

**IIS (deemed to be UNIVERSITY), Jaipur**

**Department- Home Science**

**Programme- B.Sc. (H) Home Science**

**OUTCOMES - Academic Year- 2020-21**

**PROGRAMME OUTCOMES**

<b>PO 1</b>	Understand and appreciate the role of interdisciplinary sciences in the development and well- being of individuals, families and communities
<b>PO 2</b>	Utilize knowledge from the physical, chemical and biological sciences as a basis for understanding the role of food and nutrients in health and disease processes.
<b>PO 3</b>	Apply knowledge of normal physiology to understanding of disorders or dysfunctions.
<b>PO 4</b>	Understand the sciences and technologies that enhance the quality of life of people
<b>PO 5</b>	Acquire professional and entrepreneurial skills for economic empowerment of self in particular, and community in general
<b>PO 6</b>	Develop professional skills in food, nutrition, textiles, housing, product making, communication technologies and human development
<b>PO 7</b>	Relate the principles of development with self, family and society
<b>PO 8</b>	Manage life crisis at every stage of life span
<b>PO 9</b>	Acquire competence in public speaking, writing and inter personal skills.
<b>PO 10</b>	Acquire scientific skills in the management of resources
<b>PO 11</b>	Use concepts, tools and techniques related to Science and its application in Home Science

## PROGRAMME SPECIFIC OUTCOMES

### Clothing and Textiles

<b>PSO 1</b>	Understand performance of Textiles & Apparel production and analyze textile material
<b>PSO 2</b>	Employ skills for illustrations, pattern making and sewing to take up challenges in garment construction
<b>PSO 3</b>	Apply knowledge and identify the roles and functions of marketing & merchandising
<b>PSO 4</b>	Apply and appreciate textiles and develop skill in enhancing aesthetics

### Human Development

<b>PSO 1</b>	Demonstrate an understanding of the biological, psychological, social and cultural influences of lifespan human development
<b>PSO 2</b>	Apply theory and research to contemporary problems and real-world situation
<b>PSO 3</b>	Demonstrate an understanding of how gender, ethnicity, class, historical period, and social location relate to the life course experience
<b>PSO 4</b>	Critically evaluate research relevant to human development as well as popular notions of human nature
<b>PSO 5</b>	Apply methods of teaching and training towards administration of early learning centers

### Foods and Nutrition

<b>PSO 1</b>	Understand and appreciate the role of interdisciplinary sciences in the development and wellbeing of individuals, families and communities
<b>PSO 2</b>	Understand the sciences and technologies that enhance the quality of life of people
<b>PSO 3</b>	Acquire professional and entrepreneurial skills for economic empowerment of self in particular, and community in general
<b>PSO 4</b>	Develop professional skills in food, nutrition, textiles, housing, product making, communication technologies and human development
<b>PSO 5</b>	Take science from the laboratory to the people and enhance quality of life.

## COURSE ARTICULATION MATRIX: (MAPPING OF COS WITH POS)

Course	Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11
<b>AENV 100</b>	<b>C01</b>	X										
	<b>C02</b>	X										
	<b>C03</b>	X										
	<b>C04</b>	X										
<b>CHSC111</b>	<b>C05</b>			x			X					
	<b>C06</b>			x			X					
	<b>C07</b>			x								
	<b>C08</b>			x								
	<b>C09</b>											
<b>CHSC112</b>	<b>C010</b>						X					
	<b>C011</b>						X					
	<b>C012</b>						X					
	<b>C013</b>						X					
	<b>C014</b>						X					
<b>CHSC113</b>	<b>C015</b>		x				X					
	<b>C016</b>		x				X					
	<b>C017</b>		x				X					
	<b>C018</b>		x				X					
	<b>C019</b>		x				X					
<b>CHSC114</b>	<b>C020</b>		x									
	<b>C021</b>		x									
	<b>C022</b>		x		X		X					
	<b>C023</b>		x		X		X					
<b>GBCA 102A</b>	<b>C024</b>	x										x
	<b>C025</b>	x										x
	<b>C026</b>	x										x
	<b>C027</b>	x										x
<b>GBCA 102B</b>	<b>C028</b>											x
	<b>C029</b>											x
	<b>C030</b>											x
	<b>C031</b>											x
<b>GHSC111A</b>	<b>C032</b>						X					
	<b>C033</b>						X					
	<b>C034</b>						X					
<b>GHSC111B</b>	<b>C035</b>						X					
	<b>C036</b>						X					
	<b>C037</b>						X					
<b>AENG 200A</b>	<b>C038</b>									x		
	<b>C039</b>									x		
<b>CHSC211</b>	<b>C040</b>					x				x		
	<b>C041</b>					x				x		

	C042					X		x		X		
	C043							x				
CHSC212	C044									x		
	C045									X		
	C046									x		
	C047									x		
	C048										x	
CHSC213	C049										x	
	C050										x	
	C051										x	
	C052										x	
CHSC214	C053							X				
	C054							x				
	C055										x	
	C056										x	
	C057			x								
GHSC211A	C058			x								
	C059			x								
	C060			x								
GHSC211B	C061			x								
	C062			x								
	C063				x					x		
GHSC212A	C064				x					x		
	C065				x					x		
	C066				x					x		
	C067				x					x		
	C068					x				x		
GHSC212B	C069					x				X		
	C070					X				x		
	C071					X				X		
	C072							x				
CHSC 311	C073							x				
	C074							X				
	C075							x				
	C076											x
CHSC 312	C077											x
	C078											x
	C079									x		
CHSC 313	C080									X		
	C081									x		
	C082				x					X		
	C083							x				
CHSC 314	C084									X		
	C085									X		

	C086									X		
CHSC 315	C087										X	
	C088										X	
	C089										X	
	C090				X							
	C091										X	
CHSC 316	C092										X	
	C093										X	
	C094				X							
	C095									X		
GHSC 311A	C096									X		
	C097									X		
	C098									X		
GHSC 311B	C099									X		
	C100					X						
	C101						X					
CHSC 312A	C102						X					
	C103						X					
	C104						X					
	C105						X					
	C106				X							
CHSC 312B	C107											
	C108											
	C109				X							
	C110								X			
SHSC 311	C111								X			
	C112								X			
	C113								X			
	C114								X			
	C115											X
SHSC 312	C116											X
	C117											X
	C118											X
	C119						X					
CHSC411	C120						X					
	C121						X					
	C122						X					
	C123						X					
	C124						X		X			
CHSC 412	C125						X		X			
	C126						X					
	C127						X	X				
	C128						X		X			
	CHSc 413	C129		X								

	<b>C0130</b>		X									
	<b>C0131</b>		X									
<b>CHSC 414</b>	<b>C0132</b>		X	X								
	<b>C0133</b>		X	X								
	<b>C0134</b>		X	X								
<b>CHSC 415</b>	<b>C0135</b>						X					
	<b>C0136</b>						X					
	<b>C0137</b>						X					
	<b>C0138</b>						X					
<b>CHSC 416</b>	<b>C0139</b>											X
	<b>C0140</b>											X
	<b>C0141</b>						X					
<b>GHSC 411A</b>	<b>C0142</b>					X						
	<b>C0143</b>					X						
	<b>C0144</b>					X						
<b>GHSC 411B</b>	<b>C0145</b>					X						
	<b>C0146</b>					X						
	<b>C0147</b>							X				
<b>GHSC 412A</b>	<b>C0148</b>						X					
	<b>C0149</b>						X					
	<b>C0150</b>						X					
<b>GHSC 412B</b>	<b>C0151</b>						X					
	<b>C0152</b>						X					
	<b>C0153</b>						X					
<b>SHSC 411</b>	<b>C0154</b>						X					
	<b>C0155</b>						X					
	<b>C0156</b>						X					
	<b>C0157</b>						X					
<b>CHSC 511</b>	<b>C0158</b>											X
	<b>C0159</b>											X
	<b>C0160</b>	X										
	<b>C0161</b>	X										
	<b>C0162</b>											X
<b>CHSC 512</b>	<b>C0163</b>	X										
	<b>C0164</b>											X
	<b>C0165</b>											X
	<b>C0166</b>											X
<b>CHSC 513</b>	<b>C0167</b>		X									
	<b>C0168</b>		X									
	<b>C0169</b>						X					
	<b>C0170</b>						X					
	<b>C0171</b>						X					
<b>CHSC 514</b>	<b>C0172</b>					X						X
	<b>C0173</b>					X						X

	<b>CO174</b>												X
	<b>CO175</b>												X
	<b>CO176</b>												X
	<b>CO177</b>												X
<b>DHSC 511A</b>	<b>CO178</b>								X				
	<b>CO179</b>								X				
	<b>CO180</b>								X				
	<b>CO181</b>								X				
<b>DHSC 512A</b>	<b>CO182</b>				X	X							
	<b>CO183</b>				X	X							
	<b>CO184</b>				X	X							
<b>DHSC 513A</b>	<b>CO185</b>												X
	<b>CO186</b>		X										
	<b>CO187</b>		X										
	<b>CO188</b>		X										
<b>DHSC 514A</b>	<b>CO189</b>		X										X
	<b>CO190</b>		X										X
	<b>CO191</b>		X										X
	<b>CO192</b>		X										X
	<b>CO193</b>		X										X
<b>DHSC 515A</b>	<b>CO194</b>		X										
	<b>CO195</b>		X										
	<b>CO196</b>		X										
	<b>CO197</b>		X										
<b>DHSC 516A</b>	<b>CO198</b>				X								
	<b>CO199</b>				X								
	<b>CO200</b>				X								
	<b>CO201</b>				X								
	<b>CO202</b>				X								
<b>DHSC 511B</b>	<b>CO203</b>							X					
	<b>CO204</b>						X						
	<b>CO205</b>						X						
	<b>CO206</b>						X						
	<b>CO207</b>						X						
<b>DHSC 512B</b>	<b>CO208</b>						X						
	<b>CO209</b>						X						
	<b>CO210</b>						X						
	<b>CO211</b>						X						
<b>DHSC 513B</b>	<b>CO212</b>									X			
	<b>CO213</b>									X			
	<b>CO214</b>									X			
	<b>CO215</b>									X			
	<b>CO216</b>									X			
	<b>CO217</b>									X			





<b>DHSC 614A</b>	<b>C0262</b>												X
	<b>C0263</b>												X
<b>DHSC 611B</b>	<b>C0264</b>							X					
	<b>C0265</b>							X					
	<b>C0266</b>							x					
	<b>C0267</b>							x					
	<b>C0268</b>							x					
<b>DHSC 612B</b>	<b>C0269</b>							x					
	<b>C0270</b>							x					
	<b>C0271</b>							x					
	<b>C0272</b>							x					
<b>DHSC 613B</b>	<b>C0273</b>							x					
	<b>C0274</b>							x					
	<b>C0275</b>							x					
	<b>C0276</b>							x					
	<b>C0277</b>							X					
<b>DHSC 614B</b>	<b>C0278</b>							x					
	<b>C0279</b>							x					
	<b>C0280</b>							x					
	<b>C0281</b>							x					
<b>DHSC 611C</b>	<b>C0282</b>							x					
	<b>C0283</b>							x					
	<b>C0284</b>							x					
<b>DHSC 612C</b>	<b>C0285</b>						x						
	<b>C0286</b>						x						
	<b>C0287</b>						x						
<b>DHSC 613C</b>	<b>C0288</b>											x	
	<b>C0289</b>											x	
	<b>C0290</b>											x	
<b>DHSC 613C</b>	<b>C0291</b>						x				x		
	<b>C0292</b>						x				x		
	<b>C0293</b>						x				x		

## B.Sc. (H) HOME SCIENCE (2020-2021)

### COURSE OUTCOMES - Semester I

#### PAPER CODE- AENV 100 Environment Science

**Credits: 2**

**Max. Marks: 100**

**Contact Hrs/Week: 2**

**Total Hrs.: 30**

#### Course Objectives:

#### This course will enable the students to -

1. Provide students a clear understanding of environmental concerns and to follow sustainable development practices
2. Analyze concepts and methods from ecological and physical sciences and their application in environmental problem solving

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
AENV 100	Environment al Sciences (Theory)	<b>The students will be able to –</b> <b>CO1:</b> Develop a comprehensive understanding of various ecological processes and environmental issues <b>CO2:</b> Develop critical thinking for shaping strategies for environmental protection and conservation of biodiversity, social equity and sustainable development <b>CO3:</b> Appreciate the various ecological linkages within the web of life <b>CO4:</b> Recognize the consequences of human actions on the environment and ways to prevent deterioration of environment	<b>Approach in teaching:</b> Interactive Lectures, Discussion, Power Point Presentations, Informative videos  <b>Learning activities for the students:</b> Self learning assignments, Effective questions, presentations, Field trips	Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination

#### CONTENTS

##### Unit I: Introduction to Environment and Ecosystem

**6 hrs**

- Scope of Environmental Studies and its applications
- Relationship of Environmental Studies with other subjects (Multidisciplinary nature of Environment)
- Concept of sustainability and sustainable development.
- Environmentally important dates and abbreviations
- Structure and function of an ecosystem
- Types of Ecosystems and their general characteristics

- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Food chains, food webs and ecological pyramids
- Ecological Succession

**Unit II: Natural Resources: Renewable and Non-renewable Resources** **5 hrs**

- Land resources and land use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water : Use and over-exploitation of surface and ground water, floods, droughts
- Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

**Unit III: Biodiversity and Conservation** **6 hrs**

- Levels of biological diversity: genetic, species and ecosystem diversity
- India as a mega-biodiversity nation; Biogeographic zones of India
- Biodiversity patterns and global biodiversity hot spots
- Endangered and endemic species of India
- Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value

**Unit IV: Environmental Pollution** **8 hrs**

- Types, Causes, effects and control measures of : Air pollution; Water pollution; Soil pollution; Noise pollution
- Pollution case studies
- Solid waste management: Control measures of urban and industrial waste.
- Nuclear hazards and human health risks
- Global environmental issues: Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act,1986; Air (Prevention & Control of Pollution) Act, 1981; Water (Prevention and control of Pollution) Act, 1974; Wildlife Protection Act, 1972; Forest Conservation Act, 1980
- International agreements: Montreal protocol, Kyoto protocol and Convention on Biological Diversity (CBD)

**Unit V: Human Communities and the Environment** **5 hrs**

- Human population growth: Impacts on environment, human health and welfare
- Resettlement and rehabilitation of project affected persons; case studies
- Disaster management : floods, earthquake, cyclones and landslides
- Environmental movements : Chipko, Silent valley, Bishnois of Rajasthan
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi)

## BOOKS RECOMMENDED:

- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad –380 013, India, Email:mapin@icenet.net
- Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.
- Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36-37.
- McCully, P. 1996. Rivers no more: the environmental effects of dams (pp. 29-64). Zed Books.
- McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.
- Odum, E.P., Odum, H.T. & Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders.
- Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.
- Rao, M.N. & Datta, A.K. 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt. Ltd.
- Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edition. John Wiley & Sons.
- Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi 1992.
- Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
- Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.
- Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.
- Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.
- Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders.
- Wilson, E. O. 2006. The Creation: An appeal to save life on earth. New York: Norton.
- Agarwal, K.C. Environmental Biology, Nidi Publ. Ltd. Bikaner.
- Singh, R.B., Thakur, D.K. and Chauhan, J.P.S., RBD publications, Jaipur
- Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science
- Odum, E.P. Fundamentals of Ecology. W.B. Saunders Co. USA.
- Santra S.C., Environmental Science, New Central Book Agency Pvt. Ltd.
- Singh Savindra, Environmental Geography, Prayag Pustak Bhawan
- Belsare D.K., Introduction to Biodiversity, APH Publishing Corporation
- Prabu P.C., Ecology and environmental Science, Avinash Paperbacks
- Bhatia A.L., Kohli K.S, Ecology and Environmental Biology, RBD
- Miller G.T., Environmental Science, Cengage Learning
- Srivastava K.P., An Introduction to Environmental Studies, Kalyani Publishers
- Sharma P.D., Ecology and Environment, Rastogi Publications
- Rajagopalan R., Environmental Studies, Oxford Press

**PAPER CODE-CHSC 111**  
**Human Development I: The Childhood Years**  
**(Theory)**

**Credits: 04**  
**Max Marks: 100**  
**Contact Hrs/week: 04**  
**Total Hrs: 60**

**Course Objectives:**

**This course will enable the students to**

1. Understand the concept of human development
2. Analyze the development during prenatal period
3. Evaluate the development during infancy.
4. Understand the development in early childhood and late childhood.
5. Apply the knowledge of childhood years in daily life

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 111	Human Development I: The Childhood Years (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO5:</b> Understand the meaning of Human development, stages, and child study methods.</p> <p><b>CO6:</b> Assess the importance of reproductive health , stages, birth process and complications of pre natal stage.</p> <p><b>CO7:</b> Demonstrate the knowledge of infancy in dealing with infants.</p> <p><b>CO8:</b> Acquire the knowledge of milestones, various developments and play during early childhood years.</p> <p><b>CO9:</b> Demonstrate the strategies to use the knowledge of middle and late childhood years in dealing with their developments.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, , Topic presentation, Giving tasks,</p>	Class test, Semester end examinations, Quiz, Presentation

**CONTENTS**

**Unit I: Introduction Human Development**

**12 hrs**

- Definitions, history, scope and multidisciplinary nature of Human Development
- Human development as a scientific discipline and its place in home science
- Stages and aspects of development
- Meaning & Principles of Growth and Development
- Child study methods- Observations, interviews, questionnaires, checklist and case study -types, merits and demerits, longitudinal, cross sectional approach and projective techniques
- Interrelationships of heredity and environment

**Unit II: Prenatal Development**

**12 hrs**

- Reproductive health –Meaning and Importance
- Process of Conception
- Symptoms of pregnancy Stages of prenatal development factors affecting Pre-natal development
- Complications during pregnancy and childbirth
- Birth process
- Role of heredity, environment and maturation in development
- Post-natal care of mother and child- minor ailments.

### **Unit III: Infancy (Birth -2 years)**

**12 hrs**

- Neonate-adjustment, sensory, perceptual, feeding practices, importance of early stimulation.
- Reflexes and sensory capabilities of neonate and their importance.
- Immunization schedule- essential and non-essential vaccines.
- Milestones & characteristics of infancy
- Development in Infancy
  - Physical-motor development
  - Cognitive and language development
  - Socio-emotional development
  - Play during infancy

### **Unit IV: Early Childhood (3-7yrs)**

**12 hrs**

- Characteristics and developmental tasks
- Physical and motor development - body size, skeletal growth, physiological changes
- Cognitive & language development- Pre-operational thought, meta-cognition
- Socio-emotional development- self-esteem, Socialization with peers and sibling
- gender identity in Early Childhood
- Learning & play

### **Unit V: Middle and Late Childhood (8-12yrs)**

**12 hrs**

- Characteristics and developmental tasks
- Physical development- changes in body size, proportion, composition
- Cognitive & language development- Information processing
- Social & emotional development- changes in self-concept, development of self esteem, sex typing.
- Changes in family relationships- parent child relationship, sibling
- Some common behavioural problems- thumb sucking, bedwetting, stealing, lying and using abusive language

### **BOOKS RECOMMENDED:**

- Singh, A. (Ed). 2015. Foundations of Human Development: A life span approach. New Delhi: Orient Black Swan.
- Hurlock, E.B., Child Development McGraw Hill, New York 1988.
- Berk, L. E. (2007). Development through the lifespan. Delhi: Pearson Education.
- Rice. F. P. (1998). Human Development: A lifespan approach. New Jersey: Prentice a. Hall.
- Santrock, J. W. (2007). A topical approach to life-span development. New Delhi: Tata McGraw- Hill.
- Papalia, D.E., and Olds, S.W., (2005), Human Development, Tata Mc.Graw Hill Company, New York.
- Suriakanthi, A., (2005), Child Development, Kavitha Publications, Gandhigram, Tamil Nadu.

**PAPER CODE- CHSC 112**  
**Human Development I: The Childhood Years**  
**(Practical)**

**Credits: 2**  
**Max Marks: 100**  
**Contact Hrs/week: 4**  
**Total Hrs: 60**

**Course Objectives:**

**This course will enable the students to**

1. Understand the stages of Human Development and their specific characteristics
2. Compare the developmental among the various stages of infancy using anthropometry method.
3. Understand the various developmental changes during childhood
4. Understand the various methods of child study.
5. Create stimulation kit and plan activities.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 112	Human Development I: The Childhood Years (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO10:</b> Organize dialogue session with students on common theme of ovulation, reflexes and write reflective notes on it.</p> <p><b>CO11:</b> Demonstrate strategies of using anthropometry in assessing the new born and children.</p> <p><b>CO12:</b> Learn the various methods of child study</p> <p><b>CO13:</b> Develop skills in planning various activities in different domains.</p> <p><b>CO14:</b> Plan and design infant stimulation kit.</p>	<p><b>Approach in teaching:</b>            Discussion,            Demonstration,            Team teaching,            Presentation</p> <p><b>Learning activities for the students:</b>            Self learning,            Presentation,            Effective questions,            Giving tasks</p>	Observation, Presentation, Report writing,

**CONTENTS**

- Film viewing and discussion on process of Ovulation, fertilization child birth& reflexes - Report Writing
- Assessment of new born child through APGAR test
- Anthropometric measurement of children from birth to 8years. Studying inference as per WHO norms
- Plan & use Methods of child study to assess the development of child - Interview , Observations , Checklist, Narrative, Projective techniques (any one)
- Plan and develop activities to facilitate development in different domains
- Plan& conduct infant stimulation program and observing its impact.
- Presentation based on cultural practices related to pregnancy and infancy.
- Visit to child clinic & child welfare institutions.

- To develop insight for self-analysis through personal narratives, role play and essay for self-appraisal.

**BOOKS RECOMMENDED:**

- Santrock, W. John (2007). Life Span Development, Sixth Edition, McGraw Hill, New York
- Berk, L.E (9<sup>th</sup> Edition) Child Development, London: Allyn and Bacon
- Hurlock, E.B., Child Development McGraw Hill, New York 1988
- Papalia, D.E. and Olds, S.W. Human Development McGraw Hill, 19

**PAPER CODE- CHSC 113  
Foods and Nutrition  
(Theory)**

**Credits-04**

**Max Marks -100**

**Contact Hrs. / Week -04**

**Total Hrs -60**

**Course Objectives:**

**This course will enable the students to –**

- Understand the definition concepts and functions of foods and nutrition.
- Learn structure, composition and nutritional contribution of various food products.
- Understand the effect of processing on food products.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC113	Foods and Nutrition (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO15:</b> To define the concepts and functions of foods and nutrition.</p> <p><b>CO16:</b> To characterize the composition, functions and dietary sources of various macro- and micronutrients.</p> <p><b>CO17:</b> To identify the clinical manifestations of deficiency/excess of various nutrients/non-nutrients.</p> <p><b>CO18:</b> To be able to write the structure, nutritional composition and selection criteria for various food products.</p> <p><b>CO19:</b> To explain the effects of processing on various food products.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments, Demonstration, Team teaching, Powerpoint presentations.</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Seminar presentation, Posters and Charts preparation.</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual

**CONTENTS**

**Unit I: Basic concept of Food and Nutrition**

**10hrs**

- Introduction to nutrition- definition of food, nutrition, nutrients and health.
- Basic term used in study food and nutrition



- Basic five food groups-classification, food pyramid and dietary guidelines, Recommended Dietary Allowances (RDAs), Balanced diet
- Functions of Food-physiological, psychological and social
- Genetically modified foods and organic foods

**Unit II: Composition, Classification, Functions, dietary sources and clinical manifestations of deficiency/ excess of the following nutrients/non nutrient 12 hrs**

- Carbohydrates
- Lipids and
- Protein
- Water
- Fiber

**Unit III: Composition, Classification, Functions, dietary sources and clinical manifestations of deficiency/ excess of the following nutrients 12 hrs**

- Fat soluble vitamins-A, D, E and K
- Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitaminB12 and vitamin C
- Minerals – calcium, iron, zinc and iodine

**Unit IV: Structure (wheat grain and rice), nutritional composition, products, selection and changes during cooking and processing of the following food groups 14hrs**

- **Cereals** and their processing (milling, malting, parboiling, parching, flaking, fermentation, roasting)
- **Fruits and vegetables** and their processing (blanching, canning, dehydration, freezing)
- **Fats and Oils** and their processing (refining, hydrogenation, emulsification)
- **Spices and condiments** and their medicinal value

**Unit V: Structure (egg), nutritional composition, products, selection and changes during cooking and processing of the following food groups 12 hrs**

- **Pulses** and their processing (milling, germination, fermentation, parching, puffing, roasting)
- **Milk & milk products** and their processing (pasteurization, homogenization, evaporation, fermentation)
- **Meat, eggs, poultry and fish** and processing (ageing, tenderizing and curing of meat)
- **Nuts and oilseeds**

**BOOKS RECOMMENDED:**

- Srilakshmi. B. Food Science. New V edition - Age International (P) Ltd. Publishers, New Delhi, 2012.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Banaglore 1990.
- Potter, N.N. Food Science, 3rd Ed CBS Publishers and Distributors. Delhi, 1987.
- Gupta. S., Seth, R., Khana, K. and Mahna, R. 1991,Art and Science of Cooking- A Student's Manual, Blaze Publishers and Distributors Pvt. Ltd., new Delhi.
- Mathur, M., Goyle, A., Gupta, P. and Magon, , 1995,A Book of Recipes. Indian Book House, Jaipur.
- Rodey ,S.2012.Food Science and Nutrition.Oxford Unitversity Press.
- Manay, S.N. Food facts and Principles,2010, 3<sup>rd</sup> ed, New age International Publishers, New Delhi.

**PAPER CODE- CHSC 114**  
**Foods and Nutrition**  
**(Practical)**

**Credits: 02**

**Max Marks : 100**

**Contact Hrs. / Week: 04**

**Total Hrs : 60**

**Course Objectives:**

**This course will enable the students to –**

1. Be familiar with changes occurring in the foods as a result of cooking and processing
2. Get practical knowledge in various applications and preparations of food.
3. Understand the effect of cooking and processing on nutritional quality of food

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 114</b>	<b>Food and Nutrition (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO20:</b> Interpret the relationship between food, nutrition and health</p> <p><b>CO21:</b> Identify the dietary sources, clinical manifestation and function of various nutrients and list their sources</p> <p><b>CO22:</b> Explain the nutritional contribution of and effect of cooking on different food groups</p> <p><b>CO23:</b> Explain ways of reducing nutrient losses during different methods of cooking and methods of enhancement of nutritional quality of foods.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments, power point presentation</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Effective questions, Simulation, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects

**CONTENTS**

- Weights and measures, preparing market order and table setting
- Advantages, disadvantages and the effect of various methods of cooking on nutrients
- Ways to minimize nutrient losses
- Measure/control of Portion size
- Cooking using various methods - dry, moist, frying and microwave and understand principles involved –
  - **Beverages:** Milk shake, fruit smoothies, mocktails
  - **Cereals:** Porridge, puri, parantha, pulao, pastas, bread/pizza base, pancakes, sandwiches

- **Pulses:** Whole, dehusked, sprouted and fermented products of various legumes
- **Vegetables:** salads, curries, dry preparations
- **Fruit** –salads, salad dressings and desserts
- **Milk and milk products:** Indian and Western desserts and curries
- **Soups:** Broth, plain and cream soups
- **Baked products:** Biscuits/cookies, cream cakes, sponge cake preparations, tarts and pies
- **Snacks:** pakoras, cutlets, samosas, upma, poha, pizza, momos, tikka etc. (any 3)
- **Household methods of food preservation-** jam, lemon pickle, tomato sauce, squash

#### BOOKS RECOMMENDED:

- Khanna K, Gupta S, Seth R, Mahna R, Rekhi T (2004). The Art and Science of Cooking: A Practical Manual, Revised Edition. Elite Publishing House Pvt Ltd.
- Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S (2010). Basic Food Preparation: A Complete Manual, Fourth Edition. Orient Black Swan Ltd.
- Srilakshmi (2007). Food Science, 4th Edition. New Age International Ltd.
- Wardlaw and Insel MG, Insel PM (2004). Perspectives in Nutrition, Sixth Edition. Mosby.
- Chadha R and Mathur P (eds). Nutrition: A Lifecycle Approach. Orient Blackswan, Delhi. 2015

### PAPER CODE- GBCA 102A Computer Applications (Theory)

**Credits: 02**  
**Periods/week: 04**  
**Max. Marks: 100**

#### Course Objectives:

**This course will enable the students to –**

1. Understand basic skills in MS-Office suites.
2. Use computer for basic purposes of preparing documents, personnel/business letters, excel spreadsheets and professional PowerPoint presentations.

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GBCA 102A</b>	<b>Computer Applications</b>	<p><b>The students will be able to:</b></p> <p><b>CO24:</b> Understand the fundamental concepts of office automation tools.</p> <p><b>CO25:</b> Design spreadsheets and use basic functions create charts, perform statistical analysis</p> <p><b>CO26:</b> Design presentation using presentation tools and enhance presentation skills</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Demonstrations, Team teaching, Teaching using advanced IT audio-video tools</p> <p><b>Learning activities for the students:</b></p>	<p><b>Assessment Strategies</b> Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation.</p>

		<b>CO27:</b> Create and complete a mail merge document.	Self-learning assignments, Effective questions, Simulation, Seminar presentation, Giving tasks	
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## CONTENTS

### Unit I: Introduction to Computers

**12 hrs**

Introduction to Computers (definition, characteristics & uses), Evolution of computers, System Unit (memory, ALU & control Unit), Input / Output devices, Storage devices Memory- primary & secondary. Introduction to Software, its type (system, application & utility), Programming languages (machine, assembly & high-level), Language processors (assembler, compiler & interpreter).

Introduction to Data Processing: Elements of Data Processing, Data Processing Activities.

Introduction to Computer Security, Introduction to Basics of Internet, Security Threat and Security Attack, Malicious Software, Hacking. Users Identifications and Authentication.

### Unit II:

**12 hrs.**

**Windows:** Introduction to Windows, features of Windows (Desktop & its components, the window, the application window (various bars), the document window, the dialog window, the icons). Windows explorer; Control panel, Setting wallpaper, screen saver, background. Creating a folder, Compressing/ Zipping files (WinZip), Virus & Antivirus.

**Word processors:** Introduction to word processing, Features of Word processors, working with formatted documents, Shortcut keys. Finding & replacing text, go to (5) command.

Formatting documents, Selecting text, Formatting characters, Changing cases, Paragraph formatting, Indents, Using format painter, Page formatting, Header & footer, Bullets & numbering, Tabs

### Unit III:

**12 hrs.**

**Advanced Word processing Tools:** Forming tables, Proofing text (Spell check, Auto correct), Inserting pictures, Mail merging, Printing, Getting Help.

**Spreadsheets:** workbooks, creating, saving & editing a workbook, Renaming sheet, cell entries (numbers, labels, and formulas), spell check, find and replace; Adding and deleting rows and columns. Filling series, fill with drag, data sort, Formatting worksheet

### Unit IV:

**12hrs.**

**Spreadsheets:** Functions and its parts, Mathematical Functions(FLOOR, CEILING, ROUND, SUM,PRODUCT,QUOTIENT); Date & Time (DATE, DATEVALUE, DAY, TIME,HOUR, MINUTE, SECOND, MONTH, TODAY, YEAR, WEEKDAY, WEEKNUM,NOW),Text (EXACT,LEFT,LEN, LOWER, MID, PROPER,REPLACE, RIGHT, TRIM, UPPER, VALUE,); Statistical Functions(AVERAGE,COUNT,MAX, MIN, MEDIAN, MODE),Cell referencing (Relative, Absolute, Mixed), What-if analysis. Introduction to charts: types of charts, creation of chart from adjacent data/ nonadjacent data, printing a chart, printing worksheet.

**Presentation Software:** Uses, Presentation tips, components of slide, templates and wizards, using template, choosing an auto layout, using outlines, adding subheadings, editing text, formatting text, using master slide; adding slides, changing color scheme, changing background and shading.

**Unit V:****12hrs**

**Presentation Software:** Adding header and footer, adding clip arts and auto shapes. Various presentation, Working in slide sorter view (deleting, duplicating, rearranging slides), adding transition and animations to slide show, inserting music or sound on a slide, Inserting action buttons or hyperlinks for a presentation, set and rehearse slide timings, viewing slide show, Printing slides.

**Internet:**

Internet Communication Protocols, Types of Internet Connections, ISPs, Domain Name System, Intranets, Email Concepts (receiving, sending, addressing, downloading, formatting, sending attachment), Configuring e-mail software.

**BOOKS RECOMMENDED:**

- Peter Norton, "Introduction to Computers", TMH, 2001.
- Ed Bott, "Using Microsoft Office 2007", Pearson Education India.
- John Walkenbach (Author), Herb Tyson (Author), Michael R. Groh (Author), Faithe Wempen (Author), Lisa A. Bucki, "Microsoft Office 2010 Bible", Wiley India.
- Mahapatra & Sinha, "Essentials of Information Technology", Dhanpat Rai Publishing.

**PAPER CODE- GBCA 102B  
Office Automation Lab  
(Practical)**

**Credits: 02****Periods/week: 04****Max. Marks: 100****Course Objectives:****This course will enable the students to –**

1. To make students familiar with the concepts taught in the theory paper

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GBCA 102B</b>	<b>Office Automatio n Lab (Practical)</b>	<p><b>The students will be able to:</b></p> <p><b>CO28:</b> Perform MS-Office operations.</p> <p><b>CO29.</b> Create well formatted documents.</p> <p><b>CO30.</b> Design spread sheet and employ basic functions</p> <p><b>CO31.</b> Develop practical skills to create professional power point presentations.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments, Demonstrations, Team teaching, Teaching using advanced IT audio-video tools</p> <p><b>Learning activities for the students:</b></p>	<p><b>Assessment Strategies</b> Class test, Semester end examinations, Assignments, Presentation</p>

			Self-learning assignments, Effective questions, Giving tasks	
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## CONTENTS

- Word Documents.
- Excel Spreadsheets
- Power point presentation
- Working on GUI using Windows.

### PAPER CODE- GHSC 111A Elements of Textile Design (Theory)

**Credits: 4**

**Max Marks: 100**

**Contact Hrs/week: 4**

**Total Hrs: 60**

#### Course Objectives:

**This course will enable the students to –**

1. Get an insight of design elements
2. Knowledge of colours and colour ways to imply it to textile designing

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 111A</b>	<b>Elements of Textile Design (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO32:</b> Understand aspects of designs and its utilization in textiles.</p> <p><b>CO33:</b> Interpret the design process and its importance in textile design.</p> <p><b>CO34:</b> Analyze various design components and its importance in textiles</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation,

## CONTENTS

### Unit I:

**12 hrs**

- Definition and understanding aspects of design
- Classification to Design: Structural Design and Applied Design

### Unit II:

- Design process – Concept, research, design exploration & conceptualization

**12 hrs**

**Unit III:****12 hrs**

- Introduction to various types of designs and layouts
- Types of motifs: Geometrical, Stylized, Figurative, Abstract, Folk, Tribal
- Types of Repeats: Ogee pattern, Vertical, Horizontal, Twill, Mirror, Half drop, All over

**Unit IV:****12 hrs**

- Elements of Design
  - Lines – types of lines and application of lines
  - Colour – Intensity, value, hue
  - Aspects of colour: Colour wheel and Colour schemes, warm & cool colours
  - Texture –definition and its types, factors affecting textures
  - Form and Shape

**Unit V:****12 hrs**

- Principles of Design
  - Balance: Symmetric and Asymmetric
  - Proportion
  - Rhythm
  - Emphasis
  - Repetition

**BOOKS RECOMMENDED:**

- Carol Joyce, Textile Design, Watson- Guptill Publications.
- Garthe, M., Fashion & Colour; Rockport Publishers.
- Gulrajani M.L. and Gupta D: Natural dyes and their application to textiles, IIT Delhi.
- Sekhri, Seema, Text Book of Fabric Science fundamentals to Finishing, PHI Learning Pvt, Ltd, New Delhi, 2011.
- Sumathi, G.J.,Elements of Fashion and Apparel Design, New Age International Publishers, New Delhi.
- Frings, Gini, Stephens, Fashion Concept to Consumer, 3<sup>rd</sup> ed., Prentice Hall International, New Jersey, 2008.

**PAPER CODE- GHSC 111B**  
**Application of Textile Design**  
**(Practical)**

**Credits: 2****Max Marks: 100****Contact Hrs/week: 4****Total Hrs: 60****Course Objectives:****This course will enable the students to –**

1. An understanding of design elements
2. Professional approach towards the thematic designing for textiles
3. Aesthetic sense in decorating the textiles
4. Skills of designing in students

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 111B</b>	<b>Application of Textile Design (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO35:</b> Apply elements of design in textiles designing.</p> <p><b>CO36:</b> Create various motifs to design textiles.</p> <p><b>CO37:</b> Develop skills for designing home textiles and application of various colour mediums.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Tutorials, Demonstration</p> <p><b>Learning activities for the students:</b></p> <p>Practical assignments, Simulation, Portfolio Preparation, Giving tasks.</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation,

## CONTENTS

- Introduction to elements of design in Textiles: **12 hrs**
  - Line and Form– Geometric, Simplified, Naturalized, Stylized and Abstract.
  - Colour – Colour Wheel, Intensity Scale, Gray Scale and Value Scale.
- Creating motifs: **12 hrs**
  - Enlarging and reducing of motifs
  - Design and patterns for different placement and usage
- Textures in nature **6 hrs**
- Creating design sheets using various colour schemes. **10 hrs**
- Application of various colour mediums on fabric- fabric colours, pigment dyes, metallic colours and pearl colours. **10 hrs**
- Design development for any two home textiles/apparel using any of the above mentioned colour techniques. **10 hrs**

## BOOKS RECOMMENDED:

- Birrel and Verla Leone., Colour and Design A basic Text., vol.I and II.,Digest submitted in requirements for the degree of education in teachers college, Columbia University
- Bhatt Pranav. & Goenka Shanita., Foundation of Art & Design.,Vallabhvidyanagar., Deep Prakashan,1990
- Bustanoby.J.H.,Principles of colour and colour mixing.,McGraw Hill Book Company , New York, London,1947
- Sumathi, G.J. "Elements of Fashion and Apparel Design" New Age International Publishers, New Delhi.
- Kathryn McKelvey "Fashion Source Book" Balckwell Publishing New Delhi.
- Lyle, Dorothy S.,Contemporary Clothing, Benette & Mc night Publishing Co. Peoria Illinois, 1983.



## COURSE OUTCOMES - Semester II

### PAPER CODE- AENG 200A English Communication (Theory)

**Credits: 2**

**Max Marks: 100**

**Contact Hrs/week: 2**

**Total Hrs: 30**

#### Course Objectives:

**This course will enable the students to –**

1. Develop in students an understanding of the language of communication, verbal and non-verbal
2. Help improve their grammar in terms of comprehensibility and usage in written and spoken English, respectively
3. Strengthen the students' grammatical, compositional and editing skills

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>AENG 200A</b>	<b>English Communicati on (Theory)</b>	<b>The students will be able to –</b>  <b>CO38:</b> Learn the fine points of academic writing and practices of research  <b>CO39:</b> Students will be able to use targeted grammatical structures meaningfully and appropriately in oral and written production.	<b>Approach in teaching:</b> Discussion, Demonstration via Presentation  <b>Learning activities for the students:</b> Drafting a Proposal, Presentation	Observation, Presentation, Report writing

#### CONTENTS

##### Unit I:

**6 hrs**

- Language of Communication - I
- Meaning and Importance of Communication
- The Communication Process
- Barriers to Effective Communication

##### Unit II:

**6 hrs**

- Language of Communication - II
- Verbal and Non- Verbal Communication
- Effective Use of Body Language
- Group Discussion

##### Unit III:

**6 hrs**

- Grammar and Usage
- Sequence of Tenses
- Direct and Indirect Narration

##### Unit IV:

**6 hrs**

- Reading and Comprehension
- Comprehension of an Unseen Passage

- Editing a Short Text (focussing on grammar, coherence and cohesion)

**Unit V:**

**6 hrs**

- Writing Skills
- Letter-Writing: Formal
- Report-Writing
- Précis-Writing

**BOOKS RECOMMENDED:**

- Gupta, H.C. and S.G. Telang. *Business Communication*. Wisdom Publications, 2009.
- Hooper, J. S. *A Quick English Reference*. OUP, 1981.
- Mathew, M. J. *Business Communication*. RBSA Publishers, 2002.
- Quirk, Randolph, and Sidney Greenbaum. *A University Grammar of English*. Orient Longman, 1973.
- Raman, Meenakshi. *Business Communication*. OUP, 2006.
- Shrikhande, Rajan. *Business Communication and Executive Effectiveness*. Symbiosis Centre for Distance Learning, 2004.
- Thomson A.J and A.V.Martinet. *A Practical English Grammar*. OUP, 1997.

**PAPER CODE- CHSC 211  
Dynamics of Communication and Extension  
(Theory)**

**Credits: 4**

**Max. Marks: 100**

**Contact Hrs./Week: 4**

**Total Hrs.: 60**

**Course Objectives:**

**This course will enable the students to -**

1. Understand the basic concepts behind communication process
2. Understand the role of communication in extension activities

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 211</b>	<b>Dynamics of Communication and Extension (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO40:</b> Describe the scope and concepts of human communication.</p> <p><b>CO41:</b> Comprehend the elements and process of effective communication.</p> <p><b>CO42:</b> .Explain various communication methods and media.</p> <p><b>CO43:</b> Describe the concept of extension, its philosophy, principles and scope</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Power point Presentations, Discussion, Reading assignments, Team teaching</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Seminar presentation, Role plays, Field visit</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual and group projects

**CONTENTS**

**Unit I: Communication : Concepts**

**12hrs**

- Historical background , concept, meaning and importance of communication in development
- Types of communication – communication transactions: Formal and Informal communication: Verbal and Non-verbal Communication
- Scope of Communication – Education, training and learning industry, Motivation and , Management, Corporate Communication, Management of Organizations, Advertising and Public relations.
- Communication and main stream media- newspaper, radio, television and Cinema, ICTs and web based communication

**Unit II: Understanding Human Communication**

**12hrs**

- Culture and communication- Signs , symbols and codes in communication
- Postulates /Principles of Communication
- Elements of Communication and their Characteristics
- Models of Communication
- Barriers of Communication
- Communicating Effectively
- Concept , nature and relevance to communication process  
(Empathy, Persuasion , Perception, Listening)

**Unit III: Communication for Extension**

**12hrs**

- Concept , nature and philosophy of Extension
- Principles of Extension
- Relationship between Communication , Extension and Development
- Meaning , importance and classification- Audio, Visual( Chart, poster , Flannel Graph,Flash Cards, Flip Book, Film Strips and Audio visual, Projected and Non projected (Folk media) Audio Visual aid

**Unit IV:**

**12hrs**

- **Perception & Learning- Definition, laws and Principles**
- Motivation- Definition , Role of motivation, Process of motivation
- **Methods of Communication (Individual approach)**
  - Personal letters
  - Interviews
  - Home and farm visits
  - Office calls

**Unit V: Methods of Communication**

**12 hrs**

- **Group approach for small groups**
  - Group discussions- Panel discussions, symposium , colloquy, Forum , Brain storming
  - Role plays
  - Workshops
  - Dramatization
  - Camps
  - Demonstration
- **Methods to Reach Masses**
  - Broadcasting
  - Telecasting
  - Publications Books, news papers, magazines, Letters
  - Video film conferencing
  - Public meetings

- Cyber communication
- Net working

### BOOKS RECOMMENDED

- Dahama O.P. (1998): Education and communication for Development, New Delhi, Oxford and IBH Publishing Co. Pvt. Ltd.
- Dave, E (1957). Audio visual methods in teaching Dryden press, New York.
- Jain, R. (1993) Mass Media and Rural Development. Vol II New Delhi, Manak Publication Pvt. Ltd.
- Ray, G.L (1991) Extension Communication Management, Calcutta, Naya Prakash.
- Barker, L. (1990). "Communication", New Jersey: Prentice Hall, Inc; 171.
- Devito, J. (1998) Human Communication. New York: Harper & Row.
- Patri and Patri (2002); Essentials of Communication. Greenspan Publications

### PAPER CODE-CHSC 212 Dynamics of Communication and Extension (Practical)

**Credits** -02  
**Max Marks** -100  
**Contact Hrs./ week** -02  
**Total Hrs** -60

#### Course Objectives (COs):

This course will enable the students to –

1. Develop skill in preparing various visual aids
2. Using visual aids for effective communication

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 212	<b>Dynamics of Communication and Extension (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO44:</b> Construct various visual aids.  <b>CO45:</b> Develop skills in using Visual aids for effective communication.  <b>CO46:</b> Develop effective writing skills.  <b>CO47:</b> .Design and conduct small group communication</p>	<p><b>Approach in teaching:</b>  Interactive Lectures, Discussions, Reading assignments, Team teaching, Tutorials and demonstrations.</p> <p><b>Learning activities for the students:</b>  Self-learning assignments, Seminar presentation, Role plays, giving tasks Field visit</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual and group projects

### CONTENTS

- Planning and preparation of visual aids – Charts, Posters, Flashcards, LCD Projections, PPT's/Slides
- Display material for Bulletin Board and Flannel board.

- Preparation of printed material – Leaflets, folders, Pamphlets, Posters
- Developing skills in planning and conducting small group communication.

**BOOKS RECOMMENDED:**

- Dahama O.P. (1998): Education and communication for Development, New Delhi, Oxford and IBH Publishing Co. Pvt. Ltd.
- Dave, E (1957). Audio visual methods in teaching Dryden press, New York.
- Jain, R. (1993) Mass Media and Rural Development. Vol II New Delhi, Manak Publication Pvt. Ltd.
- Ray, G.L (1991) Extension Communication Management, Calcutta, Naya Prakash.
- Barker, L. (1990). "Communication", New Jersey: Prentice Hall, Inc; 171.
- Devito, J. (1998) Human Communication. New York: Harper & Row.
- Patri and Patri (2002); Essentials of Communication. Greenspan Publications

**CHSC 213**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the fundamentals of resource management in a changing scenario.
2. Inculcate skills in identifying, creating, selecting and using available resources judiciously with emphasis on maximization and conservation.
3. Understand the scientific application of the process of management in the judicious use of resources

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 213</b>	<b>Resource Management (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO48:</b> Explain the concept and scope of management</p> <p><b>CO49:</b> Define resources, types of resources and factors affecting utilization of resources.</p> <p><b>CO50:</b> Summarize goals, values and standards.</p> <p><b>CO51:</b> Develop plans for management of various resources.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Reading assignments, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual and group projects

**CONTENTS**

**Unit I: Introduction to Resource Management**

**12 hrs**

- Concept and scope of management
- Unitversality of management
- Approaches to management
- Ethics in management
- Motivation Theory

**Unit II: Resources****12 hrs**

- Meaning, definition, importance and characteristics of resources.
- Types of resources
- Factors affecting utilization of resources.
- Maximizing use of resources.
- Resource conservation – importance and methods.
- Availability of Resources: -Introduction, Lifecycle, Transition & Usage
  - Self
  - Family
  - National
  - Global

**Unit III****12 hrs**

## Motivators of Management

- Goals- Definition, Types and Utility
- Values –importance, Sources of Values, Classification, Characteristics, changing values
- Standards- Definition, Classification, Quantitative, Conventional and Non-Conventional
- Interdependence of values , goals and standards

**Unit IV: Process of Management****12 hrs**

- Decision Making – importance, types, steps, method of resolving conflicts
- Planning – nature, characteristics, importance
- Organizing; Coordinating, Supervising, directing and guiding; Controlling characteristics for effective control
- Evaluation – meaning, importance and methods
- Application of Management Process in:
  - Time, Energy, Money Management
  - Event Planning & Execution

**Unit V: Resource Management: Domains and Application****12 hrs**

- Concepts, Scope, Dimensions & future trends of:
  - Product Design
  - Sustainable Development
  - Training and Development
  - Consumer Studies

**BOOKS RECOMMENDED:**

- Koontz.H. and O'Donnel C., 2005, Management – A systems and contingency analysis of managerial functions. New York: McGraw-Hill Book Company
- Kreitner. 2009, Management Theory and Applications, Cengage Learning: India
- Nickell, P., & Dorsey, J.M., Management in family living (4th Edition). New York NY: Wiley.
- Rao V.S. and Narayana P.S., Principles and Practices of Management, 2007, Konark Publishers Pvt.Ltd.
- Stoner J., 2008, Management. PHI Learning

**PAPER CODE-CHSC 214**  
**Resource Management**  
**(Practical)**

**Max Marks -100**  
**Contact Hrs./ week -04**  
**Total Hrs -60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the available resources, their uses and conservation.
2. Utilize resources in a prudent manner.
3. Create plans for management of resources

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 214	Resource Management (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO52:</b> Use the tools and techniques of money, space and energy management.  <b>CO53:</b> Develop skills in understanding self through SWOT analysis.  <b>CO54:</b> Demonstrate decision making abilities through management games.  <b>CO55:</b> Create time plans for self and family.  <b>CO56:</b> Use time and motion studies for work simplification.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Giving tasks, Field practical</p>	Class test, Semester end examinations, Individual and group projects

**CONTENTS**

- Resource conservation and optimization/green technologies (natural resources): Portfolio
- Identification and development of self as a resource.
- Personal SWOT analysis and Johari Window by using scales (Give the power point presentations for the same)
- Building Decision Making abilities through management games
- Preparation of time plans for self and family
- Time and Motion Study
- Managerial process
- Resource optimization - time, money, products, space, human capital Concepts and related terminology of the functional areas of Human Resource

**BOOKS RECOMMENDED:**

- Koontz.H. and O'Donnel C., 2005, Management – A systems and contingency analysis of managerial functions. New York: McGraw-Hill Book Company
- Kreitner. 2009, Management Theory and Applications, Cengage Learning: India
- Nickell, P., & Dorsey, J.M., Management in family living (4th Edition). New York NY: Wiley.
- Rao V.S. and Narayana P.S., Principles and Practices of Management, 2007, Konark Publishers Pvt.Ltd.
- Stoner J., 2008, Management. PHI Learning

**Human Physiology and Promotive Health  
(Theory)**

**Credits -04**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the anatomy and physiology of all the system of the human body.
2. Understand the basic concepts of promotive health

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 211A</b>	<b>Human Physiology and Promotive Health (Theory)</b>	<b>The students will be able to –</b>  <b>CO57:</b> Interpret the current state of knowledge about the functional organization of the human body <b>CO58:</b> Identify the correlation of physiology with various disorders and their pathogenesis. <b>CO59:</b> Comprehend the concept of health, diseases and their prevention	<b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments, Demonstration, <b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, Seminar presentation	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

## CONTENTS

### Unit I:

**12 hrs**

- Cells and Tissues- Structure and functionality of the cell .Types of Tissues (With respect to epithelial, connective, muscle and nervous tissues)
- Cardiovascular System
  - Blood – Composition and Functions, Erythropoiesis, Blood groups & Blood transfusion
  - Heart – Structure, Cardiac cycle, Cardiac output & Effect of exercise, Blood Pressure & Hypertension
  - Circulation of Blood – Systemic, Pulmonary, Portal and Coronary circulation & Heart Attacks

### UNIT II

**12 hrs**

- Digestive System- Structure & Functions of Stomach, Small Intestine, Large intestine, Pancreas, Islets of Langerhans, Liver & Gall Bladder
- Digestion & Absorption of Carbohydrates, Proteins & Fats
- Urinary System-Structure & Functions of Kidneys
- Formation of Urine

### UNIT III:

**12 hrs**

- Reproductive System and Central Nervous System
  - Structure & functions of Male Reproductive Organs – Testes, Vas Deferens & Seminal Vesicles, Prostate & Urethra
  - Structure & functions of Female Reproductive Organs – Uterus, Vagina, Fallopian tubes & Ovaries, Fertilization , Menstrual Cycle, menopause
- Nervous System- Structure of Neurons
- Structure & Functions of Brain and Spinal cord
- Actions and disorders of Pituitary, Thyroid and Parathyroid, Adrenal and Pancreatic hormones



**UNIT IV:****12 hrs**

- Concept of health, diseases and its prevention
- WHO definition of Health, Basic concept of Disease and Disease transmission,
- Definition of Public Health and Disease Prevention, Concept of Immunization and
- Immunization Schedule
- Communicable Diseases- Causative organism, Mode of transmission and Prevention and Control of Tuberculosis, Enteric Fever, Dengue fever, HIV/AIDS

**Unit V:****12 hrs**

- Non Communicable Diseases-General risk factors and Prevention of Diabetes, Hypertension and Cancer
- Mental Health -Psychosis, Neurosis, Drug abuse and Alcoholism
- Maternal Health -Antenatal Care, Family Planning and contraception

**BOOKS RECOMMENDED:**

- Ganong WF (2003). Review of Medical Physiology, 21st ed. McGraw Hill.
- J.E. Park and K. Park (2009). Park's Textbook of Preventive and Social Medicine, 20th edition. M/s Banarsi Das Bhanot, Jabalpur.
- Ross and Wilson(1973). Foundation of Anatomy and Physiology, Medical Division of Longman Group Ltd.
- Yash Pal Bedi (1980). A Handbook of Social and Preventive Medicine, Atma Ram and Sons.

**PAPER CODE- GHSC 211B**  
**Human Physiology and Promotive Health**  
**(Practical)**

**Credits -02**  
**Max Marks -100**  
**Contact Hrs./ week -04**  
**Total Hrs-60**

**Course Objectives (COs):****This course will enable the students to –**

1. Identify and interpret the different organs of the human body.
2. Understand and interpret common medical diagnostic tests and reports.
3. Design project on reproductive health for women.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>GHSC 211B</b>	<b>Human Physiology and Promotive Health (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO60:</b> Describe functional organization of the human body.  <b>CO61:</b> Explain the normal functioning of the organ systems and their interactions.  <b>CO62;</b> Explain and interpret common medical diagnostic tests and reports.</p>	<p><b>Approach in teaching:</b>  Discussion,  Demonstration, Action  Research, Project</p> <p><b>Learning activities for the students:</b>  Field activities,  Simulation, Presentation,  Giving tasks</p>	Observation, Presentation, Report writing
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## CONTENTS

- Case study of Iron deficiency Anemia, investigations and diagnosis. Blood indices
- Measurement of Blood pressure by using sphygmomanometer.
- Heart: Anatomy of heart. Circulation
- Slide identification and drawing
  - liver, kidney, spleen, pancreas, stomach, gall bladder, large and small intestine.
  - Nerve - Medullated, Nerve cell. Examine and draw the tissues.
  - Lung section , Trachea
  - Excretory System
- Microscopic examination of prepared slides.
  - Epithelium- stratified, squamous, ciliated, columnar.
  - Connective tissue - Adipose tissue, Bone, areolar tissue.
  - Muscle - Smooth, cardiac, stratified.
  - Microscopic examination of prepared slides of skin
  - Blood:
    - fresh mount of blood
    - stained blood smear
- Demonstration/ visit for latest imaging techniques like USG, CT and MRI.  
Basic First aid procedures, CPR, Burns
- Preparation of a project on Antenatal Care for women
- Preparation of a project on reproductive health and post-menopausal health for women.

## BOOKS RECOMMENDED:

- Ganong WF (2003). Review of Medical Physiology, 21st ed. McGraw Hill.
- J.E. Park and K. Park (2009). Park's Textbook of Preventive and Social Medicine, 20th edition. M/s Banarsi Das Bhanot, Jabalpur.
- Ross and Wilson(1973). Foundation of Anatomy and Physiology, Medical Division of Longman Group Ltd.
- Yash Pal Bedi (1980). A Handbook of Social and Preventive Medicine, Atma Ram and Sons.

## **PAPER CODE –GHSC 212A Guidance and Counselling (Theory)**

**Credits-04**

**Max Marks-100**

**Contact Hrs./ week-04**

**Total Hrs-60**

### **Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the basic concept of counseling and guidance.

2. Understand the roles, responsibilities and ethical issues applies in counselling
3. Evaluate and apply various techniques in counseling and guidance.
4. Evaluate various problems in children which require guidance.
5. Understand different therapies of counseling.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 212A</b>	<b>Guidance and Counselling (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO63:</b> Differentiate between the basic concept and need of guidance and counselling</p> <p><b>CO64:</b> Summarize the roles, responsibilities and ethical considerations of counsellor</p> <p><b>CO65:</b> Demonstrate the skill of conducting counselling and therapeutic sessions</p> <p><b>CO66:</b> Summarize and demonstrate the skill of applying different counselling approaches</p> <p><b>CO67:</b> Discuss and differentiate the need and approach of counselling for children and adolescents having specific problems.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments, Demonstration, Group discussion, power point presentation</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Mock sessions</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects

**CONTENTS**

**Unit I: Introduction to Guidance and Counseling 12 hrs**

- Meaning, purpose and characteristics of guidance.
- Meaning, principles, characteristics and scope of counseling.
- Need of counseling.
- Difference between guidance and counseling
- Roles and responsibilities of counselor.
- Qualities and skills of Counselor
- Ethics in counseling

**Unit II: Techniques and process of counseling 12 hrs**

- Directive, non- directive, eclectic, behavioral
- Process of counselling:
  - Stage I: Relationship building
  - Stage II: Assessment and Diagnosis
  - Stage III: Formulation of counselling goals
  - Stage IV: Intervention and problem solving
  - Stage V: Termination and follow up

**Unit III: Types and Essentials of guidance & counseling 12 hrs**

- Types of Guidance and counseling–Educational, Vocational and Personal, Individual, Group counseling
- Importance of Listening, reflection, acceptance, silence, leading, reassurance, and recording in counseling process.

**Unit IV: Approaches and therapies of counseling****12 hrs**

- Approaches to counseling: Process, advantages and disadvantages  
Psychodynamic approach  
Humanistic approach  
Behavioristic approach
- Counseling therapies- Rational -emotive, Play therapy, CBT, Psycho- drama, transactional analysis, role of reward and punishment

**Unit V: Counseling Children and Adolescence****12 hrs**

- Counseling and rehabilitation of the 'differently abled' persons
- Counseling for alcohol and substance abusers
- Counseling and rehabilitation of legal offenders
- Counseling and rehabilitation of victims of abuse and violence
- Crisis intervention counselling
- Counseling for childhood problems- Lying, stealing, truancy, bed wetting, thumb sucking, nail biting, tantrums, day dreaming, shyness, withdrawal, short attention span, phobias

**BOOKS RECOMMENDED:**

- Gibson, Robert, L. & Mitchell, Marianne, H. (2006). Introduction to Guidance and Counselling, Prentice Hall of India Private Limited, New Delhi-110001
- Indira Madhukar (2007). Guidance and Counselling, Authors press, New Delhi.
- Axline, V. M. (1947). Play therapy. New York: Ballantine Books.
- Brammer, L. M. (1985). The helping relationship: Process & skills. New Jersey: Prentice-Hall.
- Hackney, H. & Cormier, L. S. (1979). Counseling strategies and objectives. New Jersey: Prentice Hall.
- Thornburg, H.E. (1975). Contemporary Adolescence: Readings. Belmont: Wadsworth.
- Hetherington, E. M. & Parke, R. D. (1979). Child psychology: A contemporary viewpoint. N.Y.: McGraw

**PAPER CODE-GHSC 212 B  
Guidance and Counseling  
(Practical)**

**Credits-02****Max Marks-100****Contact Hrs./ week-04****Total Hrs-60****Course Objectives (COs):****This course will enable the students to –**

1. Analyze the hypothetical case and plan counselling sessions.
2. Understand various problems in children which require guidance.
3. Apply different therapies and techniques of counseling.
4. Analyze the case profile and Genogram of an individual.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<p><b>GHSC 212B</b></p>	<p><b>Guidance and Counseling (Practical)</b></p>	<p><b>The students will be able to –</b></p> <p><b>CO68:</b> Demonstrate the skills of planning and organizing counselling sessions.</p> <p><b>CO69:</b> Prepare and use the genogram and case history.</p> <p><b>CO70:</b> Demonstrate the skill of applying and interpreting psychometric tools to assess the need of the client.</p> <p><b>CO71:</b> Prepare the plan and managing strategies for the counseling center</p>	<p><b>Approach in teaching:</b> Discussion, Demonstration, projects</p> <p><b>Learning activities for the students:</b> Hands-on activities, Field visits, Mock session, Conduction of psychometric tests</p>	<p>Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects</p>
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## CONTENTS

- Prepare theme related brochures, pamphlets etc. for guidance & Counseling
- Visit to a guidance and counseling center, children’s home and evaluation
  - Organizational structure
  - Objectives/ purpose
  - Competencies of personnel and process
  - Clients views about center
  - Financial management
  - Records and registers
- Planning/ organizing guidance session of a particular age group / with specific problems.
- Understand the problem of the client through drawing and interpreting a Genogram.
- Preparation & Analysis of hypothetical case records related to family relationships and problems.
- Participation in counseling process/ assistance in preparation of case history ( Presentation of case in classroom)
- Mock Counseling session situation based activity using counseling techniques- Rapport technique, questioning, listening, reflection, acceptance, silence, leading, reassurance, non- verbal cues, terminating skills.
- Need assessment of individual guidance and counseling by suitable tool.

## BOOKS RECOMMENDED:

- Blackham, G.J. & Silberman, A. (1980). Modification of child and adolescent behavior.
- Cohen, D.H. & Stern, V. (1958). Observing and recording the behavior of young children.
- New York: Bureau of Publications Teachers College - Columbia University.
- Cormier, W.H. & Cormier, L.S. (1979). Interviewing strategies for helpers: A guide to assessment, treatment, and evaluation.

## COURSE OUTCOMES - Semester III

### PAPER CODE-CHSC 311 Introduction To Textiles (Theory)

**Credits: 04**  
**Max Marks: 100**  
**Contact Hrs/week: 04**  
**Total Hrs: 60**

#### Course Objectives (COs):

**This course will enable the students to –**

1. Impart knowledge of fundamental facts concerning textile fibers, yarns and fabrics in terms of properties and production.

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 311</b>	<b>Introductio n to Textiles (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO72:</b> Understand concept of textile fibers and various properties of textile fibers.</p> <p><b>CO73:</b> Interpret working of yarn manufacturing and understand various spinning methods.</p> <p><b>CO74:</b> Describe various fabric manufacturing techniques.</p> <p><b>CO75:</b> Understand textile dyeing, printing and finishing process and its importance in textile industry.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

### CONTENTS

#### Unit I: Textiles Fibers

**12 hrs**

- Terminology
- Fiber science (Monomers, Polymers & Types)
- General properties of Fibers –Primary & Secondary
- Classification of fibers
- Natural Fibers: Cotton, Wool, Silk
- Man-made fibers: Rayon, Polyamides, Polyester, Acrylic

#### Unit II: Yarn construction

**12 hrs**

- Basic principles of yarn making- Mechanical spinning (cotton spinning), Chemical spinning- Wet, Dry and Melt.
- Types of yarns – Simple, Novelty and Textured yarns.
- Yarn Twist and Yarn Numbering system.
- Blends: Types of blends and purpose of blending

### **Unit III: Fabric Construction Methods**

**12 hrs**

- Weaving, Knitting: Classification of knits; Construction and properties of warp and weft knits, Non woven's, Braiding, Lacing and Netting
- Weaving: - Parts, Types of loom, stages in weaving, process.
- Fabrics made from fibers- Felting and Bonding
- Classification and construction of basic weaves.
- Introduction to decorative weaves: Dobby, Jacquard, Surface Figure weaves, (Swivel, Spot weaves, Lappet), Pile weaves, and Leno weaves, Double cloth and double faced fabrics.

### **Unit IV: Dyeing and Printing**

**12 hrs**

- Classification of dyes
- Stages of Dyeing
- Styles of printing – direct, discharge, resist
- Methods of printing
  - Block printing
  - Flat plate and roller printing
  - Stencil, screen (flat and rotary) printing

### **Unit V: Finishing**

**12 hrs**

- Classification of Finishes
- Basic/Routine Finishes: Beetling, Inspection, Singeing, Desizing, Scouring, Bleaching, Stiffening, Weighting, Basic Calendering, Tenting, Mercerization
- Special finishes: Delustrants, Optical Brightening Agents, Fading Finishes, Acid and Alkali Finishes, Softening finishes, Stiffening Finishes, Absorbent, Antistatic, Abrasion Resistant, Stain and Soil Resistant, Durable Press, Shring Resistant, Flame Resistant, Water repellent and waterproof, Moth proof and Antimicrobial

### **BOOKS RECOMMENDED:**

- Corbman, P. B., Textiles-Fiber to Fabric, Gregg Division/ McGraw Hill Book Co. USA, 1985.
- Dhantiyagi, S., Fundamentals of textiles & their care, Orient Longman limited, New Delhi.
- Tortora, G. Phylis., Understanding Textiles (2<sup>nd</sup> Edition), McMillan Co. USA 1987.
- Kadolph, Sara, J. and Anna L. Langford, Textiles, 11th Edition, Pearson Education (US) 2010.
- Joseph, M.L., Essential of Textiles (5th edition), Holf, Rinecharts and Winston Publication, Florida 1988.
- Sekhri, S., Text Book of Fabric Science fundamentals to Finishing, PHI Learning Pvt, Ltd, New Delhi, 2011.
- Rastogi D. and Chopra S., Textile Science, Orient Blackswan Private Limited, 2017.
- Jain, H., Techniques of Dyeing & Printing, Ane Books Pvt. Ltd., 2010.

**PAPER CODE-CHSC 312**  
**Introduction to Textiles**  
**(Practical)**

**Credits: 02**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. To impart the knowledge about fiber identification and fabric study.
2. To develop technical competency in dyeing & printing

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 312</b>	<b>Introduction to Textiles (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO76:</b> Interpret the chemical composition of fiber.</p> <p><b>CO77:</b> Analyze various yarn identification methods and other yarn testing method.</p> <p><b>CO78:</b> Interpret the various fabric manufacturing techniques and fabric testing.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Demonstration</p> <p><b>Learning activities for the students:</b> Practical assignments, Simulation, Portfolio Preparation, Giving tasks.</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

**CONTENTS**

- Fiber Identification tests –Visual, burning, microscopic and chemical **10 hrs**
- Yarn Identification–Single, ply, cord, textured, elastic, monofilament, multifilament and spun yarn **10 hrs**
- Thread count and balance **6 hrs**
- Dimensional stability **2 hrs**
- Weaves- Identification and their design interpretation on graph & preparation of weaves sample on paper & loom **12 hrs**
- Fabric analysis of light, medium & heavy weight fabrics (five each) **20 hrs**
  - Fiber type
  - Yarn type
  - Weave
  - GSM
  - End use

**BOOKS RECOMMENDED:**

- Corbman., P. B., Textiles Fiber to Fabric Gregg, Division, Mc Graw Hill Book.
- Phyllis, G. Tortora., Understanding Textile, (2<sup>nd</sup> Edition), Mc Millan Co.,USA 1987.
- Gulrajani M.L. and Gupta D: Natural dyes and their application to textiles, IIT Delhi.
- J. E. Booth., Principles of Textile Testing: An Introduction to Physical Methods of Testing Textile Fibers, Yarns and Fabrics, Butterworths, 1986.
- Sekhri, Seema, Text Book of Fabric Science fundamentals to Finishing, PHI Learning Pvt, Ltd, New Delhi, 2011.
- Rastogi D. and Chopra S., Textile Science, Orient Blackswan Private Limited, 2017.



- Jain, H., Techniques of Dyeing & Printing, Ane Books Pvt. Ltd., 2010.

**PAPER CODE-CHSC 313**  
**Communication System and Mass Media**  
**(Theory)**

**Credits: 04**  
**Max Marks: 100**  
**Contact Hrs/week: 04**  
**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand forms of communication
2. Evaluate models of communication
3. Analyze different media of communication

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 313</b>	<b>Communicati on System and Mass Media (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO79:</b> Describe various communication systems.</p> <p><b>CO80:</b> Characterize various communication transactions for effective communication.</p> <p><b>CO81:</b> Identify the role of culture in communication.</p> <p><b>CO82:</b> Gain insight into the range and scope of traditional media, mass media, ICTs and New Media.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Giving tasks, Field practical</p>	Class test, Semester end examinations, Individual and group projects

**CONTENTS**

**Unit I: Understanding Self**

**12 hrs**

- Awareness of self in communication
- Intrapersonal Communication
- Self-concept and self esteem

**Unit II : Interpersonal Communication**

**12 hrs**

- Concept, types and functions of interpersonal communication
- Dyadic, small and large group communication
- Stages in human relationship development
- Small group communication: types and functions

**Unit III: Organization, Public and Mass Communication**

**12 hrs**

- Organizational communication: concept, types, functions and networks
- Public communication- concept and techniques
- Mass Communication- concept, significance, functions and elements

**Unit IV:**

**12 hrs**

- Theories and models of mass communication
- Intercultural communication- concept, stages and barriers
- Relationship between culture and communication
- Application of Communication for Development

**Unit V: Mass Media**

**12 hrs**

- Mass Media- characteristics and significance of print, electronic and web based media
- Print Media: types, nature, characteristics, reach, access.
- Radio: types, nature, characteristics, reach, access.
- Television and cinema: types, nature, characteristics, reach, access.
- ICTs: types, characteristics, reach and access.

**BOOKS RECOMMENDED:**

- Dahama O.P. (1998): Education and communication for Development, New Delhi, Oxford and IBH Publishing Co. Pvt. Ltd.
- Dave, E (1957). Audio visual methods in teaching Dryden press, New York..
- Jain, R. (1993) Mass Media and Rural Development. Vol II New Delhi, Manak Publication Pvt. Ltd.
- Roy, G.L (1991) Extension Communication Management, Calcutta, Naya Prakash.
- Devito, J. (1998) Human Communication. New York: Harper & Row.
- Baran, S. (2014) Mass Communication Theory. Wadsworth Publishing
- Barker, Larry Lee. (1990) Communication. Eaglewood Cliffs, New Jersey: Prentice Hall.
- McQuail, D. (2000) Mass Communication Theories. London: Sage Publications
- Vivian, J. (1991) The Media of Mass Communication
- Stevenson, D. (2002) Understanding Media Studies: Social Theory and Mass Communication, Sage Publications

**Communication System and Mass Media  
(Practical)**

**Credits: 02**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Analyze the audience
2. Evaluate mass media.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>CHSC 314</b>	<b>Communication System and Mass Media (Practical)</b>	<b>The students will be able to –</b> <b>CO83:</b> Appraise the self. <b>CO84:</b> Develop skills in characterizing the audiences. <b>CO85:</b> Develop skills in mass media CONTENTS analysis. <b>CO86:</b> Critically examine the group dynamics in communication.	<b>Approach in teaching:</b> Interactive Lectures, Discussion, Reading assignments,  <b>Learning activities for the students:</b> Self-learning assignments, Seminar presentation, Developing questionnaire	Class test, Semester end examinations, Quiz, Presentation, Individual and group projects
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## CONTENTS

- Exercises for understanding Self.
- Studying group dynamics in organizations- formal and informal.
- Audience analysis- readership, listenership and viewership studies
- CONTENTS analysis of mass media

## BOOKS RECOMMENDED:

- Dahama O.P. (1998): Education and communication for Development, New Delhi, Oxford and IBH Publishing Co. Pvt. Ltd.
- Dave, E (1957). Audio visual methods in teaching Dryden press, New York..
- Jain, R. (1993) Mass Media and Rural Development. Vol II New Delhi, Manak Publication Pvt. Ltd.
- Roy, G.L (1991) Extension Communication Management, Calcutta, Naya Prakash.
- Devito, J. (1998) Human Communication. New York: Harper & Row.
- Baran, S. (2014) Mass Communication Theory. Wadsworth Publishing
- Barker, Larry Lee. (1990) Communication. Eaglewood Cliffs, New Jersey: Prentice Hall.
- McQuail, D. (2000) Mass Communication Theories. London: Sage Publications
- Vivian, J. (1991) The Media of Mass Communication
- Stevenson, D. (2002) Understanding Media Studies: Social Theory and Mass Communication, Sage Publications

## PAPER CODE-CHSC 315 Personal Finance and Consumer Studies (Theory)

**Credits: 04**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

### Course Objectives (COs):

**This course will enable the students to –**

1. Understand the changing socio-economic environment and consumer behaviour.
2. Strengthen the financial management practices of the students for wise consumer behaviour.
3. Understand the types of markets, changing concepts of markets, changes in socio-economic environment, and marketing strategies from consumer's perspective.
4. Have an overview of the consumer problems, consumer movement and consumer protection

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 315	Personal Finance and Consumer Studies (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO87:</b> Discuss the knowledge of income, saving and investment management in the changing socio-economic environment.</p> <p><b>CO88:</b> Use the knowledge to manage their personal finances through various investment avenues.</p> <p><b>CO89:</b> Explain the role of consumer in the economy, consumer problems, education and empowerment.</p> <p><b>CO90:</b> Describe issues related to consumer protection, legislative measures and redressal mechanisms.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Reading assignments, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual and group projects

## CONTENTS

### Unit I: Introduction to family financial system

12 hrs

- Family wants-elements of wants, Factors affecting and characteristics, Classification of wants
- Family Finance management
- Family Finance Management: Records to aid the process

### UNIT II: Family Income and Expenditure

12 hrs

- Family income, credit and budgets
- Factors influencing expenditure pattern
- Family savings and investments- need principles, channels of investment, tax implications
- Consumer credit- need, sources, credit cards, Housing finance
- Personal finance management – tax implications, calculation of personal income tax, wealth tax, inheritance & gift tax

### UNIT III: Consumer in India

12 hrs

- Definition of a consumer
- Role of consumers in the economy
- National Income, Per Capita Income, Household wise distribution of income
- Changing nature of the business world –e-commerce, e-business
- Role and responsibilities of the Home Maker as a Consumer

### Unit IV: Consumer Problems and Consumer Education

12 hrs

- Types of consumer problems – products and service related, deceptive, institution and market related, policy related, investment and infrastructure related.
- Causes and solutions to consumer problems
- Consumer education- objectives and strategies
- Empowerment of consumers through education and awareness
- Consumer behaviour- factors affecting, models
- Role of family in decision making
- Guidelines for wise buying practices

### Unit V: Consumer Protection

12 hrs

- Consumer protection and movement in India

- Consumer rights and responsibilities
- Consumer organizations – origin, functioning, role and types.
- Consumer cooperatives – role, history and growth in India, PDS Kendriya Bhandars.
- Basic legislative framework for consumer protection in India, Consumer Protection Act 1986 COPRA, Alternative redressal mechanisms, Mediation centres
- Standardization and quality control measures: ISI, FPO, AGMARK, ISO, Eco mark, Wool mark, Silk mark, Cotton mark, Handloom mark, BEE star labelling and others
- Buying aids- labels, packaging, advertising, buying guides

#### BOOKS RECOMMENDED:

- Khanna S.R., Hanspal S., Kapoor S. & Awasthi H.K., 2007 Consumer Affairs, Universities Press India Pvt. Ltd.
- Sawhney, H.K. & Mital, M., 2007, Family Finance & Consumer Studies, Elite Publishing House Pvt. Ltd.
- Seetharaman, P. and Sethi, M., 2001, Consumerism: Strength and Tactics: CBS Publications New Delhi

### PAPER CODE-CHSC 316 Personal Finance and Consumer Studies (Practical)

**Credits: 02**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

#### Course Objectives (COs):

**This course will enable the students to –**

1. Understand the concept of family income, expenditure pattern, markets and marketing strategies.
2. Critically analyse the saving and investment avenues.
3. Handle their personal finances.
4. Know about the legal system and alternative mechanisms of consumer redressal

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 316	Personal Finance and Consumer Studies (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO91:</b> Examine and design various consumer aids.</p> <p><b>CO92:</b> Explain practically existing redressal mechanisms and cases.</p> <p><b>CO93:</b> Select the schemes and services offered by banks and post offices and learn to fill various bank and personal income tax forms.</p> <p><b>CO94:</b> Develop skill in undertaking food adulteration tests through lab analysis.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Giving tasks, Field practical</p>	Class test, Semester end examinations, Individual and group projects

## CONTENTS

- Evaluation and designing of advertisements in the print media including products, services and social ads.
- Evaluation and designing of informative and attractive labels of different type of food products.
- Case study of banks and post offices to understand their services and products, Learning to fill different bank forms
- Analysis of consumer redressal through case study approach under CPA.
- Food adulteration tests

## BOOKS RECOMMENDED:

- Khanna S.R., Hanspal S., Kapoor S. & Awasthi H.K., 2007 Consumer Affairs, Universities Press India Pvt. Ltd.
- Sawhney, H.K. & Mital, M., 2007, Family Finance & Consumer Studies, Elite Publishing House Pvt. Ltd.
- Seetharaman, P. and Sethi, M., 2001, Consumerism: Strength and Tactics: CBS Publications New Delhi

## Advocacy and Behaviour Change Communication (Theory)

**Credits: 04**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

### Course Objectives (COs):

**This course will enable the students to –**

1. Learn about communication system, new information and technology and its application.
2. Develop an insight on Behaviour Change Communication.
3. Apply BCC approach in environment and health promotion.

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 311 A</b>	<b>Advocacy and Behaviour Change Communicati on (Theory)</b>	<b>The students will be able to –</b> <b>CO95:</b> Understand the concept and approaches related to Behaviour Change Communication <b>CO96:</b> Gain Insight into the inter linkages between communication approaches and behavior change <b>CO97:</b> Learn the concepts and processes of advocacy for development and social change	<b>Approach in teaching:</b> Interactive Lectures, Discussion, Analysis of Behavior change communications campaigns, Team teaching  <b>Learning activities for the students:</b> Self learning assignments, Effective discussion , Simulation, Report analysis and presentation	CA test, Semester end examinations, Presentation, Individual and group projects

## CONTENTS

### Unit I: Advocacy

12 hrs

- Meaning, purpose and types of Advocacy
- Tools, techniques and approaches of advocacy
- Elements of an advocacy strategy
- Advocacy Planning Cycle - planning advocacy campaigns for different stakeholders

### Unit II: Concept and approaches to Behaviour Change Communication (BCC) 12 hrs

- Concept and relevance of BCC
- Approaches to BCC
- BCC- Strategy design and implementation
- Appraisal of communication action plan

### Unit III : Behaviour change communication (BCC) for Health 12 hrs

- Health scenario and public health issues
- Health programmes and strategies
- Role of media in health promotion
- Analysis of health campaign

### Unit IV: Behaviour Change Communication (BCC) for Environment 12 hrs

- Environment scenario and ecological issues
- Environment programmes and Strategies
- Role of media in promoting sustainable environment
- Analysis of environmental campaign

### Unit V: Concept of Development 12 hrs

- Concept of development, characteristics of developing countries
- Measuring development- Indices of measuring development and classification of countries based on development indices
- Models of Development- Dominant Paradigm, Basic Needs Model, New Paradigm of development
- Application of BCC in development

### BOOKS RECOMMENDED:

- Atkin ,C.K.& Rice, R.E. (2012) Theory and Principles of Public Campaigns. In C. Atkins & R Rice (EDS) Public Communication Campaigns. Newbury Park, CA: Sage
- Cox, R. (2006) Environmental Communications and the Public Sphere. Thousand Oaks,CA:Sage.
- Subedi, N R, (2008). Advocacy Strategies and Approaches: A Training of Trainers
- Field guide to designing communication strategy, WHO publication-2007.
- Behaviour change consortium summary (1999-2003) [www1.od.nih.gov/behaviourchange](http://www1.od.nih.gov/behaviourchange)
- Communication strategy to conserve/improve Public Health., John Hopkins University-Centre for Communication programmes.
- Michael Favin and Marcia Griffiths 1999, Nutrition tool kit-09-Communication for
- Behaviour change in Nutrition projects. Human Development Network-The World Bank-1999
- Harvard Institute of International Development (1981) Nutrition Education in Developing Countries, New York: Oelgeschlager Gunn and Hain Publishers Inc.

- Hubley J (1993) *Communicating Health*. London: Teaching Aids at Low Cost, London, UK.
- Academy for Educational Development (1988). *Communication for Child Survival*, AED, USA.
- Facts for Life (1990). *A Communication Challenge*. UNITCEF / WHO / UNESCO / UNFPA, UK.

**PAPER CODE-GHSC 311B**  
**Advocacy and Behaviour Change Communication**  
**(Practical)**

**Credits: 02**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to gain–**

1. Understanding to the process of analysing BCC campaigns
2. Understanding to the documentation and analysis of BCC campaigns-case study approach

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 311 B</b>	<b>Advocacy and Behaviour Change Communication (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO98:</b> Develop skills related to designing a behavior change communication programme</p> <p><b>CO99:</b> Gain knowledge regarding implementation of Campaign</p> <p><b>CO100:</b> Perform analysis of already implemented BCC Campaigns</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Analysis of Behavior change communications campaigns, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective discussion, Simulation, Report analysis and presentation, Giving tasks, Field practical related to implementation of designed BCC Campaign</p>	<p>CA test, Semester end examinations, Viva, Group discussion and power point presentation</p>

**CONTENTS**

- To learn the process of analysing of BCC campaigns
- To document and analyse BCC campaigns for social mobilization and policy change.
- To design and implement BCC campaigns in core issues for stakeholders

**BOOKS RECOMMENDED:**

- Atkin, C.K. & Rice, R.E. (2012) *Theory and Principles of Public Campaigns*. In C. Atkins & R Rice (EDS) *Public Communication Campaigns*. Newbury Park, CA: Sage
- Cox, R. (2006) *Environmental Communications and the Public Sphere*. Thousand Oaks, CA: Sage.
- Subedi, N R, (2008). *Advocacy Strategies and Approaches: A Training of Trainers*
- *Field guide to designing communication strategy*, WHO publication-2007.



- Behaviour change consortium summary (1999-2003) [www1.od.nih.gov/behaviourchange](http://www1.od.nih.gov/behaviourchange) Communication strategy to conserve/improve Public Health., John Hopkins University-Centre for Communication programmes.
- Michael Favin and Marcia Griffiths 1999, Nutrition tool kit-09-Communication for
- Behaviour change in Nutrition projects. Human Development Network-The World Bank-1999
- Harvard Institute of International Development (1981) Nutrition Education in Developing Countries, New York: Oelgeschlager Gunn and Hain Publishers Inc.
- Hubley J (1993) Communicating Health. London: Teaching Aids at Low Cost, London, UK.
- Academy for Educational Development (1988). Communication for Child Survival, AED, USA.
- Facts for Life (1990). A Communication Challenge. UNICEF / WHO / UNESCO / UNFPA, UK.

**PAPER CODE-GHSC 312A**  
**Child Rights and Gender Justice**  
**(Theory)**

**Credits: 04**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the child rights and various constitutional acts
2. Understand the children in difficult circumstances
3. Analyze various laws, programs and policies for protecting rights of children
4. Evaluate the role of media and society in construction of gender.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 312A</b>	<b>Child Rights and Gender Justice (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO101:</b> Discuss the present status of children in India and their needs and rights</p> <p><b>CO102:</b> Evaluate various laws, programs and policies for protecting rights of children.</p> <p><b>CO103:</b> Demonstrate the skill of dealing and providing services to children in need of care and protection</p> <p><b>CO104:</b> Explain the role of society, media and culture in construction of gender.</p> <p><b>CO105:</b> Discuss the area of empowerment through knowledge of various programs, policies and legislations for women.</p>	<p><b>Approach in teaching:</b> Discussion, Demonstration, Action Research, Project, Field Trip</p> <p><b>Learning activities for the students:</b> Field activities, Simulation, Presentation, Giving tasks</p>	Observation, Presentation, Report writing

## CONTENTS

- Unit I: Introduction to Child Rights** **12 hrs**
- Concept of Child, need of Child rights
  - Demographic profile of Indian children
  - India's International commitment towards children: UN Convention, HDI, MDGs
- Unit II: Laws, policies and programmes for children in India** **12 hrs**
- Rights of children (UNCRC)
  - Constitutional provisions for children
  - JJ Act 2000, The Child Labor Act-1986
  - POSCO Act 2012, Prohibition of child marriage act-2006
  - National policy for children-2013, Rajasthan child Policy 200
  - National charter for Children 2003
  - RTE Act 2009
- Unit III: Children in need of care and protection** **12 hrs**
- Vulnerable groups: causes and consequences
  - Street, homeless, institutionalized and working children
  - Child Abuse
  - Child Trafficking
  - Children in conflict with the law
  - Children living with: chronic illness, HIV and cancer
- Unit IV: Social construction of gender** **12 hrs**
- Socialization for gender: gender roles, stereotypes and identity
  - Gender in the workplace and in public spaces –roles, issues and concern
  - Contemporary influences: media and popular culture
  - Demographic profile of women in India
  - Media portrayal of women: print & electronic media
- Unit V: Gender and Indian society** **12 hrs**
- Sex and Gender, Masculinity and Femininity, biological and cultural determinants
  - Patriarchy and social institutions
  - Development of women through economic participation
  - Exploring the issues against females
  - Laws, policies and programmes for and women -Legal rights of women, CEDAW, ERA-1976, MTP Act-1971, , National Policy for women empowerment-2001, Domestic Violence Act-2005, Dowry Prohibition Act-1961, Rajasthan state Policy for girl child, 2013.

## BOOKS RECOMMENDED:

- Agarwal, A. & Rao, B.V. (2007). Education of Disabled Children. New Delhi: Eastern Book Corporation.
- Agnes, F. (1999). Law and Gender Inequality: The politics of Women's Rights in India. Oxford University Press.
- Bajpai, A. (2006). Child Rights in India: Law, Policy and Practice. Oxford University Press.
- Kishwar, M. (1999). Off the Beaten Track: Rethinking Gender Justice for Indian Women. New Delhi: Oxford University Press.
- Satyarthi, K. and Zutshi, B. (Ed) (2006). Globalization, Development and Child Rights. New Delhi: Shipra Publication.
- Saikia, N. (2008). Indian women: A socio-legal perspective. New Delhi: Serials Publication.

**PAPER CODE-GHSC 312B**  
**Child Rights and Gender Justice**  
**(Practical)**

**Credits: 02**  
**Max Marks: 100**  
**Contact Hrs/week: 04**  
**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the working of organization related to child rights
2. Understand the child rights and gender issues through CONTENTS analysis
3. Create the plan for workshops and awareness programs on gender and child rights related issues
4. Analysis of print and electronic media CONTENTS related to gender issues.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 312B</b>	<b>Child Rights and Gender Justice (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO106:</b> Demonstrate the skill to organize workshop on socially relevant issues</p> <p><b>CO107:</b> Evaluate the Act and Policies related to children and women.</p> <p><b>CO108:</b> Measure the needs of care and protection among vulnerable groups.</p> <p><b>CO109:</b> Summarize knowledge of programs and services provided by organizations working for Child rights and gender issues.</p>	<p><b>Approach in teaching:</b> Discussion, Demonstration, Interactive session with experts, CONTENTS analysis</p> <p><b>Learning activities for the students:</b> Hands-on activities, visit to organizations, planning and conducting workshop and awareness campaign</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Planning workshop, CONTENTS analysis

**CONTENTS**

- Visits to organizations working in the area of Child Rights and Gender to understand their objectives, programmes and experiences.
- Workshops on relevant issues like Gender, domestic violence, gendering of public spaces
- Critical analysis of any one Act or policy related to children/women.
- Preparation of informative materials on any one Act or policy related to children/women.
- Media portrayals of women and children.
- Situational analysis of any one group of children in need of care and protection on the basis of available secondary data.

**BOOKS RECOMMENDED:**

- Agarwal, A. & Rao, B.V. (2007). Education of Disabled Children. New Delhi: Eastern Book Corporation.

- Agnes, F. (1999). Law and Gender Inequality: The politics of Women's Rights in India. Oxford University Press.
- Bajpai, A. (2006). Child Rights in India: Law, Policy and Practice. Oxford University Press.
- Kishwar, M. (1999). Off the Beaten Track: Rethinking Gender Justice for Indian Women. New Delhi: Oxford University Press.
- Satyarthi, K. and Zutshi, B. (Ed) (2006). Globalization, Development and Child Rights. New Delhi: Shipra Publication.
- Saikia, N. (2008). Indian women: A socio-legal perspective. New Delhi: Serials Publication

**PAPER CODE-SHSC-311**  
**Life Skills Education**  
**(Theory)**

**Credits: 2**

**Max Marks: 100**

**Contact Hrs/week: 2**

**Total Hrs: 30**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the importance of life skill education in the life of youth.
2. Analyze the various methods of enhancing life skills.
3. Apply the adaptive and positive behavior to deal effectively with the demands and challenges of everyday life.
4. Remember the core skills for positive development

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
SHSC 311	Life Skill Education (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO110:</b> Develop the understanding of applying life skill in daily life.</p> <p><b>CO111:</b> Learn the skills to plan and organize the life skill programme</p> <p><b>CO112:</b> Skills to implement life skill program in natural environment.</p> <p><b>CO113:</b> Organize the programme in natural class room environment.</p> <p><b>CO114:</b> Inculcate the areas and positive youth empowerment</p>	<p><b>Approach in teaching:</b> Discussion, Demonstration, A, Project, Nukkad play</p> <p><b>Learning activities for the students:</b> Self learning presentation Effective questions, Giving tasks, peer learning</p>	Observation, Presentation, Nukkad, Class test.

**CONTENTS**

**Unit 1: Concept and Meaning of life skills**

**6hrs**

- Definitions, concept and need of life skills education.
- Importance in daily living; Criteria for using life skills.
- Evolution of Life Skills
- Core Life Skills- classification and components

**Unit II: Components for Planning & Organizing Life**

**Skills Programs****6hrs**

- Understanding group characteristics and needs – Understanding Life skills in context of contextual specificities and Self components critical thinking, gender, cultural ideologies skills, decision making skills, interpersonal communication skills, coping with stress and emotions; self- management skills, etc.
- Importance of communication in imparting life skills education-Aspects to develop social potentials (effective listening, speaking, building and maintaining relationships, understanding group dynamics and functioning in groups, delegating responsibilities)

**Unit III: Core Approaches and Strategies to Implement****Life Skills Program****6hrs**

- Understanding and developing self-skills/potential: self-awareness, self-esteem self-confidence, creative thinking, interpersonal skills, etc.
- Use of participatory techniques and methods: Individual exercises, Group activities, games etc.
- Communicating with the audience: receiving feedback, handling questions, etc.

**UnitIV: Organizing a Life Skills Program****6hrs**

- Planning a need based viable life skills program (select components)
- Determining the purpose, collecting materials, organizing CONTENTS.
- Getting prepared for the presentation: psychological level
- Delivering the presentation
- Methods for enhancing life skills

**Unit V:Life Skills and Youth Empowerment****6hrs**

- Youth demographics in India and role in society
- Challenges of adolescence and youth development
- Formal and Non formal approaches to youth development
- Positive Youth Development
- Methods and areas of empowerment

**BOOKS RECOMMENDED:**

- Agochiya D. 2010, life competencies for adolescents. Training manual for facilitators, teachers and parents. Sage Publications
- Dakar Framework for Action,(2000).Education for All: Meeting our Collective Commitments, Dakar, Senegal
- Peace Corps, OPATS.2001, Life Skills Manual. 62

**PAPER CODE- SHSC 312**  
**Cad in Clothing and Textiles**  
**(Practical)**

**Credits: 2****Max Marks: 100****Contact Hrs/week: 4****Total Hrs: 60****Course Objectives (COs):****This course will enable the students to –**

1. Create awareness CAD and its design interpretation in designing
2. Familiarize the students with the basics of design software

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>SHSC 312</b>	<b>CAD in Clothing and Textiles (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO115:</b> Understand the fundamentals of CAD.</p> <p><b>CO116:</b> Develop skills in drawing, editing and transformation through Corel Draw.</p> <p><b>CO117:</b> Implementation of software's to undertake design projects.</p> <p><b>CO118:</b> Create theme based garment designing with software's.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Demonstration</p> <p><b>Learning activities for the students:</b> Practical assignments, Simulation, Portfolio Preparation, Giving tasks.</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation
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- **Basics of Design Software** **20 hrs**
  - Corel Draw
  - Adobe Photoshop
  
- **CAD in Fashion Design** **20 hrs**
  - Colour
  - Textures
  - Prints
  - Silhouettes & fashion details
  - Accessories
  
- **Fashion Design Creations through CAD** **20 hrs**
  - Mood Boards with colour story and textures
  - Dressing up according to themes

**BOOKS RECOMMENDED:**

- Corel Draw 9 - Manual Avanzado, ,2000, by Francisco Paz Gonzalez
- Adobe Photoshop 7.0 Classroom in a Book, 25 June 2002, by Adobe Creative Team

## COURSE OUTCOMES - Semester IV

### PAPER CODE –CHSC 411 Human Development II: Adolescence and Adulthood (Theory)

**Credits– 04**  
**Max. Marks– 100**  
**Hrs. /week- 04**  
**Total Hrs.- 60**

#### Course Objectives (COs):

**This course will enable the students to –**

1. Understand all round developmental changes and impact during adolescence
2. Remember the problems of similar age groups
3. Analyze the sexuality issues
4. Compare the developmental changes during adulthood
5. Understand the hazards of adolescence and adulthood

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 411	Human Development II: Adolescence and Adulthood (Theory)	<b>The students will be able to –</b> <b>CO119:</b> Develop the understanding of adolescence in the various developmental areas. <b>CO120:</b> Learn the sexuality issues and risk factors associated with teen age. <b>CO121:</b> Recognize the various physical and health concerns associated early adulthood. <b>CO122:</b> Understand the changes in physical, sexual and reproductive functioning in middle adulthood. <b>CO123:</b> Develop the knowledge about issues of old age.	<b>Approach in teaching:</b> Discussion, Presentation,  <b>Learning activities for the students:</b> Field activities, Presentation, Giving tasks	Class test, Semester end examinations, Quiz, Presentation

## CONTENTS

### Unit I: Introduction to Adolescence (13-19yrs)

**12 hrs**

- Definition ,Characteristics and developmental tasks
- Physical development- growth spurt, physical transition, sexual maturity, primary and secondary sex characteristics, nutrition and health
- Thinking process- (Piaget formal operation)
- Problems –physiological, psychological, academic, social
- Eating disorders-anorexia and bulimia and their prevention
- Personality – self-identity, identity statuses and body image
- Family and peer relationships
- Adolescent and media

### Unit II: Sexuality Issues

**12 hrs**

- Sex education-meaning, importance and methods

- Methods of family planning-meaning, importance, types
- Problems in adolescents- masturbation, heterosexuality, homosexuality (sexual Orientation), Sadism
- Risk factors- suicide, AIDS, teenage pregnancy, juvenile delinquency and substance abuse
- Emotional maturity, family relationship and causes of friction
- Adolescent language and morality

**Unit III: Young Adulthood (20-40 yrs )**

**12 hrs**

- Developmental tasks, characteristics
- Physical and Cognitive development
- Psychosocial development-self identity, marriage, family and parenthood
- Responsibilities, changing trends and challenges for adults
- Changing interest and adjustment in early adulthood

**Unit IV: Middle Adulthood (41-60 yrs)**

**12 hrs**

- Characteristics, adjustment to physical changes (appearance, sensory ability, physical functioning, health, sex), mental abilities, interests, social and emotional adjustments.
- Coping with midlife crisis, marital satisfaction, occupational adjustments, gender differences, relations with friends and relatives.
- Coping with stress in family and workplace.
- Menopause, andropause, health issues.
- Preparation for retirement
- Grand parenting- advantages and disadvantages.

**Unit V: Late Adulthood and Ageing (above 60 yrs.)**

**12 hrs**

- Developmental task and characteristics
- Physical, sensory, attitudinal, interests, motor functioning
- Cognitive changes
- Retirement – effect on self concept, attitude of family and society
- Problems of old age- ageing, financial, problems faced, loneliness, prolonged illness, changing relationships.
- Successful ageing
- Provisions and policies for aging adults

**BOOKS RECOMMENDED:**

- Santrock, W. John (2007). Life Span Development, Sixth Edition, McGraw Hill, New York
- Berk, L. (2006). Child development, Allyn and Bacon, New York
- Hurlock E.B. (1978). Child development, Megraw Hill Publishing Co.
- Rice, F. (1992). Human Development. A Life Span Approach Prentice, Hall
- John Brond, Peter Coleman and Sheila Peace Aging in Society: An Introduction to Social Gerontology, 2<sup>nd</sup> edition (1993) Sage Publications, New Delhi.
- K. Warner Schaie and Sherry 1. Willis, Adult Development and Aging 3<sup>rd</sup> edition (1991) Harper – Collins Publishers, U.S.A.
- Linda Nielson Adolescent Psychology: Contemporary view (1987) holt, Rinehart and Winston, Inc, Chicago, U.S.A.

**PAPER CODE –CHSC 412**

**Human Development II: Adolescence and Adulthood  
(Theory)**

**Credits– 02**

**Max. Marks– 100**

**Hrs. /week- 04**

**Total Hrs.- 60**



**Course Objectives (COs):****This course will enable the students to –**

1. Understand all round developmental changes and impact during adolescence
2. Remember the problems of similar age groups
3. Analyze the sexuality issues
4. Compare the developmental changes during adulthood
5. Understand the hazards of adolescence and adulthood

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 412	<b>Human Development II: Adolescence and Adulthood (Practical)</b>	<b>The students will be able to –</b> <b>CO124:</b> Develop the interview schedule and questionnaire for adolescents and adults <b>CO125:</b> Learn to execute the recreational activity for adolescent and adult. <b>CO126:</b> Learn to create an awareness among adolescent and adult regarding issues and health concerns <b>CO127:</b> Assess the self, family and peer relationships using case study method. <b>CO128:</b> Develop the skills to use psychological test.	<b>Approach in teaching:</b> Discussion, Demonstration, Team teaching, presentation  <b>Learning activities for the students:</b> Self learning presentation Effective questions, Giving tasks.	Observation, Presentation, Report writing, Interviewing

**CONTENTS**

- Planning and preparing leisure time activities for adolescents
- Planning a counseling programme for adolescents/children and their parents
- Plan questionnaire to study the problems of adults
- Case profile to study young/ late adulthood/adolescent including study of self, family and peer relationships
- Planning and preparing a recreational activity for old people
- Familiarity with Psychological Tests of Intelligence and Personality- any four
- Conducting SWOT analysis for adolescents.
- Focus group discussion with adolescents to understand their aspirations, educational and career choice, physical and psychological changes and their impact on them.

**BOOKS RECOMMENDED:**

- Berk, Laura E. (1993). Infants, Children and Adolescents, Third edition.
- Diane E. Papalia (2004), Human Development, Ninth Edition, McGrawHill/Elizabeth B. Hurlock, Developmental psychology-A life span Approach, 5<sup>th</sup> edition, McGraw Hill
- Sharma, N. (2009). Understanding Adolescence, New Delhi: National Book Trust.
- Rice, F. P. (2007). Adolescent: Development, Relationships and Culture.
- Santrock, J. W. (2010). Life Span Development: A Topical Approach, New Delhi: Tata McGraw Hill
- Linda Nielson Adolescent Psychology: Contemporary view (1987) Holt, Rinehart and Winston, Inc, Chicago, U.S.A.

**PAPER CODE- CHSC 413**  
**Nutrition A Life Cycle Approach**  
**(Theory)**

**Credits: 04**  
**Max Marks: 100**  
**Contact Hrs/week: 04**  
**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the role of nutrition in different stages of life span
2. Provide the guidelines for adequate nutrition throughout life span
3. Get acquainted with growth, development and physiological changes during pregnancy, lactation and infancy

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 413	Nutrition - A Lifecycle Approach (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO129:</b> Comprehend the principles of planning nutritionally adequate diets.  <b>CO130:</b> Acquire knowledge about the nutritional needs and concerns of an individual throughout the life cycle.  <b>CO131:</b> Exercise food choices consonant with good health based on sound knowledge of principles of nutrition.</p>	<p><b>Approach in teaching:</b>  Interactive Lectures, Discussion, Tutorials, Reading assignments, power point presentation</p> <p><b>Learning activities for the students:</b>  Self learning assignments, Effective questions, Simulation, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects

**CONTENTS**

**Unit I: Introduction to nutrition**

**5 hrs**

- Food exchange list
- Principles of planning diet
- Steps involved in planning diet
- Food guide pyramid

**Unit II: Nutrition during infancy**

**15 hrs**

- Growth and development
- Nutritional requirements
- Advantages of breast feeding
- Artificial feeding or bottle feeding
- Infant milk substitute act 1992
- Preterm baby and nutritional requirements
- Feeding problems
- Weaning and supplementary foods

**Nutrition during preschool age**

- Growth and Development
- Growth monitoring
- Brain development in preschool age -Effect of nutrition
- Nutritional requirements
- Dietary guidelines
- Infection and nutrition related problems

**Unit III: Nutrition during school age**

**15 hrs**

- Growth and development
- Nutritional requirements
- Dietary guidelines
- Factors influencing food intake
- Packed lunch
- School lunch programme

**Nutrition during Adolescence**

- Growth and development
- Nutritional requirements
- Dietary guidelines
- Eating disorders: Anorexia nervosa, Bulimia nervosa and binge eating disorder
- Teen age pregnancy

**Unit IV: Nutrition during Adulthood**

**15 hrs**

- Nutritional requirements
- Dietary guidelines
- Importance of weight management
- Nutrition during menopausal stage

**Nutrition for elderly**

- Demography of aging
- Process of ageing
- Nutritional requirements
- Dietary guidelines
- Nutrition related problems: osteoporosis and osteoarthritis, chronic diseases and complications
- Drug- food and nutrient reaction in elderly

**Unit V: Nutrition during Maternal stage**

**10 hrs**

- Physiological changes
- Developmental stages of pregnancy
- Nutritional requirements
- Dietary guidelines
- Pica
- Complications of pregnancy and its management

**Nutrition during Lactation period**

- Physiology of lactation
- Prolactin reflex
- Let down reflex

- Nutritional requirements
- Human milk composition
- Lactational amenorrhoea
- Effect of breast feeding on maternal health
- Lactogogues

#### **BOOKS RECOMMENDED:**

- Antia, F.P and Abraham, P. 1997 Clinical Dietetics and Nutrition. Oxford University Press, New Delhi (4<sup>th</sup> Ed)
- Bamji, M.S, Rao, N.P. and Reddy, V., 1999. Textbook of Human Nutrition. Oxford & IBH publishing Co Pvt. Ltd, New Delhi.
- Begum, M.R. 1996. A Text Book of Foods, Nutrition and Dietetics. Sterling Publishers Pvt. Ltd., New Delhi. (Revised 2<sup>nd</sup> Ed)
- Burtis, G., Davis, J. and Martin, S. 1998. Applied Nutrition and Diet Therapy. WB. Saunders Company, Philadelphia.
- Garrow, J.S, and James, W.P.t, 1994. Human Nutrition and Dietetics. Churchill Livingstone, New York. (4<sup>th</sup> Ed)
- Joshi, S.A., 2001 Nutrition and Dietetics. Tata Mc Graw Hill Publishing Company Ltd, Delhi. (9<sup>th</sup> Ed).
- Khanna, K., Gupta, S., Pass, S.J, Pass, S.J, Seth, R., Mahan, R. and Puri, S. 1997 Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd, New Delhi.
- Kreutler, P.A and Czajka Narins, D.M. 1987 Nutrition in Perspective. Prentice-Hall, INC, Englewood cliffs, New Jersey. (2<sup>nd</sup> Ed)
- Mahan, L.K. and Stump, S.E., 2000. Karuse's Food, Nutrition and Diet Therapy. W.B Saunders Company, Philadelphia, Pennsylvania. (10<sup>th</sup> Ed)
- Mudambi, S.R and Rajagopal, M.V., 1997. Fundamentals of Foods & Nutrition. New Age International (P) Ltd, New Delhi.
- Robinson CH, Lawler MR, Chevoweth WL, Garwick AE. Normal and Therapeutic Nutrition. Mac Millan Publishing Company, New York, 1982.
- Sabarwal, B. 1999 Encyclopedia of Food, Nutrition, Dietetics and Health (4<sup>th</sup> Vol) Efficient Offset, Delhi.
- Sabarwal, B. 1999 Foundations of Nutrition. Common Wealth Publishers, New Delhi.
- Sabarwal, B. 1999. Meal Management. Common Wealth Publishers, New Delhi.
- Sharma, S., 2000. Human Nutrition and meal planning. Jnananda Prakashan (P & D), New Delhi. (1<sup>st</sup> Ed)
- Shills, M.E, Olson, J.A, Shike, M and Ross, A.C; 1998. Modern Nutrition in Health and Disease. Williams & Williams, Baltimore, U.S.A. (9<sup>th</sup> Ed)
- Srilakshmi, B. 1997 Dietetics. New Age International (P) Ltd, Publishers, New Delhi.
- Stanfield, P.S 1992 Nutrition and Diet Therapy. Jones and Barlett Publishers, Boston- London. (2<sup>nd</sup> Ed)
- Swaminathan M. 1997. Advanced Text-Book of Food & Nutrition (Vol I & II). The Bangalore Printing and Publishing Co Ltd, Bangalore. (1997 reprinted)
- Swaminathan, M. 1997. Principles of Nutrition and Dietetics. The Bangalore Printing and Publishing Co. Ltd, Bangalore. (1997 reprinted)
- Whitney, E.N and Rolfes, S.R. 1996. Understanding Nutrition. West Publishing Company, St Paul, M/N. (7<sup>th</sup> Ed).
- Williams, S.R, 1990 Essential of Nutrition and Diet Therapy. Times Mirror/ Mosby College Publishing, St. Louis, Missoun. (5<sup>th</sup> Ed)
- Chauhan ,K.B, Mehta, P.M. 2017 ,Ageing, Nutrition and Health, Kalpaz Publication.

**PAPER CODE- CHSC 414**  
**Nutrition A Life Cycle Approach**  
**(Practical)**

**Credits: 02**

**Max Marks: 100**  
**Contact Hrs/week: 04**  
**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understanding healthy diet planning using various food groups.
2. Planning diet based on different economic groups and food habits

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 414</b>	<b>Nutrition : A Life Cycle Approach (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO132:</b> Identify practical strategies to meet the nutritional needs of individuals at each stage of the life cycle</p> <p><b>CO133:</b> Develop diet plans for individuals of varying ages and physical states</p> <p><b>CO134:</b> Describe the composition of diets appropriate for meeting nutritional needs at each stage of the life cycle.</p>	<p><b>Approach in teaching:</b>            Demonstrations            Laboratory exercises            Discussions</p> <p><b>Learning activities for the students:</b>            Planning of diet            Participation in competitions            Product development</p>	Class test, Semester end examinations, Assignments, Observation, Practical performance

**CONTENTS**

- Use of exchange list in meal planning
- Planning and preparation of diets in the following stages of life cycle:
  - Infancy
  - Preschool stage
  - School stage
  - Adolescence
  - Adulthood
  - Elderly (60-70 years, 70-80 years, >80 years)
  - Maternal stage
  - Lactation period

**BOOKS RECOMMENDED:**

- Srilakshmi, B. 1997 Dietetics. New Age International (P) Ltd, Publishers, New Delhi.
- Robinson CH, Lawler MR, Chevoweth WL, Garwick AE. Normal and Therapeutic Nutrition. Mac Millan Publishing Company, New York, 1982.
- Swaminathan, M. 1997. Principles of Nutrition and Dietetics. The Bangalore Printing and Publishing Co. Ltd, Bangalore. (1997 reprinted).
- Mahan L.K. and Ecott-Stump S. (2000): Krause's food, nutrition and diet therapy. W.B. Saunders Pvt. Ltd.

**PAPER CODE –CHSC 415**  
**Fashion Design Concept**  
**(Theory)**

**Credits– 04**  
**Max. Marks– 100**  
**Hrs. /week- 04**  
**Total Hrs.- 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Study origin and theories of Clothing.
2. Learning of psychological and social aspect of Clothing in social situation

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 415	Fashion Design Concept (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO135:</b> Understanding of basics of fashion and various fashion centers.</p> <p><b>CO136:</b> Examine garment components and their application in Clothing.</p> <p><b>CO137:</b> Describe work of National and International fashion designers.</p> <p><b>CO138:</b> Select various elements and principles of textile design and their application in Clothing.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

**CONTENTS**

**Unit I: Importance of clothing**

**12 hrs**

- Clothing functions and theories of origin
- Clothing terminology
- Individuality and conformity, conspicuous consumption and emulation
- Selection of clothes for self
- Selection and Evaluation of ready-made garments

**Unit II: Fashion Concept**

**12 hrs**

- Concept of fashion
  - Terminology
  - Fashion cycle
  - Sources of fashion
  - Factors favoring and retarding fashion

**Unit III: Fashion Centers**

**12 hrs**

- Role of a Designer
- Leading Fashion centers and designers

**Unit IV: Components of garment: classification and application**

**12 hrs**

- Fabric, Seams, Stitches, Thread, Shaping methods, Dart equivalents
- Sleeves, Cuffs, Necklines, Collars, Plackets, Yokes, Pockets and Trims
- Style variation: Bodice, Skirts, Trousers in various Silhouettes

**Unit V: Design****12 hrs**

- Elements and Principles of design and its application in clothing
- Structural and Applied design and its importance on the components of garments.

**BOOKS RECOMMENDED:**

- Brown, Patty, Rice J., 1998, Ready to Wear Apparel Analysis. Prentice Hall.
- Stone, Elaine and Samples, Jean. A Fashion Merchandising, McGraw Hill Book Company, 1985.
- Frings, Gini, Stephens, Fashion Concept to Consumer, 3<sup>rd</sup> ed., Prentice Hall International, New Jersey, 2008.
- Marilyn, J, Horn. The Second Skin (3rd Edition), Houghton Mifflin Company, London.
- Marshall , Suzanne G., Individuality in Clothing Selection and Personal Appearance, Pearson, Prentice Hall, London 2004
- Mary Kefgen, In clothing selection & personal appearance, The Macmillan, Company New York.

**PAPER CODE –CHSC 416**  
**Fashion Design Concept**  
**(Practical)**

**Credits– 02****Max. Marks– 100****Hrs. /week- 04****Total Hrs.- 60****Course Objectives (COs):****This course will enable the students to –**

1. Learn about the basic sketching of garment components.
2. Focuses on design details, creation of styles and rendering using the different media

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 416</b>	<b>Fashion Design Concept (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO139:</b> Identify the process of sketching.  <b>CO140:</b> Apply various colour mediums on textiles and apparels.  <b>CO141:</b> Able to explore various fashion designers and their contribution in fashion industry.</p>	<p><b>Approach in teaching:</b>  Interactive Lectures,  Discussion, Tutorials,  Demonstration</p> <p><b>Learning activities for the students:</b>  Practical assignments,  Simulation, Portfolio  Preparation, Giving  tasks.</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

**CONTENTS**

- Flat sketching of garment components: collar, sleeves, necklines, princess line, pockets,

- yokes, Silhouettes and skirts **20 hrs**
- Identification of garment components **10 hrs**
- Interpretation of elements and principles of design concepts from print and visual Mediums and its application on Textiles and Apparels **14 hrs**
- Evaluation of Readymade garments: Casual wear and High Fashion **10 hrs**
- Study of collections of famous designers **6 hrs**

**BOOKS RECOMMENDED:**

- Ireland, Patrick, John., Fashion Design Illustration, B.T. Batsford Ltd, London
- Reader's Digest-Complete guide of sewing- The Reader's Digest Association Ltd, London
- Abling, Bina., Fashion Sketchbook, Parson School of Design & Fashion Institutes of Technology, Fairchild Publication, New York 2004.
- Kathryn, Mc Kelvey & Munslow, Janine., Illustrating Fashion, Blackwell Publishing, London 2005.
- Prakash, K., Indian Fashion Designs, English Edition Publishers and Distributors Pvt Ltd, India 2004.

**PAPER CODE –GHSC 411 A**  
**Entrepreneurship Development and Marketing**  
**(Theory)**

**Credits: 04**  
**Max Marks: 100**  
**Contact Hrs/week: 04**  
**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand Entrepreneurship Development
2. Plan and Launch a Enterprise

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 411 A</b>	<b>Entrepreneurship Development and Marketing (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO142:</b> Understand the concepts of an entrepreneur and entrepreneurship.</p> <p><b>CO143:</b> Appreciate the role of entrepreneurial motivation and creativity in innovation.</p> <p><b>CO144:</b> Gain insight into aspects related to Marketing and Financial management.</p>	<p>Approach in teaching: Discussion, Demonstration, Action Research</p> <p>Learning activities for the students: Presentation, Giving tasks, group discussion</p>	<p>CA test, Semester end examinations, Presentation, Individual and group projects</p>

**CONTENTS**

**Unit I: Entrepreneurship Development**

**12 hrs**

- Entrepreneurship- concept, definition, need and significance of entrepreneurship



- development in India, entrepreneurship growth process, barriers, entrepreneurship education model.
- Entrepreneur-their characteristics, types, gender issues, role demands and challenges.
- Entrepreneurial Motivation.
- Challenges faced by Women Entrepreneurs

**Unit II: Enterprise Planning and Launching** **12 hrs**

- Types of enterprises classification based on capital, product, location, ownership pattern and process
- Sensing business opportunities and assessing market potential; market research
- Appraising of project and feasibility

**Unit III : Enterprise Management and Networking** **12 hrs**

- Managing Production
- Organizing Production; input-output cycle
- Ensuring Quality

**Unit IV** **12 hrs**

- Managing Marketing
- Understanding markets and marketing
- Functions of Marketing
- 4Ps of Marketing(same as marketing mix)

**Unit V:** **12 hrs**

- Financial Management
- Meaning of Finance
- Types and Sources of Finance
- Estimation of project cost
- Profit Assessment
- Networking of Enterprises

**BOOKS RECOMMENDED:**

- Gundry Lisa K. & Kickul Jill R.,2007, Entrepreneurship Strategy: Changing Patterns in New Venture Creation, Growth, and Reinvention, SAGE Publications, Inc.
- Taneja & Gupta, 2001, Entrepreneur Development- New Venture Creation, Galgotia Publishing Company

**PAPER CODE –GHSC 411 B**  
**Developing Business Plan Proposal**  
**(Practical)**

**Credits– 02**  
**Max. Marks– 100**  
**Hrs. /week- 04**  
**Total Hrs.- 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Conduct SWOT Analysis

## 2. Development of Business Plan

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 411 B</b>	<b>Developing Business Plan Proposal (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO145:</b> Develop skills in project identification, formulation and appraisal</p> <p><b>CO146:</b> Gain insight into setting up of enterprise and its management</p> <p><b>CO147:</b> Learn skills required for SWOT analysis</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Analysis of SWOT Analysis report</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective discussion, Simulation, SWOT Report analysis of major Entrepreneurs and presentation</p>	CA test, Semester end examinations, viva, Presentation, Individual and group projects

### CONTENTS

- SWOT analysis of any 2 successful entrepreneurs of your choice.
- Identify an entrepreneur and analyse his/ her entrepreneurial competencies on the following parameters-
  - Sales
  - Profit
  - Employee size
  - Market Share
  - Time Span in terms of growth
- Survey of an institution facilitating entrepreneurship development in India and prepare a report for the same.
- Preparation of business plan and its presentation (PPT's)
  - Food Service Institution
  - Garment Production
  - Pre school/Creche/counseling Centre.

### BOOKS RECOMMENDED:

- Gundry Lisa K. & Kickul Jill R., 2007, Entrepreneurship Strategy: Changing Patterns in New Venture Creation, Growth, and Reinvention, SAGE Publications, Inc.
- Taneja & Gupta, 2001, Entrepreneur Development- New Venture Creation, Galgotia Publishing Company

**PAPER CODE –GHSC 412 A**  
**Clothing And Personal Appeal**  
**(Theory)**

**Credits– 04**  
**Max. Marks– 100**  
**Hrs. /week- 04**  
**Total Hrs.- 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Familiarize students with effect of Clothing.
2. Impart knowledge for the selection criteria for fabrics, garments & home furnishings.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 412 A</b>	<b>Clothing and Personal Appeal (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO148:</b> Relate Clothing and its impact on wearer.</p> <p><b>CO149:</b> Familiarize with selection of Clothing for various age groups.</p> <p><b>CO150:</b> Understand various figure and figure analysis for designing of Clothing.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

**CONTENTS**

**Unit I:**

**12 hrs**

- Importance of element of design (line, form, colour and texture) on the personality of wearer
- Illusion of elements and principle of design related to apparel

**Unit II: Effect of clothing on**

**12 hrs**

- Physical comfort
- Mood and behavior
- Personality and self concept
- Conformity
- Individual values, interests and attitudes

**Unit III: Selection Criteria**

**12 hrs**

- Selection of suitable fabrics and designs for clothing of:  
Infants, Toddlers, Pre-School Children, School going children, Adolescents, Adults and Old age
- Selection and purchase of Household linens, curtains, draperies, towels and blankets
- Selection of clothing for children with special needs.

**Unit IV: Dressing according to figure**

**12 hrs**

- Body and figure types

- Body proportions
- Figure analysis - identifying you physical self and facial features
- Principles of illusion in dressing

**Unit V:**

**12 hrs**

- Factors affecting fit of a garment
- Fitting problems
- Fitting solutions

**BOOKS RECOMMENDED:**

- Frings, Gini, Stephens., Fashion- Concept to Consumer, Prentice Hall International, New Jersey
- Marilyn, J, Horn., The Second Skin (3rd Edition), Houghton Mifflin Company, London
- Marshall, Suzanne, G., Individuality in Clothing Selection and Personal Appearance, Prentice Hall, New Jersey.
- Stone, Elaine and Samples, Jean., A Fashion Merchandising, McGraw Hill Book Company

**PAPER CODE –GHSC 412 B  
Apparel Design And Sketching  
(Practical)**

**Credits– 02**

**Max. Marks– 100**

**Hrs. /week- 04**

**Total Hrs.- 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Develop a professional approach towards the thematic designing for textiles and apparel
2. Focuses on design details, creation of styles and rendering using the different media.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>GHSC 412 B</b>	<b>Apparel Design and Sketching (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO151:</b> Understand the fundamentals of fashion illustration and rendering techniques.</p> <p><b>CO152:</b> Create various textures using different mediums.</p> <p><b>CO153:</b> Design garments for occasions.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Demonstration</p> <p><b>Learning activities for the students:</b> Practical assignments, Simulation, Portfolio Preparation, Giving tasks.</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

- Creating textures using different mediums

**10 Hrs**

- Collecting and studying textures
- Working with different medium and techniques to simulate textures
- Rendering fabric textures **20 Hrs**
  - Sketching silhouettes in various fabric textures (fur, satin, denim, tissue, silk, chiffon, knits, plaids, corduroy and others)
- Garment types and its features in appropriate textures and styles **16 Hrs**
  - Garment details (neckline, collars, princess line, yokes, silhouettes, sleeves, pockets etc.)
  - Sketching garments: one each for party wear, beach wear, executive wear & school Uniform
- Design a costume for a specific event or profession **14 Hrs**

**BOOKS RECOMMENDED:**

- Ireland, Patrick, John., Fashion Designing Drawing and Presentation, B.T. Batsford Ltd, London.
- Reader's Digest-Complete guide of sewing- The Reader's Digest Association Ltd, London

**PAPER CODE-SHSC 411**  
**Food Product Development and Sensory Evaluation**  
**(Practical)**

**Credits-02**

**Max Marks-100**

**Contact Hrs./ week-02**

**Total Hrs-60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Develop a professional approach towards the thematic designing for textiles and apparel
2. Focuses on design details, creation of styles and rendering using the different media.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
SHSC411	Food Product Development & Sensory Evaluation (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO154:</b> Examine the need and stages of new product development</p> <p><b>CO155:</b> Understand how to develop and evaluate new food products</p> <p><b>CO156:</b> Implement the principles and tests used for sensory analysis of food</p> <p><b>CO157</b> Identify the importance of sensitivity threshold test</p>	<p><b>Approach in teaching:</b> Lectures, Discussion, power point presentations,</p> <p><b>Learning activities for the students:</b> Hand on experience of developing new product, Prepared the samples for sensitivity threshold test and performed it</p>	Class test, CA test, Semester end examinations, Quiz,

**CONTENTS**

- Sensory Evaluation

- Threshold tests using sweet and salty solutions (Sucrose, NaCl)
- Conducting the sensory evaluation test in the laboratory, using new products developed in the laboratory and 5 point rating scale
- Product Development
  - Definition
  - Product life cycle
  - Factors affecting development of a new product
  - The process of new product development
  - Future trends
- Development of a new product
  - Fresh item
  - Non perishable
- Market Survey of various new products available in the market

#### BOOKS RECOMMENDED:

- Amerine, Pangborn and Roessler (1965) Principles of Sensory Evaluation of Foods. Academic Press New York
- Fellows PJ. Food Processing Technology: Principles and Practice, II edition, CRC Woodhead Publishing Ltd. Cambridge.
- Desrosier N W: Elements of Food Technology, Connecticut, USA: AVI Publishing Company.
- Srilakshmi. B. Food Science. New - Age International (P) Ltd. Publishers, New Delhi, 1997.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Bangalore 1990.
- Potter, N.N. Food Science, 3rd Ed CBS Publishers and Distributors. Delhi, 1987.

### COURSE OUTCOMES - Semester V

#### PAPER CODE: CHSC 511 Life Sciences (Theory)

**Credits: 04**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

#### Course Objectives (COs):

**This course will enable the students to –**

1. Get familiarized with various groups of animals and plants
2. Know about parasites insects and their harmful effects

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC511	Life Sciences (Theory)	<b>The students will be able to –</b> <b>CO158:</b> Know the technique of gardening - Cultivation practices, marketing and utilization of selected plants	<b>Approach in teaching:</b> Interactive Lectures, Discussion, Power Point Presentations, Informative videos	Quiz, Poster Presentations, Power Point Presentations, Individual and group projects,

		<p><b>CO159:</b> Increase the awareness, utilization and appreciation of plants &amp; plant products encountered in everyday life</p> <p><b>CO160:</b> Understand the structure of basic components of prokaryotic and eukaryotic cells, cellular components, especially membranes and organelles.</p> <p><b>CO161:</b> Basic concept of mitotic, meiotic cell division and Mendelian principles</p> <p><b>CO162:</b> Learn about technical and general knowledge necessary for various Culture techniques</p>	<p><b>Learning activities for the students:</b> Self-learning assignments, Effective questions, presentations, Field trips</p>	<p>Open Book Test, Semester End Examination</p>
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## CONTENTS

### SECTION A – BOTANY

#### Unit I: Introduction to Plant Kingdom

12 hrs

- General account on Classification of Plant Kingdom
- Angiospermic plants ( Flower with details of its parts)
- Formation of fruit, seed and embryo
- Structure of monocot and dicot seed and seed germination

#### Propagation of plants – seed and vegetative

- Seed Propagation
- Cuttings – stem, leaf and root
- Layering
- Grafting

#### Unit II : Types of Garden

12 hrs

- Ornamental garden
- Kitchen garden
- Herbal Garden

#### Economic Botany

- Vegetables-Cauliflower, carrot, tomato, potato, onion, spinach, gourds, fenugreek
- Fruits-papaya, mango
- Spices and Condiments-clove , pepper, cardamom, cumin, Coriander, asafoetida
- Ornamental and Foliage plants-Rose, Bougainvillea, China rose, fern, asparagus
- Application of biotechnology in agricultural crops.

### SECTION B- ZOOLOGY

#### Unit III: Introduction to animal kingdom

12 hrs

- Chordates up to 5 major classes, characteristics with examples
- Non chordates up to phyla, characteristics with examples

#### Cell

- Cell theory, electron microscopic structure and function of a cell
- Cell division (mitosis) and its significance

#### Unit IV

12 hrs

Parasites, insects and their harmful effects and pest control

- Parasites and human diseases
- Plasmodium, Entamoeba, Taenia
- Economic importance and control of common household insects: cockroach, housefly, mosquitoes and termites.

Culture techniques

- Sericulture, vermiculture and apiculture

### Unit V:

**12 hrs**

Basics of Genetics

- Mendelian genetics
- Sex linked inheritance in man (xx-xy)
- Importance of Genetic counseling

General structure of bacteria and virus

- Examples of harmful and non harmful bacteria and virus
- Importance of bacteria in environmental conservation

### BOOKS RECOMMENDED:

- Chadha K.L.2012. Handbook of Horticulture. ICAR Publication.
- Dutta A. C. Botany for Degree Students 1968, Oxford University Press, New Delhi
- Gopaldaswamianger K.S. 1991, Complete gardening in India, Messers Nagaraj And Co. Madras
- Hartman H.T.and D. Kester:D. 1986. Plant Propagation, Principles and Practices, Prentice Hall of India Pvt. Ltd. New Delhi.
- Kochhar P.L. Krishnamoorthy H.N 1984. A textbook of Plant Physiology. Atma Rani Publishing House.
- Raven P. and Johnson G. 2010. Biology. Mc Graw Hill Science.
- Soni N.K. and Soni V. 2010. Fundamentals of Botany. Tata Mc Graw Hill Education
- Jordan and Verma,1998, Invertebrate Zoology, S. Chand and Co. Ltd
- Kotpal,2000,Modern Textbook of Zoology, Rastogi Publications
- Winchester, A.M. 1967, Genetics, Oxford and IBH Publishing Company
- Vij and Gupta (2011)Applied Zoology, Phoenix Publishing House

**PAPER CODE: CHSC 512**

**Life Sciences**

**(Practical )**

**Credits: 02**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

### Course Objectives (COs):

**This course will enable the students to –**

1. Get familiarized with various groups of animals and plants
2. Practical knowledge of plant propagation
3. Inculcate the knowledge of composting

### Course Outcomes (COs):

Course	Learning outcomes	Assessment
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Paper Code	Paper Title	(at course level)	Learning and teaching strategies	Strategies
CHSC 512	Life Sciences (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO163:</b> Students will be able to observe and correctly identify different cell types, cellular structures and cell division using different microscopic techniques.</p> <p><b>CO164:</b> Basic knowledge about the plant specimen from members of locally available plants.</p> <p><b>CO165:</b> To have hands on training on different techniques of plant propagation such as cutting, grafting and layering.</p> <p><b>CO166:</b> Briefly study the economic products with special reference to the Botanical name, family, morphology of useful part and the uses</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Power Point Presentations, Demonstrations, Experimentation</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Effective questions, presentations, Field trips</p>	Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination

## CONTENTS

### SECTION A- BOTANY

- Floral description of few angiospermic families
- Propagation of plants by seed and vegetative methods
- Identification and classification of economically important plants

### SECTION B- ZOOLOGY

- Survey of animal kingdom (2-3 specimens from each class/ phylum)
- Study of cells – neurons, blood cells, cheek cells
- Vermi composting

### BOOKS RECOMMENDED:

- Chadha K.L.2012. Handbook of Horticulture. ICAR Publication.
- Dutta A. C. Botany for Degree Students 1968, Oxford University Press, New Delhi
- Gopalaswamianger K.S. 1991, Complete gardening in India, Messers Nagaraj And Co. Madras
- Hartman H.T.and D. Kester:D. 1986. Plant Propagation, Principles and Practices, Prentice Hall of India Pvt. Ltd. New Delhi.
- Kochhar P.L. Krishnamoorthy H.N 1984. A textbook of Plant Physiology. Atma Rani Publishing House.
- Raven P. and Johnson G. 2010. Biology. Mc Graw Hill Science.
- Soni N.K. and Soni V. 2010. Fundamentals of Botany. Tata Mc Graw Hill Education
- Jordan and Verma,1998, Invertebrate Zoology, S. Chand and Co. Ltd
- Kotpal,2000,Modern Textbook of Zoology, Rastogi Publications
- Winchester, A.M. 1967, Genetics, Oxford and IBH Publishing Company
- Vij and Gupta (2011)Applied Zoology, Phoenix Publishing House

**PAPER CODE: CHSC 513**  
**Physical Sciences**  
**(Theory)**

**Credits: 04**  
**Max Marks: 100**  
**Contact Hrs/week: 04**  
**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Acquaint the students with basic chemical and physical concepts so that they can correlate with them in everyday life.
2. Develop an understanding of working principles of different equipments and enhance their skill to handle them.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 513</b>	<b>Physical Sciences (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO167:</b> Identify the chemical elements of carbohydrates and proteins and the difference between simple and complex structures of the same.</p> <p><b>CO168:</b> Acquire perspective on the composition and functioning of lipids in their different states.</p> <p><b>CO169:</b> Analyze the different packaging materials and their lasting impact on the environment.</p> <p><b>CO170:</b> Understand working principle of household equipments and consumer awareness.</p> <p><b>CO171:</b> Knowledge of basic concept of electricity, sound and light system.</p>	Interactive Lectures, Discussion, Demonstration, Team teaching	Google Quiz Poster Presentation Group Activity, Continuous assessment Semester End Examination, Individual and group projects

**CONTENTS**

**SECTION A –CHEMISTRY**

**Unit I:Amino acids**

**12 hrs**

- Structure and classification, peptide linkage, zwitter ion, Ninhydrin test, Sangers test
- Protein structure – Levels of organization – primary, secondary, tertiary and quaternary structure;
- Denaturation of proteins.
- Enzyme and Concept of Lock & Key and Induced Fit Theory.

**Food packaging**

- Packaging: concept, significance and function
- Classification of packaging materials (flexible packages, rigid packages and retail or shipping containers)
- Interactions between packing and food (toxicity hazards),
- Biodegradable materials and environmental issues.

**Unit II: Carbohydrates**

**12 hrs**

- Definition and Classification
- Monosaccharides: Fisher's structure of aldoses and ketoses, ring structure of sugars (Haworth's projection):  $\alpha$ -glucose,  $\beta$ - glucose and fructose
  - Anomers and Epimers- Definition and examples
  - Reduction of sugars
  - Reducing properties of sugars
- Disaccharides : Formation of sucrose, lactose and maltose
  - Reducing and non reducing disaccharides
- Polysaccharides :Definition of homo and hetropolysaccharides
  - Structure and function of starch and cellulose

## SECTION B- PHYSICS

### Unit III : Household Equipment and Consumer Awareness

12 hrs

- Motorized equipments: Vacuum cleaners, Clothes washing machine, Food processors.
- Heating appliances: Electric irons, Electric water heaters.
- Solar Energy and its applications.
- Cooling appliances: Refrigeration and air conditioning, Various types of Refrigerators, air conditioners and air coolers.
- Guarantee and warranty of all household equipments, Precautions while using equipments and servicing of equipment used.

### Unit IV: Electricity

12 hrs

- Generation and efficient transmission of electricity.
- Safety features in household electric wiring – fuse, MCB, Earthing,
- Lighting fixtures in the home – Incandescent lamp, Fluorescent tube, CFL, LED, Halogen lamp.

### Sound and Light

- Knowledge of sound, echo and their uses.
- Lenses- convex and concave, focal length, aperture, aberrations
- Elementary knowledge of Radio- AM and FM.

### Unit V:Modern Physics and Electronics

12 hrs

- Semi Conductors – Concept of Transistor and its applications
- Geostationary satellites (definition and application)
- Radioactivity – concept and application, Nuclear Energy.
- Concept of Laser and its applications.

### Biophysical Techniques

- Basic principles of electromagnetic radiation: Energy, wavelength, wave numbers and frequency.
- Basic Knowledge of: X-Rays
- Harmful effect of radiations.

### BOOKS RECOMMENDED:

- Morrison, R. T. and Boyd, R. N., Organic Chemistry, (2001), 7th edition, Prentice Hall.
- Graham Solomon, T.W. Organic chemistry 10th Ed. (2009) John Wiley and sons,Inc.
- Voet, D and Voet,J, Principles of Biochemistry,4th edition(2011) by John wiley and sons.
- Nelson, D.L. and Cox, M.M., Lehninger's principles of Biochemistry, 6th edition,(2012) W.H. Freeman.
- P.C. Jain, Monika Jain, Engineering Chemistry, Dhanpat Rai Publications (1979)
- Berg, J. M., Tymoczko, J.L. and Stryer, L. (2012). Biochemistry 7th Ed., W. H. Freeman
- Household Physics (2012), Claude H. Brechner, Hardpress.

- Applied Photography Optics, 3rd Edition, Sidney E. Ray, Focal Press 2002.
- Modern Physics, Murugesan, S. Chand and Co., 2002.
- Engineering Physics: Fundamentals and modern applications, P. Khare and A. Swarup, Jones and Barlett Publishers, 2010.
- Principles of Instrumental Analysis, 6th edition (2006), D.A. Skoog et al., Saunders College Publishing.
- Murugesan, Modern Physics, S. Chand and Co., 2002.
- Bhatia, K.B., Elements of Electrical Gadgets, Arya Book Depot, 1993.
- Principles of Instrumental Analysis, 6th edition (2006), D.A. Skoog et al., Saunders College Publishing.
- Practical Organic Chemistry by Vogel A. I., Orient Longmans Limited.
- Ahluwalia, V. K., Dhingra, S., Gulati, A., College Practical Chemistry, University Press (India) Pvt. Ltd. (2005)
- B.Sc. Practical Chemistry by P. L. Soni and S. C. Jain, Sultan Chand and Sons (1978).
- College Practical Physics by Khanna and Gulati, S. Chand and Co., (1999)

**PAPER CODE: CHSC 514**  
**Physical Sciences**  
**(Practical)**

**Credits: 02**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Basic knowledge of acid base titration, complex-metric titration and precipitation titration.
2. Qualitative estimation of carbohydrates and amino acids.
3. Various concepts of physics

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 514	Physical Sciences Lab (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO172:</b> Work efficiently in physics and chemistry lab adhering to the standard protocols and safety guidelines</p> <p><b>CO173:</b> Demonstrate and document acid-base, precipitation and complex metric titrations with precision and accuracy</p> <p><b>CO174:</b> Analyse carbohydrates and amino acids qualitatively</p> <p><b>CO175:</b> Develop conceptual understanding about the sensitivity of different measuring instruments and repairing of electric iron and fuse.</p> <p><b>CO176:</b> Acquire skill to determine characteristics of transistor, Focal length of a convex lens and refractive index of a liquid</p> <p><b>CO177:</b> Learn about various sources of electricity, light and spectrum .</p>	Demonstration, Discussion Experiment	Tutorials Viva Voce Group Activity Semester End Practical Examination

**CONTENTS**

## **PART A - CHEMISTRY**

- Volumetric Analysis
- Preparation of standard solutions, concept of normality and molarity.
- Acid base titration(Estimation of free alkali present in the given soap solution)
- Precipitation Titration(Estimate amount of salinity in a given solution using silver nitrate)
- Complexometric titration( Determination of hardness of water)
- Qualitative tests for carbohydrates and preparation of derivative(Osazone)  
Monosaccharides, disaccharides and polysaccharides
- Qualitative analysis of amino acids

## **PART B- PHYSICS**

- To study the sensitivity of different measuring instruments and determine the thickness of a glass plate using (i). Vernier Calipers and (ii). Screw Gauge
- To repair and test an electric iron.
- To repair the given chord and fuse and test them.
- Characteristic curves of a transistor and determination of transistor constants.
- Refractive index of a liquid by traveling microscope.
- Focal length of a convex lens- Displacement method.

### **Demonstration experiments**

- To study the various sources of electricity and measure their e.m.f.'s.
- To study the various sources of light and record their wattages.
- To obtain a pure spectrum of various sources of light (Na and Hg) using a spectrometer.

### **BOOKS RECOMMENDED:**

- Morrison, R. T. and Boyd, R. N., Organic Chemistry, (2001), 7th edition, Prentice Hall.
- Graham Solomon, T.W. Organic chemistry 10th Ed. (2009) John Wiley and sons, Inc.
- Voet, D and Voet, J, Principles of Biochemistry, 4th edition (2011) by John Wiley and sons.
- Nelson, D.L. and Cox, M.M., Lehninger's principles of Biochemistry, 6th edition, (2012) W.H. Freeman.
- P.C. Jain, Monika Jain, Engineering Chemistry, Dhanpat Rai Publications (1979)
- Berg, J. M., Tymoczko, J.L. and Stryer, L. (2012). Biochemistry 7th Ed., W. H. Freeman
- Household Physics (2012), Claude H. Brechner, Hardpress.
- Applied Photography Optics, 3rd Edition, Sidney E. Ray, Focal Press 2002.
- Modern Physics, Murugesan, S. Chand and Co., 2002.
- Engineering Physics: Fundamentals and modern applications, P. Khare and A. Swarup, Jones and Barlett Publishers, 2010.
- Principles of Instrumental Analysis, 6th edition (2006), D.A. Skoog et al., Saunders College Publishing.
- Murugesan, Modern Physics, S. Chand and Co., 2002.
- Bhatia, K.B., Elements of Electrical Gadgets, Arya Book Depot, 1993.
- Principles of Instrumental Analysis, 6th edition (2006), D.A. Skoog et al., Saunders College Publishing.
- Practical Organic Chemistry by Vogel A. I., Orient Longmans Limited.
- Ahluwalia, V. K., Dhingra, S., Gulati, A., College Practical Chemistry, University Press (India) Pvt. Ltd. (2005)
- B.Sc. Practical Chemistry by P. L. Soni and S. C. Jain, Sultan Chand and Sons (1978).
- College Practical Physics by Khanna and Gulati, S. Chand and Co., (1999)

**Paper Code- DHSC 511A**  
**Public Nutrition**  
**(Theory)**

**Credits: 04**  
**Max Marks: 100**  
**Contact Hrs. / Week: 04**  
**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Gain a insight on Public Health Aspect
2. Geographical Distribution of Health Problems
3. Ongoing Programs for combating malnutrition

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 511A</b>	<b>Public Nutrition (Theory)</b>	<p><b>The students will be able to -</b></p> <p><b>CO178:</b> Define various aspects of public health.</p> <p><b>CO179:</b> Explain geographical distribution of various public health issues.</p> <p><b>CO180:</b> Describe how to assess nutritional and health status.</p> <p><b>CO181:</b> Develop skills and techniques required for assessment of various ongoing public health programmes.</p>	<p><b>Approach in teaching:</b>  Lecture method  Power point presentation  Discussions  Tutorials</p> <p><b>Learning activities for the students:</b>  Self learning assignments  Effective questions  Seminar presentation  Field Visits to Anganwadi centers  Giving tasks</p>	Class test Semester end examinations Quiz Assignments Presentations

**CONTENTS**

**Unit I: Concept and scope of public nutrition**

**12 hrs**

- Definition and multidisciplinary nature of public nutrition
- Concept and scope
- Role of public nutritionist
- Health Care Delivery System

**Unit II: Nutritional problems, their implications and related nutrition programmes**

**12 hrs**

- Etiology, prevalence, clinical features and preventive strategies of-
  - Undernutrition –
  - Protein energy malnutrition, nutritional anaemias, vitamin A deficiency, iodine deficiency disorders
  - Overnutrition – obesity, coronary heart disease, diabetes
  - Fluorosis

- National Nutrition Policy and Programmes - Integrated Child Development Services (ICDS) Scheme, Mid day Meal Programme (MDMP), National programmes for prevention of Anaemia, Vitamin A deficiency, Iodine Deficiency Disorders

**Unit III: Assessment of nutritional status**

**12 hrs**

- Objectives and importance
- Methods of assessment
  - Direct – clinical signs, nutritional anthropometry, biochemical tests, biophysical tests
  - Indirect – Diet surveys, vital statistics

**Unit IV**

**12 hrs**

**Nutrition Monitoring and Nutrition Surveillance**

- Objectives and components of Nutrition Monitoring

**Nutrition Surveillance System (NSS)**

- Objectives and Uses of Nutrition Surveillance
- Key Indicators of Nutrition Surveillance System

**Nutrition Education**

- Need, Scope and Importance
- Theories of NE
- Process of NEC(Nutrition Education Communication)

**Unit V: Nutrition Policies, Programmes and Acts**

**12 hrs**

- National Nutrition Policy
- Nutrition Programmes
- ICDS
- Nutrient Deficiency Control Programme
- Supplementary Feeding Programmes
- Food Security Programmes
- Self Employment and Wage Employment Schemes
- **Planning Cycle : Programme Planning and Administration**

**BOOKS RECOMMENDED:**

- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite Publishing House Pvt. Ltd. New Delhi.
- Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasidas Bhanot Publishers, Jabalpur, India.
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- ICMR (1989) Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- ICMR (2011) Dietary Guidelines for Indians – A Manual. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- Jelliffe DB, Jelliffe ERP, Zervas A and Neumann CG (1989). Community Nutritional Assessment with special reference to less technically developed countries. Oxford University Press. Oxford.
- World Health Organization (2006). WHO Child Growth Standards: Methods and development: Length/height-for-age, weight-for-age, weight-for-length, weight-for height and body mass index-for-age (<http://www.who.int/childgrowth/standards/en/>)

**Paper Code- DSHC 512A  
Public Nutrition  
(Practical)**

**Credits: 02**

**Max Marks: 100**

**Contact Hrs. / Week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Develop low cost nutritious recipes
2. Assess the nutritional status of the different population groups
3. Develop nutrition and health education for various vulnerable groups

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 512 A</b>	<b>Public Nutrition (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO182:</b> Formulate low cost recipes. <b>CO183:</b> Conduct assessment of nutritional and health status of different age groups. <b>CO184:</b> Design and implement nutrition and health education sessions for different vulnerable groups.</p>	<p><b>Approach in teaching:</b> Lecture method Power point presentation Discussions Tutorials</p> <p><b>Learning activities for the students:</b> Self learning assignments Effective questions Seminar presentation Field Visits to Anganwadi centers, presentation of nutrition and health education session Giving tasks</p>	<p>Class test Semester end examinations viva Assignments Presentations</p>

**CONTENTS**

- Planning of low cost nutritious recipes for infants, preschoolers, pregnant/nursing mothers for nutrition education.
- Assessment of nutritional status:
  - Anthropometry – weight and height measurements
  - Plotting and interpretation of growth charts for children below 5 years
  - Identification of clinical signs of common nutritional disorders
  - Dietary assessment – FFQ and 24 hour diet recall
- Planning and conducting a food demonstration.
- Visit to an ongoing nutrition and health promotion programme.

**BOOKS RECOMMENDED:**

- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite Publishing House Pvt. Ltd. New Delhi.
- Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasidas Bhanot Publishers, Jabalpur, India.



- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- ICMR (1989) Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- ICMR (2011) Dietary Guidelines for Indians – A Manual. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- Jelliffe DB, Jelliffe ERP, Zerfas A and Neumann CG (1989). Community Nutritional Assessment with special reference to less technically developed countries. Oxford University Press. Oxford.
- World Health Organization (2006). WHO Child Growth Standards: Methods and development: Length/height-for-age, weight-for-age, weight-for-length, weight-for height and body mass index-for-age (<http://www.who.int/childgrowth/standards/en/>)

**PAPER CODE: DHSC 513A**  
**Nutritional Biochemistry**  
**(Theory)**

**Credits: 04**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the principles of biochemistry
2. Apply the chemistry of major nutrients and physiologically important compounds
3. Understand the biochemical process and systems as applicable to human nutrition
4. Apply the knowledge in human nutrition and dietetics

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
DHSC513 A	Nutritional Biochemistry (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO185:</b> Develop an understanding of the principles of biochemistry.</p> <p><b>CO186:</b> Identify the chemistry of major nutrients and physiologically important biomolecules.</p> <p><b>CO187:</b> Identify the biological processes and systems as applicable to nutrition.</p> <p><b>CO188:</b> Compare the metabolism of macronutrients in our body</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, assignments, power point presentations.</p> <p><b>Learning activities for the students:</b> Self learning assignments, Seminar presentation</p>	Class test, CA test, Semester end examinations, Quiz, Assignments, Presentation,

**CONTENTS**

**Unit I:Carbohydrates**

**12 hrs**

- Definitions, classification, structure, Physical and chemical properties of:

- Monosaccharide's -- glucose, fructose, galactose,
- Disaccharides – maltose, lactose, sucrose
- Polysaccharides – dextrin, starch, glycogen

#### **Unit II: Proteins**

**12 hrs**

- Definition, classification, structure of amino acids
- Essential and non-essential amino acids
  - Definition, classification, elementary knowledge of structure of proteins
  - Enzymes – Definition, classification, mechanism of enzyme action, specificity of enzymes and factors affecting enzyme activity.

#### **Unit III : Lipids**

**12 hrs**

- Definitions and classification of lipids
- Types and properties of fatty acids
- Composition and properties of fats (hydrogenation, halogenation, iodine no., hydrolysis, saponification number, acid number and rancidity)
- Significance of acid value, iodine value and saponification value

#### **Unit IV: Minerals & Vitamins**

**12 hrs**

- **Minerals** –Biochemical role of Calcium, Phosphorus, Iron, Iodine, Fluoride, Zinc and Selenium
- **Vitamins** – Biochemical role of fat – soluble vitamins – A, D, E, K and water soluble vitamins – B-complex (B<sub>1</sub>, B<sub>2</sub>, niacin, pyridoxine, folic acid, B<sub>12</sub>) and C.

#### **Unit V:**

**12 hrs**

- **Intermediary metabolism – Carbohydrates** – Glycolysis, TCA cycle, glycogenesis, glycogenolysis, gluconeogenesis, energetics of Glycolysis and TCA cycle.
- **Lipids** – Beta oxidation of fatty acids and its energetics
- **Proteins** – General reactions of Amino acid metabolism: deamination, transamination, decarboxylation and urea cycle.

#### **BOOKS RECOMMENDED:**

- Murray R.K. Granner, D.K., Mayes P.A. and Rodwell V.W. (1993) 23<sup>rd</sup> Ed. Harper's Biochemistry, Lange Medical Book
- Rama Rao, A.V.SS : A Text Book of Biochemistry L.K. and S. Publishers, Tanuka.
- West, E.S. Todd W.R. Mason, H.S. and Van Bruggen J.T (1974) 4<sup>th</sup> Ed. Text Book of Biochemistry, Amerind Publishing Co. Pvt. Ltd.
- Lehninger A.L., Nelson D.L. and Cox. M.M. (1993) 2<sup>nd</sup> Ed. Principles of Biochemistry CBS Publishers and Distributors.
- Devlin T.M. (1986) 2<sup>nd</sup> Ed. Text Book of Biochemistry with Clinical Correlation, John Wiley and Sons.
- Fruton J and Symond S. General Biochemistry, Asia Publishing House, Bombay.
- Indian Standards Institution (1985) ISI Hand Book of Food Analysis Parts I to XI, Manak Bhawan, New Delhi.
- Talwar G.P. Text Book of Biochemistry and Human Biology, Prentice Hall of India, New Delhi.
- Kahn Conn, EE Stamf P.K. Outlines of Biochemistry Willey Eastern Pvt. Ltd. New Delhi.

- Nagar, R and Nair, S. Biochemistry. Rajasthan Hindi Granth Academy, Jaipur 2001.
- Oser B.L. (1965) 14<sup>th</sup> Ed. Hawk's Physiological Chemistry McGraw Hill Book Co.
- Sharma Sheel, Practical Biochemistry. Classic Publishing House, Jaipur-Delhi (1993).
- Stryu L. (1995) Biochemistry Freeman WH & Co.
- Sundararaj, P and Siddhu A (1995) Qualitative tests and Quantitative Procedures in Biochemistry.
- Varley H. Gowenlock, A.H. and Bell, M (1980) 5<sup>th</sup> Ed. Practical and Clinical Chemistry Vol. I William Heinemann Medical Book Ltd.
- William S, 16<sup>th</sup> Ed. JAOAC Official Methods of Analysis of the Association of Official Analytical Chemists.
- White, A. Handar, P. Smith E.L. Stelten D.W. (1959) 2<sup>nd</sup> Ed. Principles of Biochemistry McGraw Hill Book Co.
- Dutt, Debjani R. – How best to plan and build your home – Pustak Mahal Delhi.
- Sharma Sheel, Experiments and techniques in biochemistry, Galgotia Publishers, Daryaganj- New delhi

**PAPER CODE: DHSC514A**  
**Nutritional Biochemistry**  
**(Practical)**

**Credits** – 02  
**Max. Marks** – 100  
**Hrs./week** - 04  
**Total Hrs.** - 60

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand of the principles that underlie biochemical estimations
2. Apply the techniques used in qualitative and quantitative analysis

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
DHSC514 A	Nutritional Biochemistry (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO189:</b> Develop the understanding of good laboratory practices in a biochemistry laboratory.</p> <p><b>CO190:</b> Implement the safety and precautionary measures for working in a laboratory.</p> <p><b>CO191:</b> Implement the principles and techniques used in the estimation of minerals and vitamins</p> <p><b>CO192:</b> Implement the principles and techniques used in the estimation of phytochemicals</p> <p><b>CO193:</b> Examine the Haemoglobin level by using Haemoglobinometer</p>	<p><b>Approach in teaching:</b> Demonstration, Discussion</p> <p><b>Learning activities for the students:</b> Hands on experience of food product analysis</p>	Class test, CA test, Semester end examinations, Quiz, Assignments, Presentation,

**CONTENTS**

- Qualitative analysis of monosaccharides, disaccharides and polysaccharides

- Qualitative analysis of amino acids and proteins
- Estimation of moisture and ash CONTENTS of foodstuffs
- Estimation of acid value of fats and oils
- Estimation of vitamin-C by titrimetric method
- Estimation of calcium using EDTA by titration
- Qualitative testing of food adulterants – metanil yellow in turmeric, arhar dal and yellow sweets; vanaspati in pure ghee; chalk powder and sand in wheat flour; lead chromate in turmeric powder; starch in milk.
- Paper chromatography

#### **BOOKS RECOMMENDED:**

- Murray R.K. Granner, D.K., Mayes P.A. and Rodwell V.W. (1993) 23<sup>rd</sup> Ed. Harper's Biochemistry, Lange Medical Book
- Rama Rao, A.V.SS : A Text Book of Biochemistry L.K. and S. Publishers, Tanuka.
- West, E.S. Todd W.R. Mason, H.S. and Van Bruggen J.T (1974) 4<sup>th</sup> Ed. Text Book of Biochemistry, Amerind Publishing Co. Pvt. Ltd.
- Lehninger A.L., Nelson D.L. and Cox. M.M. (1993) 2<sup>nd</sup> Ed. Principles of Biochemistry CBS Publishers and Distributors.
- Devlin T.M. (1986) 2<sup>nd</sup> Ed. Text Book of Biochemistry with Clinical Correlation, John Wiley and Sons.
- Fruton J and Symond S. General Biochemistry, Asia Publishing House, Bombay.
- Indian Standards Institution (1985) ISI Hand Book of Food Analysis Parts I to XI, Manak Bhawan, New Delhi.
- Talwar G.P. Text Book of Biochemistry and Human Biology, Prentice Hall of India, New Delhi.
- Kahn Conn, EE Stamf P.K. Outlines of Biochemistry Willey Eastern Pvt. Ltd. New Delhi.
- Nagar, R and Nair, S. Biochemistry. Rajasthan Hinidi Granth Academy, Jaipur 2001.
- Oser B.L. (1965) 14<sup>th</sup> Ed. Hawk's Physiological Chemistry McGraw Hill Book Co.
- Sharma Sheel, Practical Biochemistry. Classic Publishing House, Jaipur-Delhi (1993).
- Stryu L. (1995) Biochemistry Freeman WH & Co.
- Sundararaj, P and Siddhu A (1995) Qualitative tests and Quantitative Procedures in Biochemsitry.
- Varley H. Gowenlock, A.H. and Bell, M (1980) 5<sup>th</sup> Ed. Practical and Clinical Chemistry Vol. I William Heinemann Medical Book Ltd.
- William S, 16<sup>th</sup> Ed. JAOAC Official Methods of Analysis of the Association of Official Analytical Chemists.
- White, A. Handar, P. Smith E.L. Stelten D.W. (1959) 2<sup>nd</sup> Ed. Principles of Biochemistry McGraw Hill Book Co.
- Dutt, Debjani R. – How best to plan and build your home – Pustak Mahal Delhi.
- Sharma Sheel , Experiments and techniques in biochemistry, Galgotia Publishers , Daryaganj- New delhi

**Paper Code- DHSC 515A**  
**Food Science**  
**(Theory)**

**Credits** -04  
**Max Marks** -100  
**Contact Hrs./ week** -02  
**Total Hrs** -60

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the definition, importance and basic terminology of food science.
2. Understand the functional properties of Carbohydrates, lipids and proteins
3. Understand different methods of food preservation
4. Apply food microbiology and hygiene and sanitation practices

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
DHSC 515A	Food Science (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO194:</b> Identify the functions of food, basic concepts of food groups and balanced diet.</p> <p><b>CO195:</b> Investigate the changes occurring during cooking of the commonly consumed foods</p> <p><b>CO196:</b> Identify the basic concepts of food science and its applications in processing of food.</p> <p><b>CO197:</b> Implement coherent and systematic knowledge of basic food chemistry.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, assignments, power point presentations.</p> <p><b>Learning activities for the students:</b> Self learning assignments, Seminar presentation</p>	Class test, CA test, Semester end examinations, Quiz, Assignments, Presentation

**CONTENTS**

**Unit I: Introduction to food science** **12 hrs**

- Definition, importance and applications
- Basic terminology used in food science

**Unit II: Basic food Chemistry** **12 hrs**

- Sources, chemistry and functional properties of Carbohydrates, Lipids and Proteins
- Colloidal chemistry: Definition, classification, properties and applications of sols, gels, foams and emulsions.

**Unit III : Basic food microbiology** **12 hrs**

- Introduction to yeast, mold and bacteria - Characteristics and their role in preservation and spoilage of food.
- Hygiene and sanitation practices followed in food processing and waste disposal.

**Unit IV: Preservation techniques, principles and their applications** **12 hrs**

- High temperature, low temperature, removal of moisture, irradiation and additives.

- Food packaging and labeling: FSSAI, Codex

**Unit V:**

**12 hrs**

- National and International food laws – FSSAI, BIS, AGMARK, Codex and ISO: 22000, ISO: 9000, ISO: 14000.
- Quality Assurance procedures - GMP, GHP, HACCP

**BOOKS RECOMMENDED:**

- Amerine, Pangborn and Roessler (1965) Principles of Sensory Evaluation of Foods. Academic Press New York
- Fellows PJ. Food Processing Technology: Principles and Practice, II edition, CRC Woodhead Publishing Ltd. Cambridge.
- Desrosier N W: Elements of Food Technology, Connecticut, USA: AVI Publishing Company.
- Srilakshmi. B. Food Science. New - Age International (P) Ltd. Publishers, New Delhi, 1997.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Bangalore 1990.
- Potter, N.N. Food Science, 3rd Ed CBS Publishers and Distributors. Delhi, 1987.

**Paper Code- DHSC 516A  
Food Science  
(Practical)**

**Credits** -02  
**Max Marks** -100  
**Contact Hrs./ week** -02  
**Total Hrs** -60

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the application of sols, gels, forms and emulsion in food industry
2. Apply the skills to identify microorganisms in foods
3. Understand the methods used for preservation and sensory evaluation of foods

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
DHSC516 A	Food Science (Practical)	<p><b>The students will be able to -</b></p> <p><b>CO198:</b> Identify the application of sols, gels, forms and emulsion in food industry.</p> <p><b>CO199:</b> Identify the presence of bacteria, yeast and mold in food items</p> <p><b>CO200:</b> Identify the food preservative methods used</p> <p><b>CO201:</b> Develop the understanding of different methods used for sensory evaluation of foods</p> <p><b>CO202:</b> Judge the food labels.</p>	<p><b>Learning activities for the students:</b></p> <p>Hands on experience of using food preservation techniques.</p>	<p>Class test, CA test, Semester end examinations, Assignments, Presentation,</p>

**CONTENTS**

- i) Applications and factors affecting formation of Sols, gels, foams and emulsions
- ii) Study of microscopic structure of different food starches and their gelatinization

- properties
- i) Slide preparation and identification of bacteria, yeast and mold
- ii) Assessment of hygienic practices of food handlers
- i) Preservation of food using different methods (Blanching, Dehydration, Freezing)
- ii) Basic principle involved in food preservation using additives
- i) Sensory evaluation methods and their applications.
- ii) Food analysis: Moisture, ash, pH
- Evaluation of Food labels

**BOOKS RECOMMENDED:**

- Frazier W. C. and Westhoff D. C. (1988). Food Microbiology, 4th Edition.
- Manay S. and Shadaksharaswamy M (2002). Foods – Facts and Principles. Wiley Eastern Ltd.
- Potter H (1995). Food Science, 5th Edition. CBS Publishers & Distributors.
- Srilakshmi (2007). Food Science, 4th Edition. New Age International Ltd.
- www.fssai.gov.in
- Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S (2010). Basic Food Preparation:
  - A Complete Manual, Fourth Edition. Orient Black Swan Ltd.
  - Sethi Mohini and Rao E (2011). Food Science (Experiments and Applications), 2nd Edition. CBS Publishers & Distributors Pvt. Ltd.

**PAPER CODE-DHSC 511B**  
**Principles & Perspectives in Early Childhood Education**  
**(Theory)**

**Credits: 4**

**Max Marks: 100**

**Contact Hrs/week: 3**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the need and importance of early childhood education.
2. Evaluate the education philosophies given for Early childhood education by different thinkers
3. Understand the essential components of ECCE curriculum & apply the effective pedagogical approaches
4. Apply knowledge to plan, prepare and conduct various age appropriate activities of early childhood

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
DHSC 511B	Principles & Perspectives In Early Childhood Education (Theory)	<p><b>The students will be able to -</b></p> <p><b>CO203:</b> Summarize the significance of focusing on early years and educational needs of children with diverse backgrounds.</p> <p><b>CO204:</b> Develop low-cost Teaching-Learning Material (TLM) and apply the appropriate and holistic teaching-learning approach in a child care setting.</p> <p><b>CO205:</b> Demonstrate the skills of planning and conducting meaningful, stimulating and age-appropriate activities for early childhood years.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Reading assignments, Demonstration,</p> <p><b>Learning activities for the students:</b></p> <p>Self-learning assignments,</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation

		<p><b>CO206:</b> Develop the skill of curriculum planning for early childhood centers.</p> <p><b>CO207:</b> Summarize and Interpret relevant thinker's Standards of Practice and Code of Ethics, and evidence-based practice guidelines, and interpret their impact on a variety of early learning environments.</p>	<p>curriculum planning, Simulation, presentations</p>	
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## CONTENTS

### Unit I: Introduction to Early childhood Education

**12 hrs**

- Meaning and characteristics of Early childhood
- Need & significance of ECE
- Goals and objectives of ECCE within an integrated and whole child approach
- Saliency of early childhood years and present status in India
- Sub Stages in ECCE –
  - Birth to 3 years: Health, nutrition and Early Stimulation for under 3's ; Role of care givers; need for parent education programmes. Need for crèches and day care
  - Three to six years: Early childhood Education (Preschool education) and School Readiness for 3 to 6 year olds
  - Six to eight years: Early learning and Transition to Early literacy for 6 to 8 year olds.

### Unit II: Developmental delay & Philosophical perspectives

**12 hrs**

- Recognizing delayed development
- Early detection of disabilities
- Early brain development: studies in neuroscience
- Rousseau ,Pestalozzi, Montessori, Dewey , Froebel- Philosophy & Contribution
- M.K. Gandhi, RavindraNath Tagore, Sri Aurbindo, GijubahaiBadheka, TarabaiModak- Philosophy & Contribution

### Unit III: Early Childhood care & Education Curriculum

**12 hrs**

- Essential features and component of ECCE curriculum
- Approaches to curriculum- Child Development, Verbal Cognitive, Verbal Didactic, Sensory Cognitive
- Programme Models- Montessori, BereiterEngleman, Weikart / High scope / Cognitive Oriented, Reggio Emmelia, Bank street
- School Readiness
- Play, development and learning in ECCE
- Programme Planning- Types and principles

### Unit IV: Pedagogical Approaches and practices in ECCE

**12 hrs**

- Understanding different approaches to learning with emphasis on "child as an active learner": - Holistic approach, active participation, child centeredness, constructivism
- Balancing between discipline- participation, exploring and mediation, self directed and guided activity
- Cultural and local social forms as tools in the classroom such as rhymes, folk drawings, festival and puppets, Field visits, tour and excursion
- TLMs in ECCE
- Classification of TLMs in ECE-traditional, technological and Edgar Dale's classification

### Unit V: Methods of engaging with children

**12 hrs**



- Music and movement and the appeal of rhythm
- Free conversations, free hand drawing, creative activity, role play, drama as sources of learning
- Story-telling and its functions in imagination and cultural literacy
- Indoor and outdoor play in structured and free situations
- Introducing print media like books, pictures with words and use of audio-visual aids and ICT
- Cooperation and Collaboration with parents, families, and the community

#### BOOKS RECOMMENDED:

- Mishra R.C. , 2005; Early Childhood care & education, A.P.H. publishing Corporation , New Delhi-110 002
- M.Sen Gupta, 2013; Early Childhood Care & Education. PHI Learning Pvt. Ltd. Delhi
- Kulkarni S.S. (1988), Parent Education: Perspectives of approaches.
- Mohanti and Mohanti (1996), Early Childhood Care and Education, New Delhi, Deep and DeepPublication
- Hlllderbrand V.;1971,Introduction to early childhood Education,NewYork,Macmillan.
- Decker,celia Anita and decker, John K.;1984, Planning & Administering Early childhood
- Khurshid UI Islam S. Rao,V.K.,1990; Early childhood care & Education, common wealth publishers, New Delhi.
- Documents: Sensitive periods: CLR, Pune, NCERT position paper of ECCE, National ECE curriculum, CECED paper of Dr. Vinita Kaul

### PAPER CODE-DHSC 512B Principles & Perspectives in Early Childhood Education (Practical)

**Credits: 2**

**Max Marks: 100**

**Contact Hrs/week: 4**

**Total Hrs: 60**

#### Course Objectives (COs):

**This course will enable the students to –**

1. Understand the administrative and management structure of different types of Early Childhood Centers
2. Create lesson plan for overall development of children.
3. Apply skill to develop teaching aids suitable for early childhood years
4. Create a blue print foe early childhood center

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessme nt Strategies
Paper Code	Paper Title			
<b>DHSC 512B</b>	<b>Principles &amp; Perspectives In Early Childhood Education (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO208:</b> Demonstrate skill in designing, implementing and evaluating inclusive and play-based early learning curriculum and programs.</p> <p><b>CO209:</b> Develop low-cost age-appropriate Teaching-Learning Material (TLM) and execute the activity in early learning environments.</p> <p><b>CO210:</b> Design and develop literature and school readiness material for children.</p>	<p><b>Approach in teaching:</b> Discussion, Demonstration, Field Trip, Curriculum planning, presentations</p> <p><b>Learning activities for the students:</b></p>	<p>Planning and Executing activities, <b>CONTENTS</b> developmen t, Report writing</p>

		<b>CO211:</b> Demonstrate the skill in planning and managing early childhood education and care center.	Field activities, Planning and conducting activities, developing materials	
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## CONTENTS

- Visits to various early childhood centers, : Day Care centre, Aanganwadi, crèche and Montessori and NGO run preschool etc. Write Report of the visit.
- Daily/Weekly/Monthly programme planning for holistic development of children
- Plan and execute an activity with the help of suitable teaching aids for Motor/Social/Cognitive/Language development for early childhood
- Planning of a parent - teacher meeting/BalSabha/Bal Mela
- Prepare a literature for children of early childhood years
- School Readiness: Preparation of material for pre writing, prereading and prearithmetic.

### BOOKS RECOMMENDED:

- Mishra R.C. , 2005; Early Childhood care & education, A.P.H. publishing Corporation , New Delhi-110 002
- M.Sen Gupta, 2013; Early Childhood Care & Education. PHI Learning Pvt. Ltd. Delhi
- Kulkarni S.S. (1988), Parent Education: Perspectives of approaches.
- Mohanti and Mohanti (1996), Early Childhood Care and Education, New Delhi, Deep and Deep Publication
- Decker, celia Anita and decker, John K.;1984, Planning & Administering Early childhood

### **PAPER CODE-DHSC 513B Childhood Disability and Social Action (Theory)**

**Credits– 4**

**Max. Marks – 100**

**Hrs./week - 04**

**Total Hrs. - 60**

### Course Objectives (COs):

**This course will enable the students to –**

1. Understand the various methods of studying characteristics and behavior in various handicaps.
2. Compare the various methods of measuring the physical and intellectual capabilities of individual.
3. Understand the problems of handicaps and their mainstreaming.
4. Understand the assessment methods of various disability.
5. Evaluate the role of society towards disability

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 513B</b>	<b>Childhood Disability and Social Action (Theory)</b>	<b>The students will be able to – CO212:</b> Describe the basic definition, needs, problems , classification and legislations of special children	<b>Approach in teaching:</b> Discussion, Lecture, Demonstration,	Observation, Presentation, Report writing, Interviewing

		<p><b>CO213:</b> Acquire the knowledge about the definition, causes, classification and assessment of visual, hearing, autism and orthopaedic impairment.</p> <p><b>CO214:</b> Demonstrate the ability to understand the identification of intellectual disability, emotional and behavioural disorder.</p> <p><b>CO215:</b> Understanding about learning disability and communication disorder in detail.</p> <p><b>CO216:</b> Become familiar with the education, intervention and collaborative approach towards inclusion.</p>	<p>Team teaching, presentation, quiz</p> <p><b>Learning activities for the students:</b> Self learning presentation Effective questions, Giving tasks, assignment</p>	
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## CONTENTS

### Unit I: Understanding Disability and Inclusion

**12 hrs**

- Defining and understanding disability
- Rights of persons with disability and UNCRPD
- Perspective on disability: Individual and social
- Attitudes towards disability- family, school, society and media
- Classification

### Unit II: Types of Disability

**12 hrs**

- Definition, characteristics, factors ,types, Identification, assessment and etiology with reference to:  
Physical disabilities
  - Sensory disabilities- Visual and auditory
  - Autism
  - Orthopedic impairment

### Unit III

**12 hrs**

- Definition, characteristics, factors ,types, Identification, assessment and etiology with reference to:
  - Intellectual disability
  - Emotional and Behavioral Disorder

### Unit IV Children with communication and learning disorder

**12 hrs**

- Definition, characteristics, factors ,types, Identification, assessment and etiology with reference to:
  - Communication Disability
  - Learning disability

### Unit V: Disability and society

**12 hrs**

- Overview of practices and provisions related to addressing disability in India-inclusive education
- Prevention, therapy, education and management of various disabilities
- Disability and family
- Policy and laws

## BOOKS RECOMMENDED:

- Gedkar, E. Disabled in India, Somaiya, 1983.
- Lilly Stephen, M. Children with Exceptional Needs, Holt, Rinehart, 1979
- CroockShank, W.M. Psychology of Exceptional Children and youth, "New Jersey, Prentice Hall", 1958.
- Baker, H.J., Introduction to exceptional children, New York, Macmillan Co., 1959.

- Dunn,L.M.(ed) "Exceptional children in the schools", Holt Rinehart & Winston,1963.
- Kirk,S.A.Education "Exceptional children" Hinghton,Miffhir,1962.
- Heek,A.O., "Education of Exceptional children", New York,McGraw Hill,1953.
- Garrison,K.C.andForce,Dewy,G.thePsychology of Exceptional children,NewYork,fourthedition,theRonals Press Co.,1965.
- Frampton and Rowell,Education of the handicapped.
- Good enough,Florence,Exceptionalchildren,NewYork,appleton century Lnafhs,1956.
- Ellis,N.(ed) Hand book of Mental deficiency Psychological theory & Research.
- Long, N.J.; Morse, W.C. & Newman, R.G. (1980). Conflict in the classroom: The education of emotionally disturbed children. Belmont: Wadsworth.
- Educating Exceptional Children-An introduction to Special Education(2009),S.K.Mangal

**PAPER CODE-DHSC 514B**  
**Childhood Disability and Social Action**  
**(Practical)**

**Credits– 2**  
**Max. Marks – 100**  
**Hrs./week- 04**  
**Total Hrs.-60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the various tests to measure the capabilities of an individual.
2. Apply the knowledge of techniques and solutions for improvement of handicap condition.
3. Understand the societal attitude towards handicap.
4. Create the information material for disabled

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessme nt Strategies
Paper Code	Paper Title			
<b>DHSC 514B</b>	<b>Childhood Disability and Social Action (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO217:</b> Understand and plan case study to clearly identify the disability.</p> <p><b>CO218:</b> Gain knowledge about educational/informative /developmentally appropriate material regarding various disabilities.</p> <p><b>CO219:</b> Develop the skills to use the psychometric tests</p> <p><b>CO220:</b> Develop the understanding of infrastructure of government and private organization.</p>	<p><b>Approach in teaching:</b></p> <p>Field trip, psychological testing, Team teaching, indigenous teaching aid, quiz</p> <p><b>Learning activities for the students:</b></p> <p>Self learning presentation Effective questions, Giving tasks, assignment</p>	Observation, Presentation , Report writing, case study

**CONTENTS**

- Visits- Government and Private Institutions and Organisations (CGC, schools, NGO's, Hospitals)
- Case profile of child with disability

- Planning developmentally appropriate activity for children with disability , develop material/aids for that and conduct the activity in institutions dealing with disability.
- Preparation of information materials for any one disability
- Select Psychometric tests (Raven’s Progressive Matrices, Test for Learning disability) and intelligence test (anyone)

**BOOKS RECOMMENDED:**

- Chopra,G., (2012). Early Detection of Disabilities and persons with disabilities in the community. New Delhi: Engage publications
- Chopra,G., (2012). Stimulating Development of Young Children with Disabilities at Anganwadi and at Home: A Practical Guide. New Delhi: Engage publications.
- Sharma, N. (Ed)(2010). The Socail Ecology of Disability-Technical Series -3Lady Irwin College. Delhi:Academic Excellence
- Mangal, S. K. (2007).Exceptional children: An introduction to special education. New Delhi: Prentice Hall of India
- Jangira, N.K.(1997) "Special Educational Needs of Children and Young Adults: An Unfinished Agenda," Education and Children with Special Needs: From Segregation toInclusion,Ed. Seamus Hegarty, MithuAlur, Thousand Oaks: Sage Publications Inc.
- Karna, G. N. (1999). United Nations and rights of disabled persons: A study in Indian perspective. New Delhi: A.P.H. Publishing Corporation.
- Mani, R. (1988). Physically handicapped in India. Delhi: Ashish Publishing House.
- Mastropieri, M. A., & Scruggs, T. E. (2004). The inclusive classroom: Strategies for effective instruction. NY: Pearson

**PAPER CODE-DHSC 511C  
Apparel Production  
(Theory)**

**Credits– 4**  
**Max. Marks – 100**  
**Hrs./week- 04**  
**Total Hrs.- 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the concept of pattern making, preparation of fabric and fitting.
2. Create awareness about the working process in apparel industry

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 511C</b>	<b>Apparel Production (Theory)</b>	<b>The students will be able to –</b> CO221: Understand concept of pattern making.	<b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments	Class test, Semester end examinations, Quiz, Solving problems in

		<p><b>CO222:</b> Develop skill for garment construction techniques.</p> <p><b>CO223:</b> Evaluate good fit and able to find remedy for common fitting problems.</p>	<p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, presentation, Giving tasks</p>	<p>tutorials, Assignments, Presentation</p>
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## CONTENTS

### **Unit I: Introduction to pattern making: Tools, Terms and Techniques** **12 hrs**

- Importance of taking body measurements
- Importance of patterns and pattern information
- Methods of pattern making
- Rules of pattern making
- Principles of pattern making

### **Unit II Preparatory steps for garment construction** **12 hrs**

- Fabric grain
- Preparatory steps- preshrinking, straightening and truing
- Layouts for patterns- general guidelines, basic layouts- lengthwise, partial lengthwise, crosswise, double fold, open, combination fold
- Pinning, marking and cutting
- Layouts for fabrics- Unidirectional, bold and large prints, plaids, stripes and checks, various widths of fabrics

### **Unit III Seams and finishing of raw edges** **12 hrs**

- Types of seams- Plain and its finishing, flat, ridge, decorative
- Additional seam techniques: clipping, notching, grading, trimming, easing, under stitching, stay stitching, trimming a corner
- Crossway strips-importance and applications , Finishing of hemlines

### **Unit IV Study of garment components: application and construction** **12 hrs**

- Classification and application of Apparel fabrics, shaping devices, underlying fabrics (underlining, interfacing, Interlinings & Linings), Pockets, neckline treatment, Sleeve treatments, Waist treatments, closures, Plackets, Sleeve treatment, Trimmings & fit.
- Standard for evaluating the components of a garment.

### **Unit V: Garment Fitting** **12 hrs**

- Definition, fitting room, criteria for judging fit in a basic garment
- Factors affecting fit
- Common fitting problems and their remedies for fitting defects.
- Fit: Fitting area, fitting guidelines, fitting procedure

## **BOOKS RECOMMENDED:**

- Reader's, Digest, Complete Guide to Sewing, The Reader's Digest Associations (Canada) Ltd. Montreal, Pleasantville, New York.
- Kallal, Mary Jo, Clothing Construction, Mc Millan Publishing Company, New York 1985.
- Cream, Penelope., The Complete Book of Sewing - A Practical Step by Step Guide to Sewing Techniques, DK Publishing Book, New York ,1996.
- Janace E. Bubonia. Apparel production terms and processes, Fairchild Books, New York 2012.

- Armstrong, Pearson., Pattern making for Fashion Design,. Fair Child Publication, New York 1995 (Indian ed.)
- Norma Hollen, Jane Saddler, Anna L. Langford & Sara, J., Textiles 6<sup>th</sup> ed., Macmillan Publication, New York 1988.
- Dorothy wood, the practical encyclopedia of sewing, Anness publishing Ltd, London.

**PAPER CODE-DHSC 512C**  
**Apparel Production**  
**(Practical)**

**Credits– 2**  
**Max. Marks – 100**  
**Hrs. /week- 04**  
**Total Hrs.- 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Acquaint students with the techniques of drafting.
2. Impart knowledge of constructional techniques.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 512C</b>	<b>Apparel Production (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO224:</b> Create and develop skills of pattern making.</p> <p><b>CO225:</b> Adapt basic patterns for construction of various garments.</p> <p><b>CO226:</b> Create paper pattern and construction for various garment components</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Demonstration</p> <p><b>Learning activities for the students:</b> Practical assignments, Simulation, Portfolio Preparation, Giving tasks.</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

**CONTENTS**

- Development and identification of:  
Seams: plain, french, counter, flat fell **16 hrs**  
  
Plackets : one piece & two piece  
Fasteners: Hook & eye, Buttons & Button holes, Press buttons, Velcro  
Edge finishing (binding, facing), pleats and gathers
- Development of Paper pattern of basic bodice, skirt and various sleeves( plain, puff, flared, & kimono) and collars ( peter pan, cape, convertible & shirt collar) **14 hrs**
- Develop style variations in adult bodice using dart manipulation on half scale standard Block **10 hrs**

- Construction of skirt top/ kurta **6 hrs**
- Adaptation of basic skirt block into style variations (Half scale) **8 hrs**
- Construction of skirt **6 hrs**

#### BOOKS RECOMMENDED:

- Reader's Digest-Complete guide of sewing, The Reader's Digest Association Ltd., London
- Jindal, Ritu., Handbook for Fashion Designing, Mittal Publications, New Delhi.
- Shaeffer, Claire., Sewing for the Apparel Industry, Gajra Publication, Upper Sadle River, New Jersey4.
- Armstrong, H.J., 2009, Pattern Making for Fashion Design, Harper Collins Publishers Inc., Ney York.
- Stamper, A.A., S. H. Sharp and L.B. Donnell, 1986, Evaluating Apparel Quality, Fairchild Publications, America.

### PAPER CODE-DHSC 513C Textile Processing (Theory)

**Credits– 4**  
**Max. Marks – 100**  
**Hrs./week- 04**  
**Total Hrs.- 60**

#### Course Objectives (COs):

**This course will enable the students to –**

1. Impart knowledge about dyeing and printing techniques on fabrics.
2. Acquaint the students with various techniques of finishes on textiles.

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 513C</b>	<b>Textile Processing (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO227:</b> Understand the preparation of fabric for dyeing &amp; printing.</p> <p><b>CO228:</b> Develop skills of dyeing and printing for various textile and apparels.</p> <p><b>CO229:</b> Familiarize with various finishing techniques</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

#### CONTENTS

##### Unit I: Pretreatments

**12 hrs**

- Pretreatment given to fabric: singeing, scouring, de-sizing, bleaching



- Terminology and theory of dyeing
- Auxiliaries used in dyeing and printing
  - Wetting agents, dispersing agents and solvents
  - Hygroscopic agents
  - Anti foaming agents
  - Oxidizing and reducing agents
  - Carriers
  - Binders and thickeners

#### **Unit II Dyeing**

**12 hrs**

- Classification of dyes
- Chemistry and mode of application of direct, acid, basic, azoic, reactive, sulphur, vat, mordant and disperse dyes

#### **Unit III: Printing**

**12 hrs**

- Methods of printing
  - Block printing
  - Roller printing
  - Stencil, screen(flat and rotary) printing
  - Innovative printing methods: Digital, Transfer, Jet Spray and Polychromatic, Electrostatic, Photo Printing.

#### **Unit IV**

**12 hrs**

- Styles of printing – direct, discharge, resist, dyed
- Fixation of prints: Ageing, Steaming, Baking, Wet development
- Washing of printed goods

#### **Unit V:Finishing**

**12 hrs**

- Definition, Importance of finishing
- Classification of finishes
- Preparatory Process- Desizing, Scouring and Bleaching
- Mechanical finishes- Sizing, Singeing, Mercerization, Napping, Embossing, Calendaring,
- Functional finishes- Wrinkle resistant, Water-resistant and repellent, Flame Retardant, Soil Repellant, Mothproof and Anti static.
- Bio finishes

#### **BOOKS RECOMMENDED:**

- Corbman, P. B., Textiles-Fiber to Fabric, Gregg Division/ McGraw Hill Book Co. US. 1985..
- Dhantiyagi S., Fundamentals of textiles & their care, Orient Longman limited New Delhi.
- Lyle, Dorothy S. et.al., Contemporary clothing, Benett & Mc Knight publishing company Peorie
- Corbman., P. B., Textiles Fiber to Fabric Gregg, Division, Mc Graw Hill Book.
- Phyllis, G. Tortora., Understanding Textile, (2<sup>nd</sup> Edition), Pearson, 1997.
- Joseph J. Pizzuto, Fabric science, 5<sup>th</sup> ed., Fairchild publication, New York 1987.
- Kadolph, Sara, J. and Anna L. Langford, Textiles, 11th Edition, Pearson Education (US) 2010.
- Joseph, M.L., Essential of Textiles (5th edition), Holf, Rinecharts and Winston Publication, Florida 1988.
- Sekhri, Seema, Text Book of Fabric Science fundamentals to Finishing, PHI Learning Pvt, Ltd, New Delhi, 2011.
- Sundaram, P. Mishra, Fiber Science and Technology, New Age International, New Delhi, 2010.
- Rastogi D. and Chopra S., Textile Science, Orient Blackswan Publication, 2017

**PAPER CODE-DHSC 514C**  
**Textile Processing**  
**(Practical)**

**Credits– 2**  
**Max. Marks – 100**  
**Hrs./week- 04**  
**Total Hrs.- 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Impart knowledge about dyeing and printing techniques on fabrics.
2. Acquaint the students with assessment of colour fastness on textile

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 514C</b>	<b>Textile Processing (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO230:</b> Preparation of fabric for dyeing &amp; printing.</p> <p><b>CO231:</b> Demonstrate Dyeing and printing for various textile and apparels.</p> <p><b>CO232:</b> Assessment of colour fastness of textiles.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Demonstration</p> <p><b>Learning activities for the students:</b> Practical assignments, Simulation, Portfolio Preparation, Giving tasks.</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

**CONTENTS**

- **Dyeing on:** **20 hrs**
  - Cotton using direct, reactive, azo ,vat, pigment & Natural Dyes
  - Wool and silk using acid, basic and reactive & Natural Dyes
  - Acrylic using basic dyes
- **Printing** **20 hrs**
  - Direct Printing- Pigment colours
  - Discharge printing- Direct dyes
  - Resist Printing-Azo dyes
- **Colour Fastness of dyed fabrics** **20 hrs**
  - Wash fastness
  - Light Fastness
  - Crock/Rub fastness
  - Perspiration fastness

**BOOKS RECOMMENDED:**

- Corbman, P. B., Textiles-Fiber to Fabric, Gregg Division/ McGraw Hill Book Co. US. 1985..
- Gohl E.V. and Vilensky L.D. Textile Science, C.B.S. Publishers New Delhi.

- Phyllis, G. Tortora., Understanding Textile, (2<sup>nd</sup> Edition), Pearson, 1997.
- Joseph J. Pizzuto, Fabric science, 5<sup>th</sup> ed., Fairchild publication, New York 1987.
- Kadolph, Sara, J. and Anna L. Langford, Textiles, 11th Edition, Pearson Education (US) 2010.
- Joseph, M.L., Essential of Textiles (5th edition), Holf, Rinecharts and Winston Publication, Florida 1988.
- Sekhri, Seema, Text Book of Fabric Science fundamentals to Finishing, PHI Learning Pvt, Ltd, New Delhi, 2011.
- Sundaram, P. Mishra, Fiber Science and Technology, New Age International, New Delhi, 2010.
- Shenai V.A.: Chemistry of Dyes and Principles of Dyeing, Sevak Prakashan Mumbai.

### **COURSE OUTCOMES - Semester VI**

#### **SEMESTER- VI PAPER CODE- CHSC 611 Research Methodology in Home Science (Theory)**

**Credits: 04**

**Max Marks: 100**

**Contact Hrs/week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the meaning, purpose, approaches and procedure of research.
2. Analyze sampling designs and methods of collecting primary data and secondary data
3. Create research report by performing data processing and analysis.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 611</b>	<b>Research Methodology in Home Science (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO233:</b> Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.</p> <p><b>CO234:</b> Describe qualitative and quantitative research techniques</p> <p><b>CO235:</b> Explain measurement &amp; scaling techniques as well as the quantitative data analysis</p> <p><b>CO236:</b> Classify data for hypothesis testing procedures and report writing.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Reading assignments, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Seminar presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Presentation, Individual and group projects

### **CONTENTS**

**Unit I: Research- Meaning, purpose and approaches**

**12 hrs**

- Exploration, Description, Explanation
- Scientific method and research
- Research Designs –Experimental and Observational

- Quantitative and Qualitative approaches
- Conceptualization and Measurement
- Variables, concepts and measurement
- Levels of measurement
- Units of analysis

### **Unit II: The Research Process**

**12 hrs**

- Defining the problem, research questions, objectives, hypotheses
- Review of related literature and originality in writing
- Planning the research
- Subjects context and ethics
- Methodology and tools
- Citation formats: in medical sciences, social sciences

### **Unit III: Sampling and Sampling Design**

**12 hrs**

- Types of sampling, their advantages and disadvantages: Convenient sample, Random sample, Stratified sampling, Cluster sample, Purposive sampling, Snow ball sampling. Selection of adequate sample size  
Census and Sample survey  
Steps in sampling design

### **Unit IV: Methods of collecting primary data and secondary data**

**12 hrs**

- Methods of collecting primary data
  - Questionnaire
  - Schedules
  - Interview
  - Case-study
  - Experimentation method
- Method of collecting secondary data
  - Sources of secondary data
  - Precautions while using secondary data

### **Unit V: Data processing and Data analysis**

**12 hrs**

- Editing and coding the data,
- Organization of data- Classification, meaning and objectives, types of classification
- Formation of discrete and continuous frequency distribution
- Tabulation – Role, parts of a table, general rules of tabulation, types of tables.
- Report writing

### **BOOKS RECOMMENDED:**

- Kumar, R. (2005) Research Methodology : A Step by Step Guide for Beginners. Sage Publications, New Delhi.
- Kerlinger F. N. and Lee, H.B. (2000) Foundations of Behavioural Research 4th Ed. Harcourt College Publishers
- Kothari, C. R. (2008) Research Methodology: Methods and Techniques 2nd Ed. New Age International Pvt Ltd, New Delhi.
- Black, J.A. & Champion, D. J. ( 1976) Methods and Issues in Social Research. New York: John Wiley

**PAPER CODE- CHSC 612**  
**Research Methodology in Home Science**  
**(Practical)**

**Credits: 02**  
**Max Marks: 100**  
**Contact Hrs/week: 02**  
**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the use of random number tables for sampling
2. Apply the knowledge of data collection in collecting and analysing data

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CHSC 612</b>	<b>Research Methodology in Home Science (Practical)</b>	<p><b>The students will be able to -</b>  <b>CO237:</b> Use random number tables for sampling.  <b>CO238:</b> Design and analyze tools of data collection  <b>CO239:</b> Develop expertise in conducting interview, FGDs and Questionnaire  <b>CO240:</b> Assemble and classify data on percentage basis and write report with tables and graphs</p>	<p><b>Approach in teaching:</b>  Interactive Lectures,  Discussion,  Demonstration, Team  teaching</p> <p><b>Learning activities for the students:</b>  Self learning  assignments, Giving  tasks, Field practical</p>	<p>Class test,  Semester end  examinations,  Assignments,  Presentation,  Individual and  group projects</p>

**CONTENTS**

- Exercise in sampling, random number table.
- Exercise in designing tools and their analysis:
- Interview
- Questionnaire (mailed also)
- Data collection process:
- Conducting interviews
- FGDs
- Case studies
- Questionnaire
- Data compilation on percentage basis and report writing with tables and graphs

**BOOKS RECOMMENDED:**

- Kumar, R. (2005) Research Methodology : A Step by Step Guide for Beginners. Sage Publications, New Delhi.
- Kerlinger F. N. and Lee, H.B. (2000) Foundations of Behavioural Research 4th Ed. Harcourt College Publishers

- Kothari, C. R. (2008) Research Methodology: Methods and Techniques 2nd Ed. New Age International Pvt Ltd, New Delhi.
- Black, J.A. & Champion, D. J. ( 1976) Methods and Issues in Social Research. New York: John Wiley

**PAPER CODE- CHSC 613**  
**Socio Economic Environment**  
**(Theory)**

**Credits** -04  
**Max Marks** -100  
**Contact Hrs. / Week** -04  
**Total Hrs** -60

**Course Objectives (COs):**

**This course will enable the students to –**

1. To familiarize the student with the changing socio-economic environment and consumer behavior.
2. To strengthen the financial management practices of the students for wise consumer behavior.
3. To develop an understanding of the types of markets, changing concepts of markets, changes in socio-economic environment, and marketing strategies from consumer's perspective.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 613	Socio Economic Environment (Theory)	<p><b>CO 241:</b> Outline the various dimensions of society and culture.</p> <p><b>CO242:</b> Describe the basic concepts of economics and their utilization in day today life.</p> <p><b>CO243:</b> Explain the National Income, working of the banks, value of money and tax system in India.</p> <p><b>CO244:</b> Comprehend the major economic problems of India and their implications in society.</p> <p><b>CO245:</b> Develop an insight into development policy measures adopted in the country</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Power point presentations,</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Newspaper articles reading</p>	Class test, Semester end examinations, Assignments, Presentation, Individual and group projects

**CONTENTS**

**Part I: Sociological Concerns and Orientation**

**Unit I: Sociological Orientation**

**12 hrs**

- Society, Culture and Institutions
- Family, Kinship and Relationships
- Social Groups and multiplicity
- Cultural diversity in contemporary life
- Appreciating Cultural plurality

**UNIT II: Emergence of New Ideological Orientations**

**12 hrs**

- Social mobility and social change

- Emergent Cultural Stereotypes
- Ethnographic approaches to the study of groups.
- Sociological Studies of Children, Youth and Women the aged: Empirical Problem & Frameworks

**UNIT III: Introduction—Economic system, Consumption and production and distribution**

**12 hrs**

- Definition, scope of Economics, Central problems of an economy
- Wants – Classification and Characteristics.
- Utility- Total Utility, Marginal Utility– Law of Diminishing Marginal Utility, Law of Equi-Marginal Utility
- Demand – Law of Demand, Elasticity of Demand-with emphasis on price elasticity.
- Engel’s Law of Consumption
- Consumer’s surplus- assumptions and criticism
- Supply – Law of Supply, Elasticity of Supply, equilibrium of Demand and Supply.

**Unit IV:**

**12 hrs**

- Types of Markets
- Types & functions of money, value of money – measurement of the value of money-Index number, inflation
- Types & functions of Banks
- Revenue – Concept, Total, Average and Marginal Revenue
- Taxation, Types- direct and indirect, proportional, progressive and Regressive taxes
- Features of International Trade.
- Factors of Production– land, labour and capital

**Unit V: Indian Economic Environment**

**12 hrs**

- Structure of Indian Economy: Changing structure of Indian Economy.
- Constraints on growth: issues of population, income distribution, poverty, unemployment, inequality and migration, food security.
- Role, importance and organization of Indian Agriculture.
- Role, importance and problems of Indian industries
- Recent developmental programmes of the Government of India: Jana DhanaYojna, SarvaSikshaYojana.
- Planning: Features, objectives and achievement

**BOOKS RECOMMENDED:**

- Abraham, M. F. (2006). Contemporary Sociology: An introduction to concepts and theories: New York: Oxford University Press.
- Beattie, J. (1964). Other cultures. Cohen and West.
- Das, V. (Ed.) (2003) The Oxford companion to sociology and social anthropology: volume 1 and 2. New Delhi: Oxford University Press.
- Johnson, M.H. (2001). Sociology: A systematic introduction. New Delhi: Allied Publishers Limited.
- Rawat, H.K. (2007). Sociology: Basic concepts. New Delhi: Rawat Publications.
- Srinivas, M.N. (Ed.) (1996). Caste: Its twentieth century avatar. New Delhi: Viking Penguin.
- Ahuja H.L., 2010, Modern Micro Economics. Sultan Chand & sons
- Dhingra IC and Garg VK, 2010, Introductory Economic Theory. Sultan Chand & Sons
- Mishra &Puri, Recent edition 2014, Indian Economy, Himalaya Publishing House.
- Mithani D.M., 2010 New Edition, Macro-Economics. Himalaya Publishing House
- Sundaram K.P.M., 2010, Introduction to Economics. RatanPrakashan

**PAPER CODE- CHSC 614**  
**Socio Economic Environment**  
**(Practical)**

**Credits -04**  
**Max Marks -100**  
**Contact Hrs. / Week -04**  
**Total Hrs -60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the changing socio-economic environment and its impact on consumer behavior.
2. Discuss conflicts and consensus in society and its underlying reasons.
3. Strengthen the financial management practices for wise consumer behavior.
4. Develop an understanding of the types of markets, changing concepts of markets, changes in socio-economic environment, and marketing strategies from consumer's perspective.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CHSC 614	Socio-economic Environment (Practical)	<p><b>The students will be able to -</b></p> <p><b>CO246:</b> Identify the changing socio-economic environment and family trends/set up.</p> <p><b>CO247:</b> Discuss the underlying reasons of conflicts and consensus in society.</p> <p><b>CO248:</b> Quote and understand various case studies helpful in assessing the changing socio-economic environment.</p> <p><b>CO249:</b> Organize field visits, interpret data and analyze the trends of growth and development of certain sectors.</p>	<p><b>Approach in teaching:</b>            Interactive Lectures, Discussion, Tutorials, Reading assignments, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b>            Self learning assignments, Effective questions, Simulation, Seminar presentation, Giving tasks, Field practical</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects

**CONTENTS**

**Part 1 Practical**

- Changing families & relating in society.
- Individuals facing Conflicts and consensus in society.
- Changing status and roles in varied spaces in family, work the elderly and its implication on the individual and society across cultures.
- Experiences of exclusion on the individual: caste, minority, disability, violence, Immigration, Religion and Culture
- Case studies, narratives, films, fieldtrips to different regions, communities like tribal, rural, urban

**Part II Practical**

- Field Visit (to do the comparative economic studies)
- Case Studies related to current economic issues (Developmental and Environmental)
- Data interpretation and analysis (to see the trends of growth and development of certain sectors or vice versa.)



## BOOKS RECOMMENDED:

- Abraham, M. F. (2006). Contemporary Sociology: An introduction to concepts and theories: New York: Oxford University Press.
- Beattie, J. (1964). Other cultures. Cohen and West.
- Das, V. (Ed.) (2003) The Oxford companion to sociology and social anthropology: volume 1 and 2. New Delhi: Oxford University Press.
- Johnson, M.H. (2001). Sociology: A systematic introduction. New Delhi: Allied Publishers Limited.
- Rawat, H.K. (2007). Sociology: Basic concepts. New Delhi: Rawat Publications.
- Srinivas, M.N. (Ed.) (1996). Caste: Its twentieth century avatar. New Delhi: Viking Penguin.
- Ahuja H.L., 2010, Modern Micro Economics. Sultan Chand & sons
- Dhingra IC and Garg VK, 2010, Introductory Economic Theory. Sultan Chand & Sons
- Mishra & Puri, Recent edition 2014, Indian Economy, Himalaya Publishing House.
- Mithani D.M., 2010 New Edition, Macro-Economics. Himalaya Publishing House
- Sundaram K.P.M., 2010, Introduction to Economics. Ratan Prakashan

## PAPER CODE- DHSC611A Therapeutic Nutrition (Theory)

**Credits-04**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -60**

### Course Objectives (COs):

**This course will enable the students to –**

1. Understand the modification of Normal diet for Therapeutic purposes
2. Gain knowledge about Dietary Management of Diseases

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 611A</b>	<b>Therapeutic Nutrition (Theory)</b>	<b>The students will be able to –</b>  <b>CO250:</b> Relate the causes, symptoms and onset of various types of diseases <b>CO251:</b> Understand the principles of dietary modification <b>CO252:</b> Comprehend dietary principles in planning therapeutic diets for disease conditions	<b>Approach in teaching:</b> Lecture method Power point presentation Discussions Tutorials Visits to hospitals  <b>Learning activities for the students:</b> Self learning assignments Effective questions Seminar presentation	Class test Semester end examinations Quiz Assignments Presentations

## CONTENTS

**Unit I: Principles of nutrition care** **12 hrs**

- Nutrition Care Process
- Therapeutic adaptations of the normal diet
- Progressive diets – clear fluid, full fluid, soft and regular

**Food allergy and food intolerance**

- Etiology, clinical features, diagnosis and nutritional management

**UNIT II: Etiology, clinical features and nutritional management of Infections and Fevers**

**12 hrs**

- Typhoid
- Tuberculosis
- HIV

**UNIT III: Etiology, clinical features and nutritional management of the following**

**12 hrs**

- GI Tract Disorders:
- Diarrhoea
- Constipation
- Lactose intolerance
- Celiac disease.
- Liver: Infective Hepatitis

**Unit IV: Etiology, clinical features and nutritional management of**

**12 hrs**

- Weight Imbalances-Overweight and obesity; Underweight
- Eating disorder- anorexia nervosa and bulimia

**Unit V: Etiology, clinical features, basic diagnosis and nutritional management of the**

**Following**

**12 hrs**

- Type 1 and Type 2 Diabetes Mellitus
- Metabolic Syndrome
- Hypertension and Coronary Heart Disease

**BOOKS RECOMMENDED:**

- Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
- Mahan L K and Escott Stump S (2013). Krause's Food & Nutrition Therapy, 13th ed. Saunders-Elsevier.
- Stacy Nix (2009). William's Basic Nutrition and Diet Therapy, 13th Edition. Elsevier Mosby.
- ICMR (1999). Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- Seth V and Singh K (2007). Diet Planning through the Life Cycle Part II: Diet Therapy. A Practical Manual, 4th edition. Elite Publishing House Pvt. Ltd.

**PAPER CODE- DHSC612A**  
**Therapeutic Nutrition**  
**(Practical)**

**Credits: 02**

**Max Marks: 100**

**Contact Hrs. / Week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Develop skills in planning and preparing therapeutic diets.
2. Learn techniques in diet counseling and feeding of patients.
3. Plan and prepare appropriate diets for therapeutic conditions

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 612A</b>	<b>Therapeutic Nutrition (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO253:</b> Develop skills in preparing appropriate therapeutic diets and calculate the nutrient CONTENTS of diets prepared</p> <p><b>CO254:</b> Acquire professional diet counselling skills</p> <p><b>CO255:</b> Recommend personalized diets for various disease conditions and assess patient's compliance</p>	<p><b>Approach in teaching:</b>            Demonstrations            Laboratory exercises            Discussions</p> <p><b>Learning activities for the students:</b>            Planning of diet for various diseases            Participation in competitions</p>	Class test, Semester end examinations, Assignments, Observation, Practical performance

**CONTENTS**

- Planning, preparation and service of diets for the following:  
 Therapeutic Diets – Normal, Soft, Clear and full fluid
  - Fevers: acute and chronic
  - Obesity
  - Type 2 Diabetes
  - Hypertension and CHD
  - Diarrhoea
  - Constipation
  - Hepatitis
  - Lactose Intolerance and Celiac Disease
  - Survey therapeutic foods in market

**BOOKS RECOMMENDED:**

- Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
- Mahan L K and Escott Stump S (2013). Krause's Food & Nutrition Therapy, 13th ed. Saunders-Elsevier.
- Stacy Nix (2009). William's Basic Nutrition and Diet Therapy, 13th Edition. Elsevier Mosby.
- ICMR (1999). Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- Seth V and Singh K (2007). Diet Planning through the Life Cycle Part II: Diet Therapy. A Practical Manual, 4th edition. Elite Publishing House Pvt. Ltd.

**PAPER CODE- DHSC613A**  
**Basics Of Nutrition Epidemiology And Anthropology**  
**(Theory)**

**Credits: 04**

**Max Marks: 100**

**Contact Hrs. / Week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Gain a insight on basics of epidemiology
2. Understand the basics of anthropology

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 613A</b>	<b>Basics of Nutrition Epidemiology and Anthropology (Theory)</b>	<p><b>The students will be able to -</b></p> <p><b>CO256:</b> To discuss the basics of nutritional epidemiology.</p> <p><b>CO257:</b> To compute and explain various health indicators for women, children and adolescents, and find their relevance in calculating the prevalence of various diseases.</p> <p><b>CO258:</b> To examine various agencies conducting surveys in India and abroad and utilization rates of key indicators of vulnerable age-groups.</p> <p><b>CO259:</b> To paraphrase the relevance of anthropology and nutrition.</p> <p><b>CO260:</b> To identify various factors responsible for making food choices and the role of women in maintaining health.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Case studies and fact sheets preparation, Effective questions, Simulation, Seminar presentation, Giving tasks, Making question banks.</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual and group projects.

**CONTENTS**

**Unit I: UNIT I:- Epidemiology in Nutrition**

**12 hrs**

- Definition and scope of epidemiology , Health and Nutritional epidemiology
- Determinants of MCH & indicators commonly used to track maternal/ child health & nutrition
- Definitions of commonly used epidemiological indicators like Crude death rate, IMR, U5
- MR, Birth rate, Fertility rate, , Maternal mortality rate/ratio etc..
- Disease frequency, causes and prevention - population at risk, Incidence and its comparison.
- Epidemiological Methods and Types
  - Observational, Experimental, and Potential errors.
  - Case fatality, Mortality.

**Unit II: Epidemiology of Major public Health and Nutrition Problems in India**

**12 hrs**

- Status of maternal & child nutrition/health as per latest surveys
- Prevalence and utilization rates of key indicators/interventions for women, children, adolescence: globally and in India;
- Studying the progress of key indicators of vulnerable age groups based on disaggregated data rural vs urban, male vs female, SC, ST, OBC and Wealth quintiles. (NNMB, SRS, DLHS, CES, MICS, NFHS I, II and III data) and calculating per annum progress/deterioration.
- Vital statistics and Causes of IMR, NMR, MMR, Under 5 Mortality rates & its relationship with nutrition.
- Emergence of evidence based interventions for improving Maternal and Child Health and Nutrition from global and National epidemiological data base.

**Unit III: Epidemiology of Major Micronutrient deficiencies 12 hrs**

- Status of micronutrient deficiencies in mothers and children as per latest surveys
- Prevalence and utilization rates of key indicators/interventions to improve micronutrient deficiencies for women, children, adolescence: globally and in India;
- Studying the progress of key indicators of vulnerable age groups based on disaggregated data rural vs urban, male vs female, SC, ST, OBC and Wealth quintiles. (NNMB, SRS, DLHS, CES, MICS, NFHS I, II and III data) and calculating per annum progress/deterioration. Vital statistics and Causes of IMR, NMR, MMR, Under 5 Mortality rates & its relationship with nutrition. Emergence of evidence based interventions for improving Maternal and Child Health and Nutrition from global and National epidemiological data base.

**Unit IV: Introduction of Anthropology and Its Relevance to Nutrition 12 hrs**

- Definition and Application of the Discipline of Anthropology as applied to:
  - Health and Disease
  - Nutrition and Nutritional status
- Historical development of Nutritional Anthropology: Evolution from a biomedical to a socio cultural view of nutrition.
- Emic vs Etic Perspective.
- Factors Affecting Food choices and household level practices
  - Ecological and Geographical
  - Poverty, economic status
  - Socio cultural; education, ethnic and religious factors.
  - Sensory Qualities of Foods and culture
  - Girl child and women
  - Intra Household Distribution of Food

**Unit V: Cultural Interpretation of Malnutrition and Rural Urban differences 12 hrs**

- Community beliefs about cause prevention and treatment of under nutrition and micro nutrient deficiencies (PEM, IDA, VAD, IDD ) in children and women in developed and developing countries.
- Ethno-physiology: cultural perceptions of body physiology in different stages of the life cycle (child, adolescent, adult) and its impact on home level nutrition and health care.
- Comparing rural vs urban differences as regards :
  - Time and activity patterns; workload of men and women and its impact on food intake and nutritional status (especially vulnerable groups)
  - Health care seeking behaviors – treatment of illness.
  - Complementary feeding and breast feeding practices; family support.
  - Seasonal variations in malnutrition and morbidity.

**BOOKS RECOMMENDED:**

- Basic Epidemiology, R Bonita, R Beaglehole, T Kjellström, 2nd Edition , WHO, 2006 [http://whqlibdoc.who.int/publications/2006/9241547073\\_eng.pdf](http://whqlibdoc.who.int/publications/2006/9241547073_eng.pdf)
- Moon G, Gould M (2000). Epidemiology: An Introduction. Philadelphia, Open University Press.

- Lillian Langseth (1996). Nutritional Epidemiology: Possibilities and Limitations. Washington DC, ILSI Press.
- Pelto GH, Pelto RJ and Masser E (1989). Research Methods in Nutritional Anthropology, Tokyo, Japan: The United Nations University
- MotherCare (1990). Behavioural Determinants of Maternal Health Care Choices in Developing Countries, Mother Care, USA.
- Koblinsky M (1993). The Health of Women : A Global Perspective. (1993) NCIH, Washington, DC, USA.
- Lawrence, M. (2008). Public Health Nutrition
- Lal S. (2009). Textbook of Community Medicine. CBS Publication

**Paper Code- DSHC614A**  
**Basics of Nutrition Epidemiology and Anthropology**  
**(Practical)**

**Credits: 02**

**Max Marks: 100**

**Contact Hrs. / Week: 04**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Assess the epidemiology of nutrition and health problems in vulnerable groups
2. Study the tools and methods of Nutrition Anthropology

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 614 A</b>	<b>Basics of Nutrition Epidemiology and Anthropology (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO261:</b> Develop skills required for assessing epidemiology of nutrition and health problems in India.</p> <p><b>CO262:</b> Gain knowledge about nutritional anthropology and various research tools associated with it.</p> <p><b>CO263:</b> Gain information related to purpose and techniques of various QL tools</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Designing of questionnaire and data collection and analysis, Analysis of Nutritional surveillance and Analysis reports</p> <p><b>Learning activities for the students:</b> Self learning assignments related to anthropology and data collection, Effective discussion, Simulation, NNMB, NFHS etc ie survey Report analysis</p>	<p>CA test, Semester end examinations, viva, Presentation, Individual and group projects</p>

**CONTENTS**

- Assessing the epidemiology of a nutrition and health problems in
- vulnerable groups of the population & tracking progress in the last decade
- Comparing the frequency of occurrence/exposure of nutrition and health
- Study of Nutrition Anthropology/Research Tools and Methods
- Brief overview of QL tools (purpose and technique) :
  - Focus Group Discussion
  - Open ended Interviews – In depth Interviews & Key Informant Interviews
  - Various Types of observation methods.
- Importance of integrating qualitative and quantitative methods (QL and QN);  
Overview of concept of participatory Research (PR) as distinct from Qualitative

#### Research

- Principles of PR
- Features of good PR
- Introduction of few PR methods (eg. Community mapping, preference ranking, Venn Diagrams, seasonality diagram)
- Data collection in the area of health and Nutrition using above methods

#### **BOOKS RECOMMENDED:**

- Basic Epidemiology, R Bonita, R Beaglehole, T Kjellström, 2nd Edition , WHO, 2006
- [http://whqlibdoc.who.int/publications/2006/9241547073\\_eng.pdf](http://whqlibdoc.who.int/publications/2006/9241547073_eng.pdf)
- Moon G, Gould M (2000). Epidemiology: An Introduction. Philadelphia, Open University Press.
- Lillian Langseth (1996). Nutritional Epidemiology: Possibilities and Limitations. Washington DC, ILSI Press.
- Pelto GH, Pelto RJ and Masser E (1989). Research Methods in Nutritional Anthropology, Tokyo, Japan: The United Nations University
- MotherCare (1990). Behavioural Determinants of Maternal Health Care Choices in Developing Countries, Mother Care, USA.
- Koblinsky M (1993). The Health of Women : A Global Perspective. (1993) NCIH, Washington, DC, USA.
- Lawrence, M. (2008). Public Health Nutrition
- Lal S. (2009). Textbook of Community Medicine. CBS Publication

**PAPER CODE- DHSC 611B**  
**Theories of Human Development**  
**(Theory)**

**Credits: 4**

**Max. Marks – 100**

**Hrs./week:2**

**Total Hrs. : 60**

#### **Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the concept, key themes and application of human development theories.
2. Evaluate and verify the strength and weaknesses of various human development theories.
3. Understand various learning, personality and intelligence theories and their application.
4. Apply the eclectic and ethological approach in studying human development

#### **Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<p><b>DHSC 611B</b></p>	<p><b>Theories of Human Development (Theory)</b></p>	<p><b>The students will be able to -</b>  <b>CO264:</b> Discuss the concept, history, key themes and application of psychological Theories.  <b>CO265:</b> Summarize the knowledge of psychoanalytic and psychosocial theories and their implications in personality  <b>CO266:</b> Discuss the knowledge of cognitive learning and intelligence theories and their application  <b>CO267:</b> Summarize and Compare the knowledge of Humanistic and contextual theories and their application.  <b>CO268:</b> Demonstrate the skill of applying culture specific and eclectic approach indealing with clients during counseling.</p>	<p><b>Approach in teaching:</b>  Discussion,  Interactive lectures.  Presentations,  CONTENTS analysis</p> <p><b>Learning activities for the students:</b>  Self-learning,  assignments,  presentations</p>	<p>Class test, Se  end examinations  Assignments,  Presentation,  CONTENTS analy</p>
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## CONTENTS

### Unit I: Introduction to theories in Human Development 12 hrs

- Definition, component and function of theory.
- Historical perspective of theories
- Key themes in the study of Human Development- Nature/nurture, active/passive, continuity/discontinuity, individual differences and similarities
- Role of theories in understanding human development

### Unit II: Psychoanalytic Theories 12 hrs

- Psychoanalytic: Freud
- Psycho-Social: Erikson
- Neo-Freudian Theories: Karl Jung, Alfred Alder
- Political Psychophilosopher theory of Eric Fromm, Sullivan

### Unit III: Cognitive learning and intelligence theories 12 hrs

- Models and Theories of Intelligence: Guilford, Spearman and Gardener
- Theories of Learning by Conditioning: Pavlov & Skinner
- Social Learning Theories: Bandura
- Piaget Cognitive Development Theory & Vygotsky Social Cognitive Theory

### Unit IV: Humanistic & Contextual Theories 12 hrs

- Hierarchy of Needs theory of Maslow
- Carl Roger's Self Theory
- Ecological theory of Bronfenbrener

### Unit V: Evolutionary & Ethological Theories 12 hrs

- Evolutionary and Ethological /Biological: Darwin, Lorenz
- Bowlby's Ethological Theory
- Ainsworth Attachment theory
- Eclectic theoretical orientation: a pragmatic approach to therapy

## BOOKS RECOMMENDED:

- Berger, J.M. (2010). Personality (8th ed.). Belmont, CA: Thomson/Wadsworth
- Allen, B.P. (2006). Personality theories: Development, growth and diversity (5th ed.). Needham Heights, MA: Allyn and Bacon
- Santrock, J.W. (2007). Lifespan Development (3rd ed.). New Delhi, Tata- McGraw Hill



- Rice, P. (1995). Human Development: A Lifespan Approach. New Jersey, Prentice-Hall Inc

**PAPER CODE- DHSC 612B**  
**Theories of Human Development**  
**(Practical)**

**Credits- 2**  
**Max. Marks – 100**  
**Hrs./week-4**  
**Total Hrs. - 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand and evaluate human development theories and its applications.
2. Evaluate and verify the strength and weaknesses of various human development theories.
3. Apply theories to evaluate the toys and COthes available in the market

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>DHSC 612B</b>	<b>Theories of Human Development (Practical)</b>	<p><b>The students will be able to -</b></p> <p><b>CO269:</b> Discuss the factors in eco-cultural network that influence the development of a child.</p> <p><b>CO270:</b> Summarize the biography of famous psychologists.</p> <p><b>CO271:</b> Develop plan and conduct experiments based of different theories.</p> <p><b>CO272:</b> Evaluate, verify and compare the theories and apply the eclectic approach</p>	<p><b>Approach in teaching:</b> Discussion, Interactive lectures. Presentations, CONTENTS analysis</p> <p><b>Learning activities for the students:</b> Hands-on activities, Model preparation, conducting experiments</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, CONTENTS analysis

**CONTENTS**

- Biography of a theorist with a focus on his/her family life and childhood experiences.
- Depict the 'eco-cultural' network for a child using the ecological model of Bronfenbrenner and need hierarchy by Maslow.
- Verification of selected theories using multiple methods
- Plan and conduct Experiments based on Piaget's Sensory-motor, Pre operational, Concrete operation and abstract operation stages.
- Comparative analysis and discussion of cognitive theory given by Piaget and Vygotsky
- Solving a hypothetical case vignette by using eclectic theoretical orientation

**BOOKS RECOMMENDED:**

- Berger, J.M. (2010). Personality (8th ed.). Belmont, CA: Thomson/Wadsworth
- Allen, B.P. (2006). Personality theories: Development, growth and diversity (5th ed.). Needham Heights, MA: Allyn and Bacon
- Santrock, J.W. (2007). Lifespan Development (3rd ed.). New Delhi, Tata- McGraw Hill

- Rice, P. (1995). Human Development: A Lifespan Approach. New Jersey, Prentice-Hall Inc

**PAPER CODE- DHSC 613B**  
**Family Dynamics: Mapping Family Relationships**  
**(Theory)**

**Credits: 4**

**Max Marks: 100**

**Contact Hrs/week: 2**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the various forms of family that exist in contemporary Indian context.
2. Evaluate the various roles shared by the members in a family and familial relationships.
3. Understand family and interacting variables for analyzing individual behavior within family.
4. Analyze the various programmes for family development

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
DHSC 613B	Family Dynamics: Mapping Family Relationship s (Theory)	<p><b>The students will be able to -</b></p> <p><b>CO273:</b> Become familiar with the concept of family dynamics and factors influencing the dynamics of Indian family.</p> <p><b>CO274:</b> Develop the familiarity with the family and its related issues and adjustments.</p> <p><b>CO275:</b> Understand the role expectations and demands of traditional and modern gender roles.</p> <p><b>CO276:</b> Acquire the knowledge about the factors influencing family dynamics</p> <p><b>CO277:</b> Become familiar with the reflection and perception of family members towards each other.</p>	<p><b>Approach in teaching:</b> Discussion, Presentation,</p> <p><b>Learning activities for the students:</b> Field activities, Presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Presentation

**CONTENTS**

**Unit I: : Family dynamics**

**12 hrs**

- Concept of Family Dynamics
- Indian families and Internal Dynamics
- Factors that influence dynamics of the family
- Family interactions, Cohesion, Communication in family
- Family Life Education-Meaning, importance, methods

**Unit 2 :Diversity in family forms :**

**12 hrs**

- Families in different ecological context
- Traditional forms of family and marriage in India-Nuclear, Joint and Extended-Merits & Demerits
- The life cycle -Features, Importance and Stages
- Alternative forms of family
- Family Developmental tasks

**Unit 3 : Role expectations and Demands** **12 hrs**

- Nature of roles and relationships in Indian Context
- Determinants of roles and relationships
- Traditional and Modern gender roles
- Variations in family structures and role distributions.

**Unit 4: Influence of Globalisation, Media and Migration on Family Dynamics** **12 hrs**

- Changes in the structure of Families
- Changes in roles within family setting
- Role confusion, Role Conflict and Role Stress
- Reflection on Behaviours in family
- Modern Indian Families

**Unit 5: Family Programmes and Intervention** **12 hrs**

- Problems encountered in family
- Family Intervention
- Government policies and programmes for families.

**BOOKS RECOMMENDED:**

- Kuppuswamy,B. (1975) . Social change in India (2<sup>nd</sup> Edition). New Delhi :Vikas
- Ahuja , R. (1993) . Indian social system, New Delhi :Rawat.
- Duvalh E.: Family development, J.B. Lippincott, New York, 3rd ed. 1967
- Foster: Marriage and Family Relations, Macmillan, 1950
- Hill R. and Waller: The Family, Holt Rinehart and Winstion, New York (Latest ed.)
- Prabhy: Hindar Social Organization, Popular Book Co. 1954
- Williamson, R.C.: Marriage and Family Relations, Collier Macmillan, London, 1969
- Newman and Newman: Infancy and Childhood development and its Context, John Willey, 1978
- Macionis,J.J. (2006). Sociology. Delhi: Pearson.
- Sonawat, R. (2001). Understanding Families in India: A Reflection of Societal Changes. Unit for Family Studies, TISS (1991). Research on familieswith . problems in India: Issues and implications (Vol. I). Bombay TISS
- Kuppuswamy, B. (1975). Social change in India (2nd edition). New Delhi: Vikas.

**PAPER CODE- DHSC 614B**  
**Family Dynamics: Mapping Family Relationships**  
**(Practical)**

**Credits: 2**

**Max Marks: 100**

**Contact Hrs/week: 2**

**Total Hrs: 30**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Understand the various forms of family that exist in contemporary Indian context.
2. Understand the various roles shared by the members in a family and familial relationships.
3. Understand family by drawing three generational family tree.
4. Evaluate the family as a functioning Unit.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
DHSC 614B	<b>Family Dynamics: Mapping Family Relationships (Practical)</b>	<p><b>The students will be able to -</b></p> <p><b>CO278:</b> Understand the various forms of family that exist in contemporary Indian context.</p> <p><b>CO279:</b> Develop the understanding of the various roles shared by the members in a family and familial relationships.</p> <p><b>CO280:</b> Learn the skills to draw three generational family tree.</p> <p><b>CO281:</b> Inculcate the knowledge about development during childhood/adulthood/old age.</p>	<p><b>Approach in teaching:</b> Field trip, Team teaching, quiz</p> <p><b>Learning activities for the students:</b> Self learning presentation Effective questions, Giving tasks, assignment</p>	Observation, Presentation, Report writing, case study

**CONTENTS**

- To study different forms of family existing in the society
- To understand the family as a functioning Unit by understanding the roles and responsibilities of family members
- To observe and identify the various developmental characteristics of different life stages (any one)
- To understand the dynamics of relationships and their effect on individual functioning with the help of family tree and genogram To draw three generational family tree and genogram

**BOOKS RECOMMENDED:**

- Kuppaswamy, B. (1975) . Social change in India (2<sup>nd</sup> Edition). New Delhi :Vikas
- Ahuja , R. (1993) . Indian social system, New Delhi :Rawat.
- Duvalh ,E. Family development, J.B. Lippincott, New York, 3rd ed. 1967
- Indira Gandhi National Open University, National center for disability studies. Human development and family relationships, Manual for supervised practicum, New Delhi

**PAPER CODE- DHSC 611C**  
**Indian Textile Heritage**  
**(Theory)**

**Credits: 4****Max Marks: 100****Contact Hrs/week: 4****Total Hrs: 60****Course Objectives (COs):****This course will enable the students to –**

1. Create awareness of design and its interpretation.
2. Familiarize the students with the elements and principles of design.
3. Foster appreciation of traditional textiles of India

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
DHSC 611C	Indian Textile Heritage (Theory)	<p><b>The students will be able to -</b></p> <p><b>CO282:</b> Understand traditional textiles of various states.</p> <p><b>CO283:</b> Analyze various motifs, design and colour of textiles and their relevance</p> <p><b>CO284:</b> Recognize and appreciate the design textile masterpieces</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

**CONTENTS****Unit I: Woven Textiles****12 hrs**

- Study in reference to origin, processing techniques, colours and motifs used:
  - Bengal- Jamdani, Baluchar
  - Tamilnadu – Kanjeevaram
  - Maharashtra - Paithani
  - Madhya Pradesh – Chanderi
  - Uttar Pradesh – Brocades
  - Kashmir– Carpets & Shawls

**Unit II Dyed Textiles:****12 hrs**

- Study in reference to styles employed, designs incorporated, effects achieved:
  - Rajasthan – Bandhani
  - Andhra Pradesh – Ikat (Telia Rumal, Pochampalli)
  - Gujarat – Patola

**Unit III Painted and Printed Textiles****12 hrs**

- Andhra Pradesh – Kalamkari: Kalahasti and Machilipatnam
- Nathdwara- Pichwais
- Orrisa- Patachitra
- Rajasthan – Sanganer and Bagru
- Madhya Pradesh – Bagh

**Unit IV Embroidery****12 hrs**

- Material used, techniques employed and designs incorporated in embroidered textiles:
  - Jammu and Kashmir-Kashida.
  - Gujarat-Kutch and Kathiawar
  - Punjab-Phulkari.
  - Uttar Pradesh-Chikankari

- Karnataka-Kasuti.
- West Bengal-Kantha.
- Rajasthan –gotta patti

**Unit V: Conservation and status of Traditional Textiles**

**12 hrs**

- Factors influencing degradation of textiles
- Care and storage techniques
- Evolution and socio-economic significance of Khadi, Handloom and Handicraft sector .
- Interventions by the organization in sustaining the traditional textiles

**BOOKS RECOMMENDED:**

- Bhatnagar,Parul., Traditional Indian Costumes and Textiles, Abhishek Publications, Jaipur
- Naik, Traditional Embroideries of India, APH Publication Corp, New Delhi.
- Agarwal, O.P., 1977, Care and Presentation of Museum projects – II, NRL
- Chattopadhaya, K.D., 1995, Handicrafts of India, Wiley Eastern Limited, N Delhi
- Das, Shukla., 1992, Fabric Art –Heritage of India, Abhinav Publications, New Delhi
- Bhavani, E., 1968, Decorative Designs and Craftsmanship of India, D.B.Taroporevala sons & Co. Pvt. Ltd, Bombay.

**PAPER CODE- DHSC 612C**  
**Indian Textile Heritage**  
**(Practical)**

**Credits: 2**

**Max Marks: 100**

**Contact Hrs/week: 4**

**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Create awareness of embroidered, dyed and printed textile heritage of India.
2. Initiate identification of regional embroideries developed by various communities.
3. Learn about the evolution of various textiles over a period of time.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
DHSC 612C	Indian Textile Heritage (Practical)	<p><b>The students will be able to -</b></p> <p><b>CO285:</b> Develop skills of motifs and design identification and preparation of embroideries.</p> <p><b>CO286:</b> Recognize and create the design effects in textile masterpieces of the world.</p> <p><b>CO287:</b> Rejuvenate traditional textiles through Unitque sample preparation and explore various crafts of India.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Demonstration</p> <p><b>Learning activities for the students:</b> Practical assignments, Simulation, Portfolio Preparation, Giving tasks.</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

**CONTENTS**

- Make samples of tradition embroideries of India: **34 hrs**
  - Jammu and Kashmir-Kashida & Zalakdozi
  - Gujarat-Kutch- Kathiawar
  - Punjab-Phulkari.
  - Uttar Pradesh-Chikankari
  - Karnataka-Kasuti.
  - West Bengal-Kantha.
  - Rajasthan –gotta patti
  - Tie & Dye
  - Block Printing
  - Batik
  
- Visit to craft centers and museum **6 hrs**
- Preparation of an article incorporating any Traditional Indian Textile/ Techniques **20 hrs**

**BOOKS RECOMMENDED:**

- Naik., Traditional Embroideries of India, APH Publishing Corporation, New Delhi
- Crill, R., Indian Embroidery, Prakash Book Depot, New Delhi 1999.
- Bhatnagar. Parul., Traditional Indian Costumes & Textiles, Abhishek Publications,
- Gillow, John, Traditional Indian Textiles, Thames & Hudson Ltd, London 1993.
- Kokyo Hatanka Collection., Textiles Arts of India Chronicle Books, San Francisco,
- Rai, Inderpal. Indian Embroidery and Textiles, Books Treasure, Jodhpur 2008.
- Bhatnagar. Parul., Traditional Indian Costumes & Textiles, Abhishek Publications, Chandigarh.

**PAPER CODE- DHSC 613C**  
**Apparel Marketing and Merchandising**  
**(Theory)**

**Credits: 4**  
**Max Marks: 100**  
**Contact Hrs/week: 4**  
**Total Hrs: 60**

**Course Objectives (COs):**

**This course will enable the students to –**

1. Impart knowledge to students related to apparel marketing and merchandising.
2. Impart knowledge about trend forecasting.
3. Develop understanding of merchandising & retailing and its importance in today's consumer market

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
PAPER COD DHSC 613C	Apparel Marketing And Merchandising (Theory)	<p><b>The students will be able to -</b></p> <p><b>CO288:</b> Understand principles of apparel marketing, management and consumer buying behavior.</p> <p><b>CO289:</b> Comprehend trend forecasting and its importance in fashion industry.</p> <p><b>CO290:</b> Describe elements of merchandising and emerging retailing trends in industry.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

**CONTENTS**

**Unit I: Fashion Trend Forecasting**

**12 hrs**

- Forecasting
- Steps in developing a Forecast
- Sourcing & cataloguing of fabrics
- Seasonal Trend Analysis- Colour, silhouettes & detailing, material & textures, print & graphics, accessories trends

**Unit II: Fundamentals of Fashion Marketing**

**12 hrs**

- Marketing Environment
- 4P's of Marketing
- Market: Segmentation, Targeting & Positioning
- Consumer Buying Behavior

**Unit III: Fashion Merchandising and Buying**

**12 hrs**

- Concept of Merchandising
- Merchandise Category-Staple, Fashion & Seasonal
- Assortment Planning
- Buying Organizations & Techniques
- Inventory Management
- Pricing Objectives & Methods

**Unit IV: Fashion Brand and Product Management**

**12 hrs**

- Brand Management: Meaning & Process
- Brand Management Concepts: Brand Name, Brand Attributes, Brand Identity & Image
- Product Classification & Product Lifecycle
- New Product Development: Process & Challenges

**Unit V: Introduction to Fashion Retailing**

**12 hrs**

- The Global Impact of Fashion Retailing
- Types of Retail Institutions
- Retail Promotion-Advertising, Sales promotion & Personal selling



- Visual Merchandising in Retail
- Trends in Retail industry

### BOOKS RECOMMENDED:

- Easey, Mike, Fashion Marketing, Blackwell Science Ltd, London 1995.
- Kotler, P., Marketing Management: Analysis, Planning, Implementation and Control (9<sup>th</sup> Ed), Prentice Hall, New Delhi 1998.
- Donnellan, John, Merchandise buying & management, Fairchild publication, New York, 1999.
- Stone, Elanie & Samples, Jean. A., Fashion Merchandising, McGraw Hill, New York. 1985.
- Stephens, Frings Gini, Fashion Concept to Consumer, 3<sup>rd</sup> ed., Prentice Hall International, New Jersey, 2008.
- Green, Wood, Fashion Innovation and Marketing, Macmillan Press Ltd. London, 2003.
- Diamond, Jay & Ellen, Contemporary Visual Merchandising and Environmental, Pearson Prentice Hall, Fourth Edition

**PAPER CODE- DHSC 614C**  
**Apparel Marketing and Merchandising**  
**(Practical)**

**Credits: 4**

**Max Marks: 100**

**Contact Hrs/week: 4**

**Total Hrs: 60**

### Course Objectives (COs):

**This course will enable the students to –**

1. Impart knowledge to students related to apparel marketing and merchandising.
2. Impart knowledge about trend forecasting

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
PAPER CODE DHSC 613C	Apparel Marketing And Merchandising (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO291:</b> Develop skill in promotional material for marketing</p> <p><b>CO292:</b> Analyze trend forecasting for fashion industry.</p> <p><b>CO293:</b> Create catalogue and theme based window display</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials</p> <p><b>Learning activities for the students:</b> Practical exercises, Simulation, Portfolio Preparation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation

### CONTENTS

- Fashion forecast analysis:
  - To develop mood boards & theme boards

**10 hrs**

- Colour
  - Silhouettes & detailing
  - Material & textures
  - Print & graphics
  - Accessories
- To prepare a Catalogue of various available/sourced fabrics **14 hrs**
    - Fashion Trend Report (Project)
    - Case Study of various Brands
- Designing of promotional material **16 hrs**
    - Catalogue-Accessories, Children's wear, men's wear, women's wear
    - Brochures/Leaflets
    - Shopping/Carry Bags
    - Visiting Cards
    - Advertisement-For print media
- Display **10 hrs**
    - Market Survey of Fashion brand Stores
    - Theme based Window display
    - Analyzing assortment plan for a store

#### **BOOKS RECOMMENDED:**

- Easey, Mike, Fashion Marketing, Blackwell Science Ltd, London 1995.
- Kotler, P., Marketing Management: Analysis, Planning, Implementation and Control (9<sup>th</sup> Ed), Prentice Hall, New Delhi 1998.
- Donnellan, John, Merchandise buying & management, Fairchild publication, New York, 1999.
- Stone, Elanie & Samples, Jean. A., Fashion Merchandising, McGraw Hill, New York. 1985.
- Stephens, Frings Gini, Fashion Concept to Consumer, 3<sup>rd</sup> ed., Prentice Hall International, New Jersey, 2008.
- Green, Wood, Fashion Innovation and Marketing, Macmillan Press Ltd. London, 2003.
- Diamond, Jay & Ellen, Contemporary Visual Merchandising and Environmental, Pearson Prentice Hall, Fourth Edition

**Programme- B.Sc. Clinical Dietetics (Elective)**

**OUTCOMES - Academic Year- 2020-21**

**PROGRAMME OUTCOMES**

<b>PO1</b>	<b>Innovative.</b> Understand, acquire, articulate, retain, apply and communicate scientific concepts, experimental results and analytical arguments to fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
<b>PO2</b>	<b>Critical thinking and Problem Solving:</b> Employ critical thinking, analytical reasoning and the scientific knowledge to design, carry out, record and analyze various aspects of science. It will help to develop scientific temper that will be more beneficial for the society.
<b>PO3</b>	<b>Employability:</b> Apart from the research jobs, students can also work or get jobs in Marketing, Business & Other technical fields. Science graduates also recruited in the bank sector to work as customer service executives. Students can also find employment in government sectors. Often, in some reputed universities or colleges in India and abroad the students are recruited directly by big MNC's after their completion of the course.
<b>PO4</b>	<b>Collaborative:</b> Apply the knowledge of basic science, life sciences and fundamental sciences to multidisciplinary level like genetic engineering or Nanotechnology.
<b>PO5</b>	<b>Applicability:</b> Acquire the ability to engage in independent and self-learning as well as to successfully pursue their career objectives in advanced education and in professional courses, in a 22 scientific career in government or industry, in a teaching career in the school systems, or in a related career following graduation. Understand the importance of modern branches of science like genetic engineering for the improvement of human race.
<b>PO6</b>	<b>Research Aptitude:</b> Demonstrate the knowledge in understanding research and addressing practical problems and to apply various scientific methods to address different questions by formulating the hypothesis, data collection and critically analyze the data to decipher the degree to which their scientific work supports
<b>PO7</b>	<b>Sustainable Development:</b> Develop respect for nature by participating in various social and cultural activities voluntarily, in order to spread knowledge, creating awareness about the social evils, blind faith, etc. and analyze the impact of anthropogenic activities on environment.

<b>PO8</b>	<b>Communication Skills:</b> Communicate effectively on various scientific issues with the with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
<b>PO9</b>	<b>Ethics:</b> Stay firm on the value systems of their culture, including their own for a healthy socio cultural environment. Students will also strengthen their ethical and moral values and shall be able to deal with psychological weaknesses.
<b>PO10</b>	<b>Life-long learning:</b> Develop scientific outlook not only with respect to science subjects but also in all aspects related to life. It will enable the graduate prepare for national as well as international competitive examinations, especially UGC-CSIR NET and UPSC Civil Services Examination. Students will acquire digital skills and integrate the fundamental concepts with modern tools.
<b>PO11</b>	<b>Leadership readiness:</b> Graduates are expected to be familiar with decision making process and basic managerial skills to become a better leader. Skills may include defining objective vision and mission, how to become charismatic inspiring leader and so on.
<b>PO12</b>	<b>Instrumentation:</b> Acquire the skills in handling scientific instruments, planning and performing in laboratory experiments.

## PROGRAMME SPECIFIC OUTCOMES



<b>CND 202</b>	<b>CO 16</b>		x		x						
	<b>CO 17</b>		X		x						
	<b>CO 18</b>				x						
	<b>CO 19</b>				x						
<b>CND 203</b>	<b>CO 20</b>		X		x						
	<b>CO 21</b>				x						
	<b>CO 22</b>					x					
<b>CND 301</b>	<b>CO 23</b>									x	
	<b>CO 24</b>										x
	<b>CO 25</b>									x	
	<b>CO 26</b>										x
	<b>CO 27</b>										x
	<b>CO 28</b>									x	
	<b>CO 29</b>									x	
<b>CND 302</b>	<b>CO 30</b>				x						
	<b>CO 31</b>				x						
	<b>CO 32</b>				x						
<b>CND 303</b>	<b>CO 33</b>				x						
	<b>CO 34</b>					x					
	<b>CO 35</b>					x					
<b>CND 401</b>	<b>CO 36</b>									x	
	<b>CO 37</b>	x								x	
	<b>CO 38</b>						x				
	<b>CO 39</b>									x	
	<b>CO 40</b>									x	
<b>CND 402</b>	<b>CO 41</b>	x									
	<b>CO 42</b>	x									
	<b>CO 43</b>				x				x		
<b>CND 403</b>	<b>CO 44</b>				x						
	<b>CO 45</b>					x					
	<b>CO 46</b>								x		
<b>CND 501</b>	<b>CO 47</b>					x					
	<b>CO 48</b>					x					
	<b>CO 49</b>					x					
	<b>CO 50</b>									x	
<b>CND 502</b>	<b>CO 51</b>									x	
	<b>CO 52</b>									x	
<b>CND 503</b>	<b>CO 53</b>									x	
	<b>CO 54</b>									x	
	<b>CO 55</b>				x						
	<b>CO 56</b>				x						

CND 601	CO 57				X						
	CO 58							X			
	CO 59							X			
CND 602	CO 60								X		
	CO 61								X		
	CO 62								X		
CND 603	CO 63				X				X		
	CO 64					X					
	CO 65								X		

**B.Sc. (ELECTIVES) Clinical Dietetics (2020-2021)  
COURSE OUTCOMES, SEMESTER I**

**PAPER CODE-CND 101  
Human Physiology  
(Theory)**

**Credits-03  
Max Marks -100  
Contact Hrs. / Week-03  
Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Know in detail about various systems of body.
2. Acquire knowledge regarding the human body.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CND 101	Human Physiology (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO1:</b> Know the principles of normal biological function in human body. <b>CO2:</b> Outline basic human physiology and correlate with structures of the organs.</p>	<p><b>Approach in teaching:</b> Lecture method, Power point presentation, Discussions and Tutorials.</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Seminar presentation and giving tasks.</p>	<p>Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects</p>

**CONTENTS**

**Unit I**

**9hrs.**

- Cell and Tissues
- Structure and functions
- Skeletal system
- Structure, formation & types of bones
- Sense organs
- Structure & functions

**Unit II**

**9hrs.**

- Cardiovascular system
- Blood: composition, functions, blood group
- Heart: structure, blood vessels, cardiac cycle
- Circulation of blood
- Blood pressure, hypertension, heart attack
- Lymphatic system
- Structure & function of lymph
- Lymph vessels
- Lymph nodes
- Importance and significance in diseases
- ImmUnity & vaccines

**Unit III**

**9hrs**

- Nervous system
- Structure & function of neurons
- Structure & function of Brain & spinal cord
- Peripheral system
- Hypothalamus & its functions
- Endocrine system
- Structure & function of endocrine glands
- Role of hormones
- Related disorders

**Unit IV**

**9hrs**

- Digestive system
- Structure & functions of digestive organs
- Digestion & absorption of carbohydrates, proteins, fats

- Respiratory system
- Structure & function of respiratory organs
- Role of lungs in exchange of gases
- Vital capacity

**Unit V**

**9hrs**

- Urinary system
- Structure & functions of kidney
- Urine formation
- Factors affecting urine formation & excretion
- Reproductive system
- Structure & functions of male & female reproductive organs
- Menstrual cycle, spermatogenesis

**BOOKS RECOMMENDED::**



- Sears, W. G. Anatomy and Physiology for Nurses
- Donald C Rizzo. (2007). Fundamentals of Anatomy & Physiology Thomas Learning 2007
- Glenister, TWA & Jean RW Ross (2004) Anatomy and Physiology for Nurses CBS Publishers
- Anatomy and physiology in Health and Wellness; Anne Waugh & Allison Grant, 11<sup>th</sup> ed, Churchill Livingstone Elsevier.
- Keele, C.A. and Neil, E. (1978) Samson Wright's Applied Physiology, Oxford University Press
- Tortora, G.J. and N. P. Anagnostakos (1984), Principles of Anatomy and Physiology, Harper and Row Publisher, New York
- Armstrong, K.F. Anatomy and Physiology for Nurses
- Pearce, A. Anatomy and Physiology for Nurses, Faber and Faber
- Pike and Brown: Nutrition – An integrated approach – John Wiley and sons, New York
- Robinson C.H., Lawler M.R. 'Normal and Therapeutic Nutrition'. Macmillan

**PAPER CODE-CND 101**  
**Fundamentals of Nutrition**  
**(Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Comprehend the meal management system.
2. Understand the relationship between nutrition and human well-being.
3. Acquire knowledge regarding principles of planning diets.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CND 102</b>	<b>Fundamentals of Nutrition (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO3:</b> Comprehend relationship between food, nutrition and health.</p> <p><b>CO4:</b> Understand the functions of food, basic concepts of food groups and balanced diet</p> <p><b>CO5:</b> Identify and explain nutrients in foods and the specific functions in maintaining health.</p> <p><b>CO6:</b> Understand sources and requirement of various nutrients.</p>	<p><b>Approach in teaching:</b> Lecture method, Power point presentation, Discussions and Tutorials.</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Seminar presentation and giving tasks.</p>	Class test, Semester end examinations, Quiz, Assignments and Presentations.

**CONTENTS**

**Unit I**

**9hrs.**

- Introduction to health
- Dimensions & scope
- Physical ,mental, social, spiritual, emotional, vocational, etc
- Concept of Positive Health and wellbeing
- Concept and thorough understanding of
- Definition of food, nutrients, nutrition, malnutrition (over & under nutrition)
- Nutrient classification of food
- Basic food group
- Recommended Dietary Allowances
- Dietary guidelines

**Unit II**

**9hrs**

- Composition , classification, functions, requirements, sources of Macro nutrients:
- Carbohydrate
- Protein
- Fat

**Unit III**

**9hrs**

- Composition , classification, functions, requirements, sources of Micro nutrients
- Vitamins-water soluble(vitamin-B,C),
- Fat soluble(vitamin -A,D,E,K)
- Antioxidants

**Unit IV**

**9hrs**

- Composition , classification, functions, requirements, sources of Micro nutrients
- Minerals & trace elements-calcium, phosphorous, iron, magnesium, sodium, iodine

**Unit V**

**9hrs**

- Functions & requirements:
- Water
- Fiber
- Enzymes : functions , classification

**BOOKS RECOMMENDED:**

- Srilakshmi. B. Food Science. New -Age International (P) Ltd. Publishers, New Delhi, 1997.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Banaglore 1990.
- Potter, N.N. Food Science, CBS Publishers and Distributors. Delhi, 1987.
- Bennion, M. Introductory Foods. Eight edition. Macmillan Publishing Company, New York. 1985.
- Bogstrom, G. Principles of Food Science, Vol I and II, The Macmillian Co., New York, 1968.
- Charly, H. Food Science. John Wiley and Sons Inc, New York.
- Griswald, R.M. The Experimental study of foods. Houghton Mifflin Co., Boston, 1962.
- Hughes, Osee. Introduction Foods. The Mac Millan Co, New York, 1962.
- Lowe, B. Experimental Cookery. John Wiley and Sons Inc, New York.
- Manay, N.S. and Shadaksharaswamy M. Food Facts and Principles. Second edition, New Age International Publisher, New Delhi 2001.
- Meyer. L.H. Food Chemistry, CBS Publishers and Distribution, Delhi, 1987.

- Raina Usha, Kashyap Sushma, Nurala Vinita .Basic Food Preparation , A Complete Manual . Orient Longman
- Agarwal, Gupta and Khuteta, Food and Nutrition, Ajmer book Company, Jaipur 2001, Singh Varnda (in Hindi)
- Gupta. S., Seth, R., Khanna, K. and Mahna, R. Art and Science of Cooking-A Student's Manual, Blaze Publishers and Distributors Pvt. Ltd., New Delhi 1991.
- Mathur, M., Goyle, A., Gupta, P. and Magon, A Book of Recipes. Indian Book House, Jaipur, 1995.

**PAPER CODE-CND 103**  
**Fundamentals of Nutrition**  
**(Practical)**

**Credits-02**

**Max Marks -100**

**Contact Hrs. / Week -04**

**Total Hrs -60**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the basic terms and methods used in cooking.
2. Understand various food preparations and the principles involved in food preparations.
3. Understand knowledge regarding the portion size and nutritional quality of food product.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CND 103</b>	<b>Fundamentals of Nutrition (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO7:</b> Develop an understanding about the methods of preparing food.</p> <p><b>CO8:</b> Apply principles of menu planning and food presentation.</p> <p><b>CO9:</b> Modify recipe/formulation for specific purposes, such as nutrient enhancement and quality improvement</p>	<p><b>Approach in teaching:</b>            Demonstrations,            Laboratory exercises,            Discussions and interaction with chefs and cooks</p> <p><b>Learning activities for the students:</b>            Use of recipe books and related videos,            Participation in cookery competitions, Product development.</p>	Class test Semester end examinations Quiz Assignments

**CONTENTS**

- Weights and measures, basic terms used in cookery
- Methods of cooking:-Preparation of 2 dishes (each/combination) of
- Dry heat:
  - Roasting
  - Baking
  - Grilling/broiling
- Frying

- Deep frying
- Shallow frying
- Sautéing
- Moist heat
  - Boiling
  - Poaching
  - Steaming :Direct, Indirect, Pressure Cooking
  - Stewing
- Combination cooking: moist heat/frying/dry heat
- Preparation of nutrient rich dishes
- Energy
- Protein
- Vitamin A
- Calcium
- Iron
- Ascorbic acid.
- Menu Planning of
  - 3 course meal
  - 5 course meal
  - 7 course meal
- Table settings & meal presentations

**BOOKS RECOMMENDED::**

- Raina Usha, Kashyap Sushma, Nurala Vinita .Basic Food Preparation , A Complete Manual . Orient Longman
- Agarwal, Gupta and Khuteta, Food and Nutrition, Ajmer book Company, Jaipur 2001, Singh Varnda (in Hindi)
- Gupta. S., Seth, R., Khanna, K. and Mahna, R. Art and Science of Cooking-A Student's Manual, Blaze Publishers and Distributors Pvt. Ltd., New Delhi 1991.
- Mathur, M., Goyle, A., Gupta, P. and Magon, A Book of Recipes. Indian Book House, Jaipur, 1995.

**COURSE LEARNING OUTCOMES - Semester II**  
**PAPER CODE- CND 201**  
**Human Nutrition**  
**(Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the basic principles of nutrition.
2. Enable the students to apply knowledge of nutrition to daily life.
3. Impart in-depth knowledge of nutrients and their interrelationships.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CND 201	Human Nutrition (Theory)	<b>The students will be able to –</b> <b>CO10:</b> Execute the knowledge of biochemical monitors used to assess the nutritional status of different nutrients. <b>CO11:</b> Identify the concept of growth and development <b>CO12:</b> Identify the role of carbohydrates, lipids and proteins required in human nutrition <b>CO13:</b> Examine energy requirement and expenditure in the human body during rest and physical activity <b>CO14:</b> Identify the diseases and symptoms resulting from deficiency and excess of major and minor nutrients & effect of processing on them.	<b>Approach in teaching:</b> Interactive Lectures, Discussion, assignments  <b>Learning activities for the students:</b> Self learning assignments, Seminar presentation	Class test, CA test, Semester end examinations, Quiz, Assignments, Presentation,

**CONTENTS**

**Unit I**

**9hrs**

- **Body composition**
  - Methods for Analyzing Body composition.
  - Growth and development
  - General aspects of physical and cellular growth,

**Unit II**

**9hrs**

- **Energy**
  - Definitions, Units of energy, Components of Energy Expenditure,
  - BMR and Thermal effect of food
  - Measurement of energy expenditure: Direct and Indirect
- **Carbohydrates**

- Classification
- Digestion, Absorption & metabolism – an overview
- Dietary fibre – classification, food sources, health benefits
- Resistant Starch, Fructo-oligosaccharides

### Unit III

9hrs

- **Proteins**
  - Review of Proteins and amino acids
  - Digestion, absorption & Metabolism– an overview
  - Evaluation of Quality of Proteins: Biological and Chemical methods
  - Amino Acid imbalances
  - Protein Deficiency and Toxicity: concerns of protein supplementation.

### Unit IV

9hrs

- **Lipids**
  - Overview of lipids and fatty acids
  - Digestion, absorption & metabolism– an overview
  - EFA its importance
  - Lipoproteins: Types and importance
  - Trans-fats and their health effects
  - MCTs their nutritional importance
  - Consequences of deficiency and excess
  - Interrelationships between macronutrients

### Unit V

9hrs

- An overview of deficiency and toxicity and factors influencing absorption of **Vitamins**
  - Fat soluble (A, D, E and K)
  - Water soluble vitamins (B-Complex and C)
- **Minerals**
  - Macro-minerals (Ca, P, Na, K)
  - Micro-minerals (Iron, Zn)
  - Trace elements (Se, Cu)
  - Interrelationships between macronutrients and micronutrients

### BOOKS RECOMMENDED::

- Pike and Brown: Nutrition – An integrated approach – John Wiley and sons, New York
- Robinson C.H., Lawler M.R. 'Normal and Therapeutic Nutrition'. Macmillan Publishing Company. 17 Edition. 1986
- Antia F.P. 'Clinical Dietetics and Nutrition'. III Edition. Oxford University Press. Bombay, 1989.
- Modern Nutrition in Health and Disease. Shills, M.E.and Young V.R. Bombay K.M. Varghese Company (vi edition 1988)
- Passmore, P. and M.A. Eastwook. (1986). Human Nutrition and Dietetics ELBS, Churchill,Livingstone, 8 Edition

- Mahan, L.K. & Ecott-Stump, S. (2000). Krause's Food, Nutrition and Diet Therapy, W.B. Saunders Pvt. Ltd.
- Anderson, L., Dibble, M. and Mitchell, H. (1992) Nutrition in health and disease, 17th ed., J.B. Lippincott Co.
- Philadelphia
- Bamji, M., Rao, P. N. and Reddy, V. Textbook of Human Nutrition, Oxford: IBH Pub. Co.
- Davidson, S., Passmore, R., Brock, J and Truswell, A., (1975) Human nutrition and dietetics, 6th ed., ELBS
- Edinburgh.
- Guthrie, H. (1986) Introductory Nutrition, 6th ed., Times Mirror/Mosby College Publication.
- Robinson, C. and Lawler, M., (1982) Normal and therapeutic nutrition, 16th ed.;Macmillan

**PAPER CODE-CND 202**  
**Family Meal Management**  
**(Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Know the factors affecting the nutrient needs during different stages of life cycle & the RDA for various age groups.
2. Gain knowledge of dietary modification for weight management.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CND 202</b>	<b>Family Meal Management (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO15:</b> Identify the factors effecting meal planning.</p> <p><b>CO16:</b> Explain the physiological changes, nutritional guidelines and healthy food habits during adulthood, pregnancy, lactation and old age.</p> <p><b>CO17:</b> Describe growth and development, nutritional guidelines and nutritional concerns during infancy, preschool years, school age and adolescence.</p> <p><b>CO18:</b> Discuss the importance of nutrition for physical fitness and sport, during calamities and emergencies.</p> <p><b>CO19:</b> Know the nutritional needs for effective weight management.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Power point presentations, Discussion, Tutorials, Reading assignments</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Effective questions, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual and group projects

## **CONTENTS**

### **Unit I**

**9hrs**

- Introduction, importance & goals of Meal planning
- Basic principles of meal management
- Steps in meal management
- Factors affecting meal management - Nutritional, socio-cultural, religious, geographic, economic, availability of time & material resources
- Use of convenience foods in Meal planning

### **Unit II**

**9hrs**

- Meal management for -
- Infants
- Preschool children
- School children

### **Unit III**

**9hrs**

- Meal management for -
- Adolescents
- Adult
- Old age

### **Unit IV**

**9hrs**

- Special nutrition for
- Pregnancy
- Lactation
- Sports
- Space
- Higher altitude

### **Unit V**

**9hrs**

- Energy modifications and nutritional care for weight management
  - Identifying the overweight and obese individuals, factors contributing to obesity, low energy diets, balanced energy reduction, behavioural modification and prevention
  - Underweight – etiology and assessment, high energy diets for weight gain.
- Functional foods: probiotics, nutraceuticals



- Methods of improving nutritional quality of foods : fermentation, germination, , fortification

#### **BOOKS RECOMMENDED:**

- Srilakshmi, B. 1997 Dietetics. New Age International (P) Ltd, Publishers, New Delhi.
- Robinson CH, Lawler MR, Chevoweth WL, Garwick AE. Normal and Therapeutic Nutrition. Mac Millan Publishing Company, New York, 1982.
- Swaminathan, M. 1997. Principles of Nutrition and Dietetics. The Bangalore Printing and Publishing Co. Ltd, Bangalore. (1997 reprinted)
- Khanna, K., Gupta, S., Pass, S.J, Pass, S.J, Seth, R., Mahan, R. and Puri, S. 1997 Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd, New Delhi.
- Antia,F.P and Abraham, P. 1997 Clinical Dietetics and Nutrition. Oxford University Press, New Delhi (4 Ed)
- Begum, M.R. 1996. A Text Book of Foods, Nutrition and Dietetics. Sterling Publishers Pvt. Ltd., New Delhi. (Revised 2 Ed)
- Bamji, M.S, Rao, N.P. and Reddy, V., 1999. Textbook of Human Nutrition Oxford & IBH publishing Co Pvt. Ltd, New Delhi.
- Burtis, G., Davis, J. and Martin, S. 1998. Applied Nutrition and Diet Therapy.B. Saunders Company, Philadelphia.
- Garrow, J.S, and James, W.P.t, 1994. Human Nutrition and Dietetics. Churchill Livingstone, New York. (4 Ed)
- Joshi, S.A., 2001 Nutrition and Dietetics. Tata Mc Graw Hill Publishing Company Ltd, Delhi. (9 Ed).
- Kreutler, P.A and Czajka Narins, D.M. 1987 Nutrition in Perspective. Prenticend Hall, INC, Englewood cliffs, New Jersey. (2 Ed)
- Mahan, L.K. and Stump, S.E., 2000. Karuse’s Food, Nutrition and Diet Therapy.W.B Saunders Company, Philadelphia, Pennsylvania. (10 Ed)
- Sabarwal, B. 1999 Encyclopedia of Food, Nutrition, Dietetics and Health (4Vol)Efficient Offset, Delhi.
- Sabarwal, B. 1999. Meal Management. Common Wealth Publishers, New Delhi.
- Sabarwal, B. 1999 Foundations of Nutrition. Common Wealth Publishers, New Delhi.
- Sharma, S., 2000. Human Nutrition and meal planning. Jnananda Prakashan (P & D), New Delhi. (1st Ed)
- Shills, M.E, Olson, J.A, Shike, M and Ross, A.C; 1998. Modern Nutrition in Health and Disease. Williams & Williams, Baltimone, U.S.A. (9 Ed)
- Stanfield, P.S 1992 Nutrition and Diet Therapy. Jones and Barlett Publishers, andBoston-London. (2 Ed)
- Swaminathan M. 1997. Advanced Text-Book of Food & Nutrition (Vol I & II). The Banglore Printing and Publishing Co Ltd, Bangalore, Mudambi, S.R and Rajagopal, M.V., 1997. Fundamentals of Foods & Nutrition. New Age International (P) Ltd, New Delhi.
- Williams, S.R, 1990 Essential of Nutrition and Diet Therapy. Times Mirror/ Mosby College Publishing, St. Louis, Missousn. (5 Ed)
- Whitney, E.N and Rolfes, S.R. 1996. Understanding Nutrition. West Publishing Company, St Paul, M/N. (7 Ed).
- Dietary Tips For Better Health, Food & Nutrition Board .MWCD Govt. of India(2007)
- Dietary Tips For the Elderly, Food & Nutrition Board .MWCD Govt. of India(2007)

**PAPER CODE- CND 203**  
**Family Meal Management**  
**(Practical)**

**Credits-02**

**Max Marks -100**

**Contact Hrs. / Week -04**

**Total Hrs -60**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the use of Exchange list.
2. Plan diet for individuals at different stages of life cycle, having different physiological conditions and for weight management.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CND 203</b>	<b>Family Meal Management (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO20:</b> Interpret the food exchange lists and use them for meal planning.</p> <p><b>CO21:</b> Plan and prepare balanced meals and nutritious snacks for various age groups.</p> <p><b>CO22:</b> Develop skills in counselling obese and underweight individuals.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b> Self -learning assignments, Effective questions, Seminar presentation, tasks on preparation of diet plans for a given situation</p>	Class test, Semester end examinations, Quiz, Individual and group projects

**CONTENTS**

- Use of exchange list.
- Planning and preparing nutrient rich dishes.
- Planning, preparation and serving of meals for
  - Preschool child
  - School age child
  - Adolescent,
  - Adult
  - Old age person
  - Pregnant lady
  - Lactating mother
  - Athlete
- Planning, preparation and serving of meals for individuals -
  - Overweight
  - Underweight

**BOOKS RECOMMENDED:**

- Robinson CH, Lawler MR, Chevoweth WL, Garwick AE. Normal and Therapeutic Nutrition. Mac Millan Publishing Company, New York, 1982.
- Khanna, K., Gupta, S., Pass, S.J, Pass, S.J, Seth, R., Mahan, R. and Puri, S. 1997 Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd, New Delhi.

- Antia, F.P and Abraham, P. 1997 Clinical Dietetics and Nutrition. Oxford University Press, New Delhi (4 Ed)
- Begum, M.R. 1996. A Text Book of Foods, Nutrition and Dietetics. Sterling Publishers Pvt. Ltd., New Delhi. (Revised 2 Ed)
- Joshi, S.A., 2001 Nutrition and Dietetics. Tata Mc Graw Hill Publishing Company Ltd, Delhi. (9 Ed).
- Kreutler, P.A and Czajka Narins, D.M. 1987 Nutrition in Perspective. Prenticend Hall, INC, Englewood cliffs, New Jersey. (2 Ed)
- Mahan, L.K. and Stump, S.E., 2000. Karuse's Food, Nutrition and Diet Therapy.W.B Saunders Company, Philadelphia, Pennsylvania. (10 Ed)
- Sabarwal, B. 1999 Encyclopedia of Food, Nutrition, Dietetics and Health (4Vol)Efficient Offset, Delhi.
- Sabarwal, B. 1999. Meal Management. Common Wealth Publishers, New Delhi.
- Sabarwal, B. 1999 Foundations of Nutrition. Common Wealth Publishers, New Delhi.
- Sharma, S., 2000. Human Nutrition and meal planning. Jnananda Prakashan (P & D), New Delhi. (1st Ed)
- Dietary Tips For Better Health, Food & Nutrition Board .MWCD Govt. of India(2007)
- Dietary Tips For the Elderly, Food & Nutrition Board .MWCD Govt. of India(2007)

### **COURSE LEARNING OUTCOMES - Semester III**

#### **PAPER CODE- CND 301 Women Health & Nutrition (Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

#### **Course Objectives:**

**This course will enable the students to –**

1. Be acquainted with status of women in family & society.
2. Understand how various factors influence the health & nutritional status of women.
3. Understand how health of women influence family, community & national development.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CND 301	Women Health & Nutrition (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO23:</b> Demonstrate the status of women in family and society.</p> <p><b>CO24:</b> Identify the role of women in National development.</p> <p><b>CO25:</b> Define Family Planning and examine women as reproductive Unit.</p> <p><b>CO26:</b> Illustrate the nutritional requirements of women through lifecycle and the special care needed during certain physiological conditions.</p> <p><b>CO27:</b> List various policies and legislations for women.</p> <p><b>CO28:</b> To explain the role of education in empowering women.</p> <p><b>CO29:</b> Describe how the family, community and National development is influenced by women's health.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments, Demonstration.</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Kahoot Quiz, Simulation, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual projects.

**Unit I**

**9 hrs.**

- Role of Women in National Development
- pre and post-independence
- present scenario
- Women in family and community
- Demographic changes as per the latest census report (2011)
- Sex ratio
- Life expectancy
- Literacy rate
- Fertility related statistics
- Birth Rate, General Fertility Rate, General Marital Fertility Rate, Age-Specific Fertility Rate, Total Fertility Rate, Gross Reproduction Rate, Net Production Rate, Child Women Ratio, Pregnancy Rate, Abortion Rate, Abortion Ratio, Marriage Rate

**Unit II**

**9hrs.**

- Women as a reproductive Unit
- Girl child and gender bias
- Family planning
- Definition
- Health aspects
- National population policy
- Fertility regulating methods
- Post- conceptional methods
- National Family Welfare Programme

**Unit III****9hrs**

- Women's nutritional requirements and food need throughout lifecycle
- Special Care during certain physiological conditions (mental- social support and food fads and myths )
- Menarche
- Pregnancy
- Lactation
- Menopause
- Special Care in chronic degenerative diseases (mental- social support and food fads and myths )
- HIV and AIDS
- Cancers- breast cancer and cervical cancer
  - Overview to the funding agencies for the same ( national & international)

**Unit IV****9hrs**

- Policies and Legislations
  - CEDAW ( Convention on Elimination of all forms of Discrimination Against Women)
  - WRLH (Women's Right to Life and Health)
  - Safe motherhood & child survival
  - Ministry of Women & Child Guidelines
  - Laws pertaining to rape and female feticide

**Unit V****9hrs**

- Empowerment of women
- Role of education
- Various national schemes for women  
SABLA, IGMSY,IMY, Working Women Hostel, STEP, Swadhar, KSY and BSY.

**BOOKS RECOMMENDED:**

- Park K & Park (2011) Park's Textbook of Preventive and Social Medicine. 21<sup>st</sup> Edition. Banarsidas Bhanot Publications UP, India
- Women and Health (2011) Mary IJ, Chidambaranathan C. Pointer Publication, Jaipur.
- Bhatia A (2000). Women Development and NGO's. Rawat Publications
- Women & Society (1995) Women & educational development series-10. Common Wealth Publishers
- Nutrient Requirement and Recommended Dietary Allowances. (2010) ICMR
- ACC/SCN Policy Discussion Papers
- UNICEF (1994): The Urban Poor And Household Food Security, UNICEF
- IDRC (1993): Gender, Health and Sustainable Development.
- NFHS Reports.
- UNICEF-State of World's Children
- Annual Report of Government of India (National Development)
- World Health Organization (2010): Working with individuals, families and communities to improve maternal and newborn health
- Gopalan, G. & Kaur, S. (Editors) (1989). Women & Nutrition in India. Nutrition Federation of India

- Policy documents, 11<sup>th</sup> Five Year Plan. Ministry of Women & Child, Government of India
- ICMR Spl.Rep.Ser.No.42. Nutrition for Mother and Child. NIN Hyderabad

**PAPER CODE- CND 302**  
**Medical Nutrition Therapy - I**  
**(Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Acquire knowledge regarding effect of various diseases on nutritional status
2. Gain an understanding of the nutrient and dietary requirements of different diseases.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
CND 302	Medical Nutrition Therapy–I (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO30:</b> Explain therapeutic adaptations of normal diet.</p> <p><b>CO31:</b> Discuss the aetiology, symptoms and nutritional management of fevers and infections</p> <p><b>CO32:</b> Describe risk factors, assessment, complications and dietary management of common GI diseases, Liver conditions and heart diseases</p>	<p><b>Approach in teaching:</b> Discussion, Powerpoint Presentations, Videos, Demonstration.</p> <p><b>Learning activities for the students:</b> Field activities, Presentation, Giving tasks, self- learning assignments.</p>	Class test, Semester end examinations, Quiz, Assignments, Individual and group projects

**CONTENTS**

**Unit I**

**9hrs.**

- Medical Nutrition Therapy (MNT)
- Team approach of health care.
- Dietitian – types, qualities, qualifications and role of dietitian in management of hospital diet
- Basic concepts of diet therapy – Therapeutic adaptations of normal diet
- Routine Hospital diets – Regular, soft, fluid
- Special feeding methods (enteral, parental), feeding the patients and psychology of feeding.
- Meaning, aim, principles, scope and types of diet counseling
- Roles and responsibilities of counselors

**Unit II**

**9hrs**

- Classification, metabolism and diet in fevers (acute & chronic)
- HIV infection and AIDS: Epidemiology, transmission of HIV, pathophysiology, clinical manifestations, ImmUnity and AIDS virus, dietary management, prevention and control.

**Unit III****9hrs**

- Incidence, etiology, pathophysiology, clinical manifestations, complications and dietary management and counseling for the following GIT diseases
- Diarrhea (acute and chronic), constipation ( atonic and spastic)
- Peptic ulcer, ulcerative Colitis, Malabsorption Syndrome Carbohydrate and Fat intolerance – Sprue, Celiac disease

**Unit IV****9hrs**

- Incidence, etiology, pathophysiology, clinical manifestations, complications and dietary management and counseling for the following diseases
- Liver disease –Hepatitis, Cirrhosis, Hepatic Coma, liver transplant
- Diseases of Pancreas and Gall bladder

**Unit V****9hrs**

- Incidence, etiology, pathology and metabolic aberrations, clinical manifestations, complications and dietary management and counseling for Heart diseases
- Cardiovascular diseases – Hyperlipidemia, Hypertension, Coronary Heart diseases

**BOOKS RECOMMENDED:**

- Robinson C.H., Lawler M.R. 'Normal and Therapeutic Nutrition'. Macmillan Publishing Company. 17<sup>th</sup> Edition. 1986.
- Shils, M.E. and Young V.R. (vi edition 1988) Modern Nutrition in Health and Disease. Bombay K.M. Varghese Company
- Antia, F.P. (1989) Clinical Dietetics and Nutrition. Oxford University Press, Bombay
- Passmore, P. and M.A. Eastwood. (1986). Human Nutrition and Dietetics. ELBS, Churchill, Livingstone, 8 Edition
- Mahan, L.K. & Ecott-Stump, S. (2000) : Krause's Food, Nutrition and Diet Therapy. W.B. Saunders Pvt. Ltd.
- Sharma rekha (2004) Diet Management. Elsevier Publication
- Some Therapeutic Diets. NIN. ICMR Publications
- Raghuram T C, Pasricha S, Sharma R D. Diet & Diabetes NIN ICMR Publications
- Krishnaswamy Kamala. Diet & Heart Disease. NIN ICMR Publications

**PAPER CODE- CND 303****Diet Therapy - I  
(Practical)****Credits-02****Max Marks -100****Contact Hrs. / Week -04****Total Hrs -60****Course Objectives:****This course will enable the students to –**

1. Plan and prepare diets for patients suffering from various diseases covered in theory.

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CND 303</b>	<b>Diet Therapy-I (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO33:</b> Evaluate the therapeutic foods available in market.</p> <p><b>CO34:</b> Demonstrate skills in modifying diets and planning therapeutic diets for various conditions.</p> <p><b>CO35:</b> Develop skills in preparing counselling material like brochure, pamphlet etc.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Reading assignments, Team teaching</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Effective questions, Seminar presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Assignments, Individual and group projects

### CONTENTS

- Special feeding methods (Market survey of enteral, parenteral and oral feeds)
- Writing articles for counselling – preparing brochures, pamphlets, etc.
- Need based programme planning, organizing counselling sessions of particular age group, with specific disease
- Planning and preparation of diets in the following diseases
- Febrile diseases – Typhoid, Tuberculosis
- GIT Diseases –Diarrhea, Constipation, Peptic ulcers, Ulcerative Colitis
- Liver disease –Hepatitis, Cirrhosis
- Pancreatitis
- Diseases of Gall bladder (with obesity)
- Heart disease – Hyperlipidemia, Hypertension (with obesity)

### BOOKS RECOMMENDED:

- Robinson C.H., Lawler M.R. 'Normal and Therapeutic Nutrition'. Macmillan Publishing Company. 17 Edition. 1986.
- Antia, F.P. (1989) Clinical Dietetics and Nutrition. Oxford University Press, Bombay
- Passmore, P. and M.A. Eastwook. (1986). Human Nutrition and Dietetics. ELBS, Churchill, Livingstone, 8 Edition
- Mahan, L.K. & Ecott-Stump, S. (2000) : Krause's Food, Nutrition and Diet Therapy. W.B. Saunders Pvt. Ltd.
- Sharma rekha (2004) Diet Management. Elsevier Publication
- Some Therapeutic Diets. NIN. ICMR Publications
- Raghuram T C, Pasricha S, Sharma R D. Diet & Diabetes NIN ICMR Publications
- Ghafoorunissa & Krishnaswamy Kamala. Diet & Heart Disease. NIN ICMR Publications



**COURSE LEARNING OUTCOMES - Semester IV**

**PAPER CODE-CND 401  
Problems in Human Nutrition  
(Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Become aware of the nutrition related problems in the community and the resources to prevent or cure them.
2. Evaluate and interpret parameters of nutritional status assessment.

**Course Outcomes (COs):**

<b>Course</b>	<b>Learning outcomes</b>		<b>Assessment</b>
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Paper Code	Paper Title	(at course level)	Learning and teaching strategies	Strategies
CND 401	Problems in Human Nutrition (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO36:</b> List various nutrition related problems in community and examine their preventive and therapeutic measures.</p> <p><b>CO37:</b> Describe various inborn errors of metabolism of proteins, fats and carbohydrates.</p> <p><b>CO38:</b> Debate about Food safety and contamination.</p> <p><b>CO39:</b> Design the nutritional management during emergencies and disasters.</p> <p><b>CO40:</b> Evaluate and interpret about the parameters of nutritional status assessment.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Reading assignments, Demonstration.</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Seminar presentation, Group discussions.</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual projects.

**Unit I**

**9hrs.**

- Historical Background, prevalence, etiology, biochemical and clinical manifestations, preventive and therapeutic measures for the following nutritional problems.
- Protein Energy Malnutrition (PEM)
- Rickets, Osteomalacia and Osteoporosis
- Fluorosis

**Unit II**

**9hrs**

- Historical Background, prevalence, etiology, biochemical and clinical manifestations, preventive and therapeutic measures for the following nutritional problems.
  - Iron Deficiency Anemia (IDA)
  - Iodine Deficiency Disorder (IDD)
  - Vitamin A Deficiency (VAD)

**Unit III**

**9 hrs**

- **Inborn errors of metabolism**
  - Disorders of Amino Acid metabolism – Phenylketonuria, hypertyrosinemia, hypervalinemia, hyperhistidinemia, hyperlysinemia, homocystinuria.
  - Disorders of carbohydrate metabolism – Galactosemia, Pentosuria.
  - Disorders of lipid metabolism – Hyperchylomicronemia, hypercholesterolemia (pure and mixed).

**Unit IV**

**9 hrs**

- **Food safety and contamination**
  - Naturally occurring and anti nutritional factors causing Lathyrism, Epidemic dropsy.
  - Chemical contamination of food- heavy metal and pesticide residue.
  - Fungal contamination – Mycotoxins:- Aflatoxicosis, Ergotism and Deoxynivalenol Mycotoxicosis

## Unit V

9 hrs

- **Nutritional Management of Disasters and Emergencies**
  - Disasters and Emergencies
    - Natural and Man Made disaster
    - Factors giving rise to emergency
  - Nutritional problems in Disasters and Emergencies
  - Nutritional relief and rehabilitation
  - Public nutritional approaches to tackle emergencies
    - Household food security
    - Food distribution strategy

### BOOKS RECOMMENDED:

- Bamji, M.S., Rao, P.N. and Reddy, (1996 : Textbook of Human Nutrition, Oxford & IBH Publishing Co. Pvt. Ltd.
- Jelliffe. D.B. 1966. The Assessment of the Nutritional Status of the Community. WHO, Geneva.
- Haddow, George D and Jane A. (2003): Introduction to Emergency Management. Amsterdam.
- McCollum, E.V. (1957) : History of Nutrition, Houghton Mifflin Co.
- Waterlow, J.C. (1992) Protein Energy Malnutrition, Edward Arnold, A Division of Hodder & Stoughton.
- Bauernfeind, J. Christopher (Ed.) (1986) : Vitamin and its Control, Academic Press.
- WHO (1970) : Fluorides and Human Health.
- Rajiv Gandhi National Drinking Water Mission. (1993) : Prevention and Control of Fluorosis Ministry of Rural Development.
- Beaton, G.H. and Bengoa, J.M. (Eds) (1976) : Nutrition in Preventive Medicine, WHO.
- Gopalan, C. (Ed) (1993) Recent Trends in Nutrition, Oxford University Press.
- DeMaeyer, E.M. (1989) : Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care, WHO.
- Sachdeva, H.P.S., Chaudhary, P. (Eds) (1994) : Nutrition in Children Developing Country Concerns, Dept. of Pediatrics, Maulana Azad Medical College, New Delhi.
- Shills, M.E., Olson, J.A., Shike, N. and Ross, A.C. (Ed) (1999) : Modern Nutrition in Health & Disease, 9 Edition, Williams and Wilkins.
- Mahan, L.K. & Ecott-Stump, S. (2000) : Krause's Food, Nutrition and Diet therapy, 10 Edition, W.B. Saunders Pvt. Ltd.
- Publications of the International Life Science Institute.
- UNICEF's State of the World's Children.

- World Health Organizations Reports, Monographs and Technical Report Series.
- McLaren, D.S. (1992) A Colour Atlas and Text of Diet-Related Disorders.
- WHO, Growth charts of Hodder & Stoughton.
- Bauernfeind, J. Christopher (Ed.) (1986) : Vitamin and its Control, Academic Press.
- WHO (1970) : Fluorides and Human Health.
- Rajiv Gandhi National Drinking Water Mission. (1993) : Prevention and Control of Fluorosis Ministry of Rural Development.
- Beaton, G.H. and Bengoa, J.M. (Eds) (1976) : Nutrition in Preventive Medicine, WHO.
- Gopalan, C. (Ed) (1993) Recent Trends in Nutrition, Oxford University Press.
- DeMaeyer, E.M. (1989) : Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care, WHO.
- Sachdeva, H.P.S., Chaudhary, P. (Eds) (1994) : Nutrition in Children Developing Country Concerns, Dept. of Pediatrics, Maulana Azad Medical College, New Delhi.
- Shils, M.E., Olson, J.A., Shike, N. and Ross, A.C. (Ed) (1999) : Modern Nutrition in Health & Disease, 9 Edition, Williams and Wilkins.
- Mahan, L.K. & Ecott-Stump, S. (2000) : Krause's Food, Nutrition and Diet therapy, 10 Edition, W.B. Saunders Pvt. Ltd.

**PAPER CODE-CND 402**  
**Medical Nutrition Therapy- II**  
**(Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Acquire knowledge regarding effect of various diseases on nutritional status.
2. Gain an understanding of the nutrient and dietary requirements of different diseases.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>CND 402</b>	<b>Medical Nutrition Therapy-II (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO41:</b> Correlate physiology with various disorders and their pathogenesis.</p> <p><b>CO42:</b> Understand functions of various systems in the body &amp; gaining knowledge about clinical manifestations of related diseases</p> <p><b>CO43:</b> Understand role of antioxidants, nutraceuticals and probiotics in prevention of diseases</p>	<p><b>Approach in teaching:</b> Lecture method, Power Point presentation, Demonstration, Discussions, Field visits/hospital visits, Tutorials</p> <p><b>Learning activities for the students:</b> Field activities, Presentations, Giving tasks</p>	Class test, Semester end examinations, Quiz, Assignments
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## CONTENTS

### Unit I

**9hrs**

- Incidence, etiology, pathology and metabolic aberrations, clinical manifestations, complications and dietary management and counseling for Diabetes
- Diabetes mellitus (Juvenile and adult onset types),
- Glycemic index, glycemic load
- Type of insulin and their action
- Oral hypoglycemic drugs

### Unit II

**9hrs.**

- Incidence, etiology, pathology and metabolic aberrations, clinical manifestations, complications and dietary management and counseling for Renal diseases –
  - Glomerulonephritis,
  - Nephrotic Syndrome
  - Acute & Chronic Renal Failure
  - Nephrolithiasis
  - Dialysis
  - Kidney transplant

### Unit III

**9 hrs**

- Incidence, etiology, pathology, clinical manifestations, complications, dietary management and counseling in:
  - Surgery
  - Burns
  - Allergy
  - Cancer

### Unit IV

**9hrs.**

- Incidence, etiology, pathology. clinical manifestations, complications, dietary management and counseling in:
- Rheumatoid arthritis, osteoarthritis, osteoporosis

- Gout
- Eating disorders – anorexia, bulimia.

**Unit V**

**9hrs.**

- Role of Antioxidants in disease prevention.
- Role of probiotics in disease prevention.
- Role of omega-3 fatty acids, carotenoids, dietary fiber, phytoestrogens: glucosinates; organosulphur compounds as nutraceuticals in disease prevention.

**BOOKS RECOMMENDED:**

- Robinson C.H., Lawler M.R. 'Normal and Therapeutic Nutrition'. Macmillan Publishing Company. 17 Edition. 1986.
- Antia, F.P. (1989) Clinical Dietetics and Nutrition. Oxford University Press, Bombay
- Passmore, P. and M.A. Eastwood. (1986). Human Nutrition and Dietetics. ELBS, Churchill, Livingstone, 8 Edition
- Mahan, L.K. & Ecott-Stump, S. (2000) : Krause's Food, Nutrition and Diet Therapy. W.B. Saunders Pvt. Ltd.
- Sharma rekha (2004) Diet Management. Elsevier Publication
- Some Therapeutic Diets. NIN. ICMR Publications
- Raghuram T C, Pasricha S, Sharma R D. Diet & Diabetes NIN ICMR Publication

**PAPER CODE- CND 403  
Diet Therapy- II  
(Practical)**

**Credits-02**

**Max Marks -100**

**Contact Hrs. / Week -04**

**Total Hrs -60**

**Course Objectives:**

**This course will enable the students to –**

1. Plan and prepare diets for patients suffering from various diseases covered in theory.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>CND 403</b>	<b>Diet Therapy-II (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO44:</b> Demonstrate skills in modifying and planning therapeutic diets for lifestyle and renal diseases.</p> <p><b>CO45:</b> Use the knowledge gathered in counselling patients about therapeutic diets.</p> <p><b>CO46:</b> Outline the working of a dietary department.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Tutorials, Reading assignments, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Seminar presentation, giving tasks, Visit to dietary departments of hospitals</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual and group projects
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**CONTENTS :**

- Planning and preparation of diets in the following diseases
  - Diabetes mellitus (with obesity/hypertension/hyperlipidemia)
  - Renal diseases – Glomerulonephritis, Nephrotic Syndrome, Chronic Renal Failure
  - Osteoporosis
  - Gout
  - Observation of a Dietetics Unit in a hospital

**BOOKS RECOMMENDED:**

- Robinson C.H., Lawler M.R. 'Normal and Therapeutic Nutrition'. Macmillan Publishing Company. 17 Edition. 1986.
- Antia, F.P. (1989) Clinical Dietetics and Nutrition. Oxford University Press, Bombay
- Passmore, P. and M.A. Eastwook. (1986). Human Nutrition and Dietetics. ELBS, Churchill, Livingstone, 8 Edition
- Mahan, L.K. & Ecott-Stump, S. (2000) : Krause's Food, Nutrition and Diet Therapy. W.B. Saunders Pvt. Ltd.
- Sharma rekha (2004) Diet Management. Elsevier Publication
- Some Therapeutic Diets. NIN. ICMR Publications
- Raghuram T C, Pasricha S, Sharma R D. Diet & Diabetes NIN ICMR Publications

**COURSE LEARNING OUTCOMES - Semester V**  
**PAPER CODE-CND 501**  
**Improving Health & Nutrition: IEC Approaches**  
**(Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Develop understanding regarding the vital aspects of communication and various audio & visual methods/ mass media & their use in nutrition & health education.
2. Develop skills to plan and use IEC.

**Course Outcomes (COs):**



Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CND 501</b>	<b>Improving Health and Nutrition : IEC Approaches (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>C047:</b> Explain the usage of IEC material for development.</p> <p><b>C048:</b> Discuss different types of IEC material.</p> <p><b>C049:</b> Interpret the principles and techniques of developing IEC material.</p> <p><b>C050:</b> Use the acquired knowledge for the community through the use of different communication strategies and tools for promotion of nutrition and health among the vulnerable groups.</p>	<p><b>Approach in teaching:</b> Discussion, Demonstration, Action Research, Project, Field Trip</p> <p><b>Learning activities for the students:</b> Field activities, Presentation, Giving tasks</p>	Observation, Presentation, Report writing

## CONTENTS

### Unit I

**9hrs**

- Concept of Communication
- Concept of communication & mass communication
- Elements of communication
- Models of communication
- Approaches to communication
- Barriers to communication

### Unit II

**9hrs**

- Communication for Extension Education & Development
- Introduction to IEC (Information, Education, Communication)
- Aims & objectives of IEC

### Unit III

**9hrs**

- Different media & their characteristics & use
- Audio visual aids
  - Audio aids : - Tape recorder, Public Address system, Telephone
  - Visual aids :- chalk board, poster, charts, flip cards, slides, film strips
- Mass media
  - Newspaper, radio, television

### Unit IV

**9hrs**

- Methods ,Techniques & Tools

- IEC for different target groups
- Policy makers
- NGOs
- Grassroots functionaries
- Community

**Unit V**

**9hrs**

- Specific National Programmes & IEC support
- National : ICMR, ICDS, FNB
- International : WHO, CARE, CDC

**BOOKS RECOMMENDED:**

- Dahama O.P. (1998): Education and communication for Development, New Delhi, Oxford and IBH Publishing Co. Pvt. Ltd.
- De. D. and Jirli B. (2011): A handbook of Extension Education, Agrobios (India), Jodhpur
- Dave, E (1957). Audio visual methods in teaching Dryden press, New York.
- Jain, R. (1993) Mass Media and Rural Development. Vol II New Delhi, Manak Publication Pvt. Ltd.
- Roy, G.L (1991) Extension Communication Management, Calcutta, Naya Prakash.
- Journal of Nutrition Education

**PAPER CODE-CND 502  
Assessment of Nutritional and Health Status  
(Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Assess the nutritional Status of subjects.
2. Develop skills related to counseling.
3. Learn different therapies of counseling.

**Course Outcomes (COs):**

Course	Learning outcomes		Assessment
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Paper Code	Paper Title	(at course level)	Learning and teaching strategies	Strategies
CND 502	Assessment of Nutritional and Health Status (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO51:</b> Gain knowledge on the Nutritional status of the population in terms of Anthropometry, dietary intake and clinical assessment</p> <p><b>CO52:</b> Identify the tools for Nutritional Screening and Nutritional Assessment of Hospitalized Patients</p>	<p><b>Approach in teaching:</b> Discussion, Demonstration, Action Research, Project, Field Trip</p> <p><b>Learning activities for the students:</b> Field activities, Presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects

## CONTENTS

### Unit I

9hrs

- Direct and Indirect methods of Nutritional assessment of human groups
- Assessment of age: Using local events calendar.
- Anthropometry Assessment: Measurements used, use of equipment, standards for comparison. Classification used to categorize malnutrition, cut of points used to distinguish current and long term malnutrition.
- Indicators of nutritional status: weight /age, height/age and weight/height, mid upper arm (MUAC).
- Guidelines for interpretations of growth charts

### UNIT II

9 hrs

- Dietary assessment: Methods and techniques for assessing dietary intakes of individual, house hold level and Institutional level, Essential features, Uses and limitations of different methods.
- Problems intake measurements, factors affecting the accuracy of dietary assessment. Interpretation of dietary data.

### UNIT III

9 hrs

- Clinical assessment: Study of different methods and techniques for clinical assessment of nutritional status and diagnosis of sign of relation to various nutrient deficiencies.
- Biochemical assessment: Methods and techniques for major nutritional disorders, standards for comparison, field level assessment techniques.

### Unit –IV

9hrs

- **Tools for Nutrition Screening in Hospitalized Patients**
  - Nutrition Risk Screening 2002
  - Mini Nutritional Assessment (MNA)
  - Malnutrition Universal Screening Tool(MUST)

- **Tools for Nutritional Assessment of Hospitalized Patients**

- Subjective Global Assessment (SGA)
- Physical Examination
- Laboratory Examination

**BOOKS RECOMMENDED:**

- Bamji, M.S., Rao, P.N. and Reddy, V. (Eds) (1996) : Textbook of Human Nutrition, Oxford & IBH Publishing Co. Pvt. Ltd.
- Robinson, C.H. and Lawler, M.R. (1986). Normal and Therapeutic Nutrition. Macmillan, New York
- Hackney, H & Cormier, L.S (1979). Counseling strategy and Objectives. New Jersey: Prentice Hall.
- McCollum, E.V. (1957) : History of Nutrition, Houghton Mifflin Co.
- Waterlow, J.C. (1992) Protein Energy Malnutrition, Edward Arnold, A Division of Hodder & Stoughton.
- Bauernfeind, J. Christopher (Ed.) (1986) : Vitamin and its Control, Academic Press.
- Gopalan, C. (Ed) (1993) Recent Trends in Nutrition, Oxford University Press.
- DeMaeyer, E.M. (1989) : Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care, WHO.
- Sachdeva, H.P.S., Chaudhary, P. (Eds) (1994) : Nutrition in Children Developing Country Concerns, Dept. of Pediatrics, Maulana Azad Medical College, New Delhi.
- Shils, M.E., Olson, J.A., Shike, N. and Ross, A.C. (Ed) (1999) : Modern Nutrition in Health & Disease, 9<sup>th</sup> Edition, Williams and Wilkins.
- Mahan, L.K. & Ecott-Stump, S. (2000) : Krause's Food, Nutrition and Diet Therapy, 10<sup>th</sup> Edition, W.B. Saunders Pvt. Ltd.
- Davidson, Passmore and Eastwood: Human Nutrition and Dietetics- FLBS Bhavana shabarwala public health & Nutritional care , common wealth publisher,1999
- carol west suitor merrily forbes,Crowley ,Nutrition,principles and application in health promotion,b.lippincot companay Ltd.,1984
- Edith H-reinsch, Ralpahe., Health of the pre school, child John Wesley and sons Inc. 1978
- Eva D. Wilson, Catherine H-Fisher., 1971, Principles of Nutrition, willey Eastern Pvt Ltd.,
- Gopalan., Kamala Krishna swamy, Nutrition in major metabolic diseases Oxford University 2000
- Hugh Jolly., Diseases of children, the English language book society and backwell scientific publications 1981.
- Jelliffce., D.B and J.P. Stanfield, disease of children in the subtropical and tropics English language book society., 1982
- Mahtab S.Bamji, textbook of Human Nutrition, Oxford &IBH publishing Co., pvt. Ltd., 1999.  
Maurice E.Shills, Vernon R.Young Modern Nutrition in healath and disease K.M. Varghese com., 1988.
- Park and A, Text of preventive and social medicine, M\s Banrasidas bhanot publishers 1983.  
Robinson, O.H. and Lawyer, Normal Nutrition, Mac Milan publishers, 1982.
- Robinson collier, Fundamenatals of normal nutrition, Mac Milan International edition 1979.  
Shukla P.K.Nutrition problems of India, prentiace hall of India,1982.
- Tara Gopala Das and subadra seshadari, Nutrition, Monitoring and assessment, Oxford University press, 1987.

- William O. Pediatric Nutrition in clinical practice, Mac millan and George Graham, Adison, Willey publishing Co., 1981.

**PAPER CODE-CND 503**  
**Assessment of Nutritional and Health Status**  
**(Practical)**

**Credits-02**

**Max Marks -100**

**Contact Hrs. / Week -04**

**Total Hrs.-60**

**Course Objectives:**

**This course will enable the students to –**

1. Assess nutritional status of individuals belonging to various age groups.
2. Comment on the nutritional status of the subjects.
3. Provide counseling related to their nutritional status.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>CND 503</b>	<b>Assessment of Nutritional and Health Status (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO53:</b> Explain , demonstrate and assess the measurement of height, weight, and waist circumference, assessment of growth of different groups of people .</p> <p><b>CO54:</b> Assessment of the diet, assessment of nutritional status of group, commUnity and population level in terms of the dietary intake and pattern of food consumption</p> <p><b>CO55:</b> Assessment and identification of clinical signs and symptoms of various nutritional deficiencies in different age groups.</p>	<p><b>Approach in teaching:</b> Discussion, Demonstration, Action Research, Project</p> <p><b>Learning activities for the students:</b> Field activities, Simulation, Presentation, Giving tasks</p>	Observation, Presentation, Report writing

**CONTENTS**

- **Dietary Assessment**
- Standardization of vessels for 24 hours recall method.
- Development of skill in conducting a dietary survey using 24 hours recall method for University women students.
- Development skill in conducting a dietary survey using 24 hours recall method for pre-school children.

- Developing skill in conducting Institutional diet survey and household diet survey.
- **Anthropometric assessment**
- Developing skill in assessing body mass index for University Students
- Developing skill in measurement of Anthropometry for pre school and school going children.
- **Clinical assessment**
- identification of clinical signs and symptoms related to various deficiency diseases in various ages.

#### **BOOKS RECOMMENDED:**

- Bamji, M.S., Rao, P.N. and Reddy, V. (Eds) (1996) : Textbook of Human Nutrition, Oxford & IBH Publishing Co. Pvt. Ltd.
- Robinson, C.H. and Lawler, M.R. (1986). Normal and Therapeutic Nutrition. Macmillan, New York
- Hackney, H & Cormier, L.S (1979). Counseling strategy and Objectives. New Jersey: Prentice Hall.
- McCollum, E.V. (1957) : History of Nutrition, Houghton Mifflin Co.
- Waterlow, J.C. (1992) Protein Energy Malnutrition, Edward Arnold, A Division of Hodder & Stoughton.
- Bauernfeind, J. Christopher (Ed.) (1986) : Vitamin and its Control, Academic Press.
- Gopalan, C. (Ed) (1993) Recent Trends in Nutrition, Oxford University Press.
- DeMaeyer, E.M. (1989) : Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care, WHO.
- Sachdeva, H.P.S., Chaudhary, P. (Eds) (1994) : Nutrition in Children Developing Country Concerns, Dept. of Pediatrics, Maulana Azad Medical College, New Delhi.
- Shils, M.E., Olson, J.A., Shike, N. and Ross, A.C. (Ed) (1999) : Modern Nutrition in Health & Disease, 9<sup>th</sup> Edition, Williams and Wilkins.
- Mahan, L.K. & Ecott-Stump, S. (2000) : Krause's Food, Nutrition and Diet Therapy, 10<sup>th</sup> Edition, W.B. Saunders Pvt. Ltd.
- Davidson, Passmore and Eastwood: Human Nutrition and Dietetics- FLBS Bhavana shabarwala public health & Nutritional care , common wealth publisher,1999
- carol west suitor merrily forbes,Crowley ,Nutrition,principles and application in health promotion,b.lippincot companay Ltd.,1984
- Edith H-reinsch, Ralpahe., Health of the pre school, child John Wesley and sons Inc. 1978
- Eva D. Wilson, Catherine H-Fisher., 1971, Principles of Nutrition, willey Eastern Pvt Ltd.,
- Gopalan., Kamala Krishna swamy, Nutrition in major metabolic diseases Oxford University 2000
- Hugh Jolly., Diseases of children, the English language book society and backwell scientific publications 1981.
- Jelliffe., D.B and J.P. Stanfield, disease of children in the subtropical and tropics English language book society., 1982
- Mahtab S.Bamji, textbook of Human Nutrition, Oxford &IBH publishing Co., pvt. Ltd., 1999.
- Maurice E.Shills, Vernon R.Young Modern Nutrition in healath and disease K.M. Varghese com., 1988.
- Park and A, Text of preventive and social medicine, M\s Banrasidas bhanot publishers 1983.
- Robinson, O.H. and Lawyer, Normal Nutrition, Mac Milan publishers, 1982.

- Robinson Collier, Fundamentals of normal nutrition, Mac Millan International edition 1979.  
Shukla P.K. Nutrition problems of India, Prentice Hall of India, 1982.
- Tara Gopala Das and Subadra Seshadri, Nutrition, Monitoring and Assessment, Oxford University Press, 1987.
- William O. Pediatric Nutrition in Clinical Practice, Mac Millan and George Graham, Addison, Wiley Publishing Co., 1981.

**COURSE LEARNING OUTCOMES - Semester VI**  
**PAPER CODE-CND 601**  
**Lifestyle Management**  
**(Theory)**

**Credits-03**

**Max Marks -100**

**Contact Hrs. / Week -03**

**Total Hrs -45**

**Course Objectives:**

**This course will enable the students to –**

1. Identify the lifestyle dynamics.
2. Promote health through lifestyle modifications.

**Course Outcomes (CLOs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>CND 601</b>	<b>Lifestyle Management (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO56:</b> Develop knowledge and understanding of the basic concepts of personal health, wellness, and nutrition.</p> <p><b>CO57:</b> Summarize various methods relating to healthy behavior change.</p> <p><b>CO58:</b> Develop healthy alternatives in the management of stress.</p> <p><b>CO59:</b> Explain alternative approaches of rehabilitation.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Reading assignments, Team teaching</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Effective questions, Seminar presentation, Giving tasks</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual and group projects
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## CONTENTS

### Unit I

**9hrs**

- Introduction to lifestyle and wellness  
Definition and importance
- Lifestyle dynamics and their effect on health
  - Lack of physical activity
  - Stress
  - Tension
  - Alcohol
  - Smoking

### Unit II

**9hrs**

- Concept of lifestyle management and health promoting and damaging behavior
- Role of nutritionist in lifestyle management
- Principles of diet counseling in respect to lifestyle management
- Essentials of Health Care Public Relations for nutritionist

### Unit III

**9hrs**

- Lifestyle management through
  - Physical activity
  - Meditation
  - Yoga
  - Dietary modification

### Unit IV

**9hrs**

- Health effects and dependency assessment
  - Alcohol
  - Smoking
  - Drugs
  - Paan ,tobacco
- Stress management



**Unit V****9hrs**

- Lifestyle management for rehabilitation for
  - Cardiac care
  - Renal care
  - Cancer care
- Lifestyle management for rehabilitation for
  - Obesity
  - Pregnancy
  - Diabetes

**BOOKS RECOMMENDED:**

- Lifestyle Management in Health and Social Care. Miranda Thew Jim McKenna .Wiley-Blackwell; 1 edition (2008)
- Concepts and skills for practical dietetics. Edited by Bhaskarachay, Rao and Rao.IDA, Hyderabad (2010).
- Ananda, Sri 1989.The Complete Book of Yoga. New Delhi : Orient paperbacks
- Coleman,(Dr.) Vernon. 1998 Stress Management Techniques. Bombay: IBH Publishers
- Taub A Edward MD . The Wellness Rx New Jersey, Prientice Hall 1994
- Stephen R. Covey, 7 Habits of Highly Effective People
- Richard Carlson, Stop Thinking, Start Living: Discover Lifelong Happiness
- Charles Clark, The New High Protein Diet: How to Lose Fat the Quicker, Safer, Easier Way - And Never Go Hungry

**PAPER CODE-CND 602**  
**Community Nutrition**  
**(Theory)**

**Credits-03****Max Marks -100****Contact Hrs. / Week -03****Total Hrs -45****Course Objectives:****This course will enable the students to –**

1. Recognize the solutions for overcoming problems of malnutrition in the Community.
2. Develop awareness among the students about the magnitude of nutritional problems.
3. Develop ability to assess the problems and devise nutrition education material for them.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>CND 602</b>	<b>CommUnity Nutrition (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO60:</b> Understand the principles of commUnity nutrition and develop comprehension about multi faceted nature of nutritional problems</p> <p><b>CO61:</b> Create awareness about nutrition policy and programmes.</p> <p><b>CO62:</b> Gain insight about national and international agencies working actively in commUnity</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Designing of questionnaire</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective discussion , Simulation, Review of several public health programmes Report analysis</p>	<p>CA test, Semester end examinations, Home Assignment, Presentation, Individual and group projects</p>
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## CONTENTS

### Unit I

**9 hrs**

- Concept and Scope of community Health and Nutrition. Health care, health delivery systems
- Nutrition and health in national development
- Demography and population Dynamics

### Unit II

**9hrs**

- Identification of at risk group
- Causes of malnutrition, Economics of Malnutrition, Dual Burden of Malnutrition
- Nutrition and behavior
- Food and Nutrition Security

### Unit III

**9hrs**

- Nutrition Education
- Nutritional Surveillance & Monitoring
- Programme Planning

### Unit IV

**9hrs**

- Nutrition Policies, National Health Policy, National Nutrition Policy
- Food Based Strategies for Combating Malnutrition : Horticulture Intervention, food fortification, value addition
- Ongoing programme in field of Public Health Nutrition at central as well as state
- CommUnity Nutrition Programmes – Objectives, strategy and other various nutrition related welfare programme. An Overview of
- ICDS, Mid Day Meal Programmes, Iron Deficiency Disorder Control Programme, Vitamin A Deficiency Disorder Control Programme, IDD

**Unit V****9hrs**

- National and International agencies in improving the nutritional status : WHO, UNICEF, CDC, CARE,ICMR, NIN, ICAR
- Approaches & working with Community
- Factors affecting community Health & nutrition
- An overview of Constitutional rights and acts related to nutrition and health sector

**BOOKS RECOMMENDED:**

- Nutrition Foundation of India Bulletin, New Delhi.
- Nutrition News. NIN, Hyderabad.
- Park, J.E. and Park, K. 2000. Text Book of Preventive and Social Medicine. Banarsidas Bhanot Publishers, Jabalpur.
- Jeannette B. Endras, 1999. Community Nutrition Challenges and Opportunity Merrill , an imprint of prentice Hall Upper Saddle River, New Jersey Colum Ohio.
- Rao, B.S.N. Deosthale, Y.G. and Pant, K.C. 1998 (Revised and updated).Nutrition value of Indian Foods by Gopalan. C. Ramashastri, B.V. and Balasubraman S.C., NIN, ICMR,Hyderabad.
- Gopaldas, T. and Seshadari, S. 1987. Nutrition Monitoring and Assessment.Oxford University Press, New Delhi.
- McLaren, D.S. 1977. Nutrition in the Community John Wiley and Sons, Chichester.
- Jelliffe. D.B. 1966. The Assessment of the Nutritional Status of the Community.WHO, Geneva.
- Jelliffe, N. 1962. Clinical Nutrition. Hoeber Medical Division, New York.
- Nutritious Recipes. For Complementary Feeding of Infants & Young Children. Food & Nutrition Board .MWCD Govt. of India (2008)

**PAPER CODE-CND 603**  
**Community Nutrition**  
**(Practical)**

**Credits-02****Max Marks -100****Contact Hrs. / Week -04****Total Hrs -60****Course Objectives:****This course will enable the students to –**

1. Develop low cost recipes-weaning foods for infants and supplementary foods for all ages.
2. Identification of the problem, planning and implementation of several community based projects

**Course Outcomes (CLOs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>CND 603</b>	<b>Community Nutrition (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO63:</b> Develop skills required to develop low cost recipes to ensure proper to combat various deficiencies.</p> <p><b>CO64:</b> Gain knowledge required for planning and implementation of public health nutrition programmes.</p> <p><b>CO65:</b> Gain information related to evaluation of public health nutrition programmes</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Analysis of Behavior change communications campaigns, Team teaching and learning activities</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Effective discussion , Simulation, Report analysis and presentation, Giving tasks, Field practical related to implementation of designed nutrition education programmes</p>	CA test, Semester end examinations, Viva, Group discussion and power point presentation
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## CONTENTS

- Development and sensory evaluation of various low cost recipes to combat dual burden of malnutrition
  - Protein energy malnutrition
  - Iron deficiency
  - Vitamin A deficiency
- Use and interpretation of growth charts.
- Planning and Implementation of a Nutrition and Health Education programme

## BOOKS RECOMMENDED:

- Vir Chander Sheila. 2011. Public Health Nutrition in Developing Countries Part I & II. Woodhead Publishing India.
- Hughes R and Margetts M.B. 2011. Practical Public Health Nutrition. Wiley- Blackwell.
- Nnakwe E.N. 2013. Community Nutrition Planning Health Promotion and Disease Prevention. Second Edition. Jones & Bartlett Learning.
- Rao, B.S.N. Deosthale, Y.G. and Pant, K.C. 1998 (Revised and updated). Nutrition value of Indian Foods by Gopalan. C. Ramashastry, B.V. and Balasubraman S.C., NIN, ICMR, Hyderabad. Gopaldas, T. and Seshadari, S. 1987. Nutrition Monitoring and Assessment. Oxford University Press, New Delhi.
- McLaren, D.S. 1977. Nutrition in the Community John Wiley and Sons, Chichester.
- Jelliffe. D.B. 1966. The Assessment of the Nutritional Status of the Community. WHO, Geneva.
- Jelliffe, N. 1962. Clinical Nutrition. Hoeber Medical Division, New York.
- Nutritious Recipes. For Complementary Feeding of Infants & Young Children. Food & Nutrition Board .MWCD Govt. of India (2008)

**Programme- B.Sc. Food Science and Quality Management (Elective)**

**OUTCOMES - Academic Year- 2020-21**

**PROGRAMME OUTCOMES**

<b>PO1</b>	<b>Innovative:</b> Understand, acquire, articulate, retain, apply and communicate scientific concepts, experimental results and analytical arguments to fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
<b>PO2</b>	<b>Critical thinking and Problem Solving:</b> Employ critical thinking, analytical reasoning and the scientific knowledge to design, carry out, record and analyze various aspects of science. It will help to develop scientific temper that will be more beneficial for the society.
<b>PO3</b>	<b>Employability:</b> Apart from the research jobs, students can also work or get jobs in Marketing, Business & Other technical fields. Science graduates also recruited in the bank sector to work as customer service executives. Students can also find employment in government sectors. Often, in some reputed universities or colleges in India and abroad the students are recruited directly by big MNC's after their completion of the course.
<b>PO4</b>	<b>Collaborative:</b> Apply the knowledge of basic science, life sciences and fundamental sciences to multidisciplinary level like genetic engineering or Nanotechnology.
<b>PO5</b>	<b>Applicability:</b> Acquire the ability to engage in independent and self learning as well as to successfully pursue their career objectives in advanced education and in professional courses, in a 22 scientific career in government or industry, in a teaching career in the school systems, or in a related career following graduation. Understand the importance of modern branches of science like genetic engineering for the improvement of human race.
<b>PO6</b>	<b>Research Aptitude:</b> Demonstrate the knowledge in understanding research and addressing practical problems and to apply various scientific methods to address different questions by formulating the hypothesis, data collection and critically analyze the data to decipher the degree to which their scientific work supports
<b>PO7</b>	<b>Sustainable Development:</b> Develop respect for nature by participating in various social and cultural activities voluntarily, in order to spread knowledge, creating awareness about the social evils, blind faith, etc. and analyze the impact of anthropogenic activities on environment.

<b>PO8</b>	<b>Communication Skills:</b> Communicate effectively on various scientific issues with the with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
<b>PO9</b>	<b>Ethics:</b> Stay firm on the value systems of their culture, including their own for a healthy socio cultural environment. Students will also strengthen their ethical and moral values and shall be able to deal with psychological weaknesses.
<b>PO10</b>	<b>Life-long learning:</b> Develop scientific outlook not only with respect to science subjects but also in all aspects related to life. It will enable the graduate prepare for national as well as international competitive examinations, especially UGC-CSIR NET and UPSC Civil Services Examination. Students will acquire digital skills and integrate the fundamental concepts with modern tools.
<b>PO11</b>	<b>Leadership readiness:</b> Graduates are expected to be familiar with decision making process and basic managerial skills to become a better leader. Skills may include defining objective vision and mission, how to become charismatic inspiring leader and so on.
<b>PO12</b>	<b>Instrumentation:</b> Acquire the skills in handling scientific instruments, planning and performing in laboratory experiments.

## **PROGRAMME SPECIFIC OUTCOMES**

### **B. Sc. FSQM (Elective)**

<b>PSO1</b>	Learn composition and chemistry of different foods and changes that occur during cooking/processing of foods
<b>PSO2</b>	Apply the knowledge of food microbiology, sanitation and hygiene in food production and service
<b>PSO3</b>	Gain the knowledge regarding nutritional classification of food, method and media of cooking, nutritive value and processing, storage of plant/animal based foods
<b>PSO4</b>	Implement strategies for food access, procurement, preparation, and safety for individuals, families, and communities
<b>PSO5</b>	Understand the important pathogens and spoilage microorganisms in foods, the most likely sources of these organisms, and the conditions under which they grow, the role of beneficial microorganisms in foods and their use
<b>PSO6</b>	Employ appropriate laboratory techniques to enumerate, isolate, and identify microorganisms in foods
<b>PSO7</b>	Understand the basic principles of food preservation methods, including high temperature, drying and dehydration, high pressure, fermentation, chemicals and food irradiation
<b>PSO8</b>	Understand the techniques that can be used to monitor quality of raw ingredients and final products
<b>PSO9</b>	Conduct appropriate sensory evaluation tests to answer specific questions regarding food attributes or consumer preferences

**COURSE ARTICULATION MATRIX: (MAPPING OF COS WITH PSOs)**

Course	Cos	PS01	PS02	PS03	PS04	PS05	PS06	PS07	PS08	PS09
FSQ 101	C01	x								
	C02			X						
	C03	x								
	C04	x								
FSQ 102	C05	x								
	C06	x								
	C07	x								
	C08	x								
	C09	x								
FSQ 103	C010			X						
	C011			X						
	C012			X						
FSQ 201	C013			X						
	C014	x								
	C015	x								
	C016				x					
FSQ 202	C017							x		
	C018							x		
	C019							x		
	C020							x	x	
FSQ 203	C021				x				x	
	C022							x		
	C023				x			x		
FSQ 301	C024	x		X						
	C025	x		X						
	C026	x		X						
	C027	x		X						
	C028	x		X						
FSQ 302	C029					x	x			
	C030							x		
	C031		X		x					
	C032					x	x			
	C033		X			x				
FSQ 303	C034		X			x				
	C035						x		xx	
FSQ 401	C036				x					
	C037				x					
	C038		X		x					
	C039		X						x	
	C040		X							
	C041							x		



FSQ 402	C042			X					
	C043	x							
	C044				x				
FSQ 403	C045							x	
	C046							x	
	C047							x	
	C048							x	
	C049							x	
FSQ 501	C050				x			x	
	C051				x			x	
	C052							x	
FSQ 502	C053								x
	C054								x
	C055								x
	C056								x
FSQ 503	C057							x	
	C058								x
	C059							x	
FSQ 601	C060				x				
	C061				x		X		
	C062							x	
FSQ 602	C063						X		
	C064					x			
	C065							x	
	C066								x
FSQ 603	C067	x		X					
	C068								X
	C069								X

**B.Sc. (ELECTIVES) FSQM (2020-2021)  
COURSE OUTCOMES, SEMESTER I  
PAPER CODE -FSQ 101**

## Food Science I (Theory)

**Credits-03**

**Max Marks-100**

**Contact Hrs. / week-03**

**Total Hrs-45**

### Course Objectives:

**This course will enable the students to –**

1. Understand the definition, concepts and functions of food and nutrition.
2. Learn structure, composition and nutritional contribution of various food products.
3. Understand the effect of processing on food products.

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>FSQ 101</b>	<b>Food Science-I (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO1:</b> Apply food science knowledge to describe functions of ingredients in food.</p> <p><b>CO2:</b> Develop an understanding about the methods of preparing food.</p> <p><b>CO3:</b> Explain effect of different cooking methods on the quality of foods</p> <p><b>CO4:</b> Identify commonly used herbs and spices in food processing</p>	<p><b>Approach in teaching:</b> Lecture method Power Point presentation Discussions Tutorials</p> <p><b>Learning activities for the students:</b> Seminar Presentations Giving tasks</p>	<p>Class test Semester end examinations Quiz Assignments</p>

## CONTENTS

### Unit I

**9hrs**

- Introduction to Food Science: Evolution of the food industry and allied industries. Development of Food Science as a discipline.
- Basic food groups
- Food intake and its regulation
- Food preparation – Different methods of cooking

### Unit II

**9hrs**

- Carbohydrate
  - Introduction
  - Monosaccharide, Oligosaccharides
  - Sugar and Sweeteners: Sugar, syrups, sugar alcohols, potent sweetener, sugar products.

- Polysaccharides
- Starch & Modified food starches
- Non starch Polysaccharides: Cellulose, Hemi cellulose, Pectin, Gums and animal polysaccharides

### **Unit III**

**9hrs**

- Proteins
  - Classification, composition
  - Denaturation,
  - Non enzymatic browning and other changes.
- Enzymes
  - Nature of enzymes
  - Stability and action
  - Proteolytic enzymes, oxidizes, lipases, enzyme decomposing carbohydrates and applications
  - Immobilized enzymes.

### **Unit IV**

**9hrs**

- Lipids
  - Sources and compositions
  - Functional properties of fat and uses in food preparations
  - Fat substitutes, fat deterioration and antioxidants.
  - Effect of heat and storage temperature, hydrogenation process, refining process, rancidity

### **Unit – V**

**9hrs**

- Spices and condiments
  - Composition
  - Nutritive value
  - Role in cooking
  - Salt and Substitutes

### **BOOKS RECOMMENDED:::**

- Srilakshmi. B. Food Science. New - Age International (P) Ltd. Publishers, New Delhi, 1997.

- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Banaglore 1990.
- Potter, N.N. Food Science, 3rd Ed CBS Publishers and Distributors. Delhi, 1987
- Bennion, M. Introductory Foods. Eight edition. Macmillan Publishing Company, New York. 1985.
- Bogstrom, G. Principles of Food Science, Vol I and II, The Macmillian Co., New York, 1968.
- Charly, H. Food Science. John Wiley and Sons Inc, New York, Second edition 1970
- Lowe, B. Experimental Cookery. John Wiley and Sons Inc, New York.
- Manay, N.S. and Shadaksharaswamy M. Food Facts and Principles. Second edition, New Age International Publisher, New Delhi 2001.
- Meyer. L.H. Food Chemistry, CBS Publishers and Distribution, Delhi, 1987.

**PAPER CODE -FSQ102**  
**Food Chemistry**  
**(Theory)**

**Credits-03**

**Max Marks-100**

**Contact Hrs. / week-03**

**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to –**

1. Know the major and minor components of foods.
2. Composites and properties of foods.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>FSQ 102</b>	<b>Food Chemistry (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO5:</b> Identify the chemistry underlying the properties of various food components</p> <p><b>CO6:</b>Examine the concept of food chemistry of water</p> <p><b>CO7:</b>Identify the role of enzymes in food processing</p> <p><b>CO8:</b>Judge the role of pigments in foods</p> <p><b>CO9:</b>Examine the role of flavours in foods</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, assignments, Demonstration</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Simulation, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Assignments, Presentation, Individual

**CONTENTS**

**Unit I**

**9hrs**

- Introduction to Food Chemistry water and ice
- Moisture in Foods
  - Hydrogen Bonding
  - Bound Water
  - Water activity and Food Stability
  - Emulsions: Formation, stability, surfactants and emulsifiers.
  - Foams: Structure, formation and stabilization

## **Unit II**

**9hrs**

- Carbohydrates
  - Classification
  - Hydrolytic reactions, solubility and crystallization, hygroscopicity, colligative properties, textural contribution, non enzymatic browning
  - Functions mono, oligo and polysaccharides in foods
  - Other sweetening agents
  - Changes on cooking and processing

## **Unit III**

**9hrs**

- Lipid
  - Nomenclature classification
  - Physical aspects
  - Chemical aspects
  - Emulsion and emulsifiers
  - Chemistry on Fat and oil Processing
  - Role of foods lipids in flavor

## **Unit IV**

**9hrs**

- Proteins
  - Amino Acids, Peptides and Proteins
  - Physio-chemical Properties
  - Denaturation
  - Modification of food proteins through processing and storage
- Enzymes
  - Nomenclature
  - Definite specificity
  - Catalysis regulation Kinetics
  - Factors influencing enzyme activity
  - Controlling enzyme action
  - Enzyme added to food during processing
  - Enzyme inhibitors in food

**Unit V****9hrs**

- Vitamin and Mineral
  - Structure function
  - General courses for loss in foods
  - Fortification, enrichment, restoration
  
- Pigment in foods
  - Structures
  - Chemical and physical properties
  - Effect of processing and storage
  
- Flavors
  - Vegetable, fruit and spice flavors from ferments and sea foods

**BOOKS RECOMMENDED:::**

- Food chemistry ed. Or feneema 2 ed.
- Food chemistry lillan Hoagland Meger
- Food Chemistry He mann
- Meyer. L.H. Food Chemistry, CBS Publishers and Distribution, Delhi, 1987.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Banaglore 1990.

**PAPER CODE- FSQ 103**  
**Food Science**  
**(Practical)**

**Credits-02****Max Marks-100****Contact Hrs. / week-04****Total Hrs-60****Course Objectives:****This course will enable the students to –**

1. The basic terms and methods used in cooking.
2. Various food preparations and the principles involved in food preparations.
3. The portion size and nutritional quality of food product.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>FSQ 103</b>	<b>Food Science (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO10:</b> Define the basic terms and methods used in cooking.</p> <p><b>CO11:</b> Demonstrate various food preparation methods and the principles involved in cooking methods.</p> <p><b>CO12:</b> Ascertain the portion size and interpret the nutritional quality of a food product.</p>	<p><b>Approach in teaching:</b> Laboratory Demonstration, Interactive Lectures, Project.</p> <p><b>Learning activities for the students:</b> Presentation, Giving tasks, Demonstrations</p>	
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## CONTENTS

- Weights and measures, basic terms used in cookery, methods of cooking and table settings.
- Food preparation, understanding the principles involved nutritional quality and portion size.  
Beverages - Tea, coffee, mocktails, sodas, sundaes and milk shakes.
  - Carbohydrate rich- porridge, gruels, puri, chapatti, parantha, pastas, pancakes, sandwiches and various rice preparations.
  - Protein Rich - whole, dehusked, sprouted. Fermented products of various legumes and pulses.
  - Protective foods- vegetable salad, curried and dry vegetable preparation.
  - Milk and it's products- Indian and western desserts, preparation of paneer, khoa, chenna (Cottage cheese) and curds (Processed).
  - Soups- clear and cream including Indian soups.
  - Baked products (cakes, biscuits)
  - Steamed (direct and indirect)
  - Fried (shallow and deep)

## BOOKS RECOMMENDED:: :

- Food chemistry ed. Or feneema 2 ed.
- Food chemistry lillan Hoagland Meger
- Food Chemistry He mann
- Meyer. L.H. Food Chemistry, CBS Publishers and Distribution, Delhi, 1987.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Banaglore 1990.

## COURSE OUTCOMES - Semester II

**PAPER CODE -FSQ 201**

**Food Science II**

**(Theory)**

**Credits-03**

**Max Marks-100**

**Contact Hrs. / week-03**

**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to -**

1. Understand the definition, concepts and functions of food and nutrition.
2. Learn structure, composition and nutritional contribution of various food products.
3. Understand the effect of processing on food products.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>FSQ 201</b>	<b>Food Science-II (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO13:</b> Define the basic concepts of food science and its applications in processing of food.</p> <p><b>CO14:</b> Explain the structure, composition and nutritional contribution of various food products.</p> <p><b>CO15:</b> Demonstrate understanding of the effect of processing on food products.</p> <p><b>CO16:</b> Develop understanding of national and international food laws.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Reading assignments, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, Seminar presentation, Giving tasks</p>	Class test, Semester end examinations, Assignments, Presentation, Individual and group projects

### CONTENTS

**Unit I**

**9hrs**

- Cereal and Cereal Products
  - Cereal Grains: Structure and compositions
  - Cereal products, Flour and flour quality
  - Extruded foods, breakfast cereals, wheat germ, bulgar, puffed and flaked cereals
- Milk and Milk Products
  - Composition, nutritive value
  - Different types of processed milk



- Home care of milk
- Curd formation, cheese preparation
- Effect of cooking, grading of milk.

## **Unit II**

**9hrs**

- Meat and poultry
  - Structure and composition
  - Nutritive value
  - Post mortem changes
  - Factors affecting tenderness of meat, effects of cooking.
- Fish and Sea foods
  - Types of composition
  - Storage and changes during storage and processing
  - By Products and new products

## **Unit III**

**9hrs**

- Egg
  - Structure and composition
  - Nutritive value
  - Effects of cooking
  - Functions of eggs in cookery, quality testing.
- Legumes and Pulses.
  - Composition
  - Nutritive value
  - Methods of cooking-soaking, germination, fermentation.
- Nuts and Oilseeds:
  - Composition,
  - Oil extraction and by products

## **Unit IV**

**9hrs**

- Vegetables
  - Classification and composition
  - Significance
  - Color, pigments, compounds responsible for flavour, buying and care

- Changes that occur during cooking, ways to minimize nutritional losses during preparation and cooking.
- Fruits and fruit preparations
  - Classification (juicy, pulpy, citrus, other) and composition
  - Nutritional contribution flavour constituents
  - Changes that occur during ripening,

## Unit V

9hrs

- Food adulteration
  - Definition
  - Incidental and intentional adulteration
  - Common adulterants in food and simple tests for detection of food adulterants
- Food laws
  - Voluntary and mandatory- national and international
  - Role of voluntary agencies and legal aspects of consumer protection
  - Food standards: FSSA, FPO, AGMARK , CODEX ALIMENTARIUS and others
  - Consumer laws
  - Food Safety Laws
  - Food additives

### BOOKS RECOMMENDED:::

- Srilakshmi. B. Food Science. New - Age International (P) Ltd. Publishers, New Delhi, 1997.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Banaglore 1990.
- Potter, N.N. Food Science, 3rd Ed CBS Publishers and Distributors. Delhi, 1987
- Bennion, M. Introductory Foods. Eight edition. Macmillan Publishing Company, New York. 1985.
- Bogstrom, G. Principles of Food Science, Vol I and II, The Macmillian Co., New York, 1968.
- Charly, H. Food Science. John Wiley and Sons Inc, New York, Second edition 1970
- Lowe, B. Experimental Cookery. John Wiley and Sons Inc, New York.
- Manay, N.S. and Shadaksharaswamy M. Food Facts and Principles. Second edition, New Age International Publisher, New Delhi 2001.
- Meyer. L.H. Food Chemistry, CBS Publishers and Distribution, Delhi, 1987.

**PAPER CODE- FSQ202**  
**Food Preservation**  
**(Theory)**

**Credits-03**  
**Max Marks-100**  
**Contact Hrs. / week-03**  
**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the basic principles of food preservation.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>FSQ 202</b>	<b>Food Preservation (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO17:</b> Describe the purpose and scope of the food preservation industry.</p> <p><b>CO18:</b> Explain the different objectives, principles and methods of food preservation.</p> <p><b>CO19:</b> Demonstrate skills for processing of fruits and vegetable chutneys, sauces and beverages.</p> <p><b>CO20:</b> Be conversant about new trends in food processing technology.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b> Self- learning assignments, Giving tasks, Field practical/ Visits</p>	Class test, Semester end examinations, Individual and group projects

**CONTENTS**

**Unit I**

**9hrs**

- Introduction to Food Preservation
  - Physiology of Cells
  - Cellular stress signaling Systems
- General principles of food preservation: Asepsis, Removal, Anaerobic conditions
  - Methods of food preservation
  - Principles of Food Preservation
  - Asepsis
  - Removal of Microorganism
  - Maintenance of anaerobic conditions
- Aseptic Packaging
  - Introduction
  - Causes of Spoilage
  - Managing Microbial Activity
  - Active food Packaging
  - Antimicrobial Packaging Systems
  - Designing of AM Packaging System

- Heating, Ventilation and conditioning of packaging environment
- Packing Machine Requirements

## **Unit II**

**9hrs**

- Preservation by High Temperature
  - Factors Affecting Heat Resistance (Thermal Death Time)
  - Heat Resistance of Microorganism and their spores
  - Determination of Heat Resistance (Thermal Death Time)
  - Thermal Death Time Curves (TDT) 12D concept
  - Heat penetration
  - Determination of Thermal Process
  - Heat Treatments employed in processing foods

## **Unit III**

**9hrs**

- Preservation by the use of Low Temperature
  - Growth of Microorganism at Low Temperature
  - Temperatures Employed in Low Temperature storage
  - Effects of Subfreezing and freezing temperatures on Microorganisms
- Preservation by Food Additives
  - The ideal antimicrobial preservatives
  - Added Preservatives
  - Developed Preservatives

## **Unit IV**

**9hrs**

- Preservatives by Drying
  - Methods of Drying
  - Factors in control of Drying
  - Treatments of Foods before drying
  - Procedures after drying
  - Microbiology of Dried Foods
  - Intermediate- Moisture Foods
- Preservatives by Irradiation
  - Introduction
  - Ionizing Radiation used for Food Irradiation
  - Foods Currently being Irradiated
  - Sensitivity and Resistance of microbes towards ionizing Radiations
  - Importance of surviving bacteria in low dose irradiated foods
  - Uses of Food Irradiation
  - Effects of Ionizing Radiation on Nutrient in Foods

## Unit V

9hrs

- New Preservation Technologies
  - Introduction
  - Non Thermal Inactivation Technologies
  - Biopreservation
  - Natural Anti Microbial Compounds
  - Non bacteriocinogenic cultures
  - Factors affecting microbial resistance
  - Kinetics of inactivation

### BOOKS RECOMMENDED::

- Srilakshmi. Food science. New Age International Pvt.Ltd. New Delhi,1997.
- Manay. Food, facts and principles. New Age International Pvt.Ltd. New Delhi 2000
- Frazier. Food microbiology. McGraw Hill, New York, 1998.
- ISI publications.
- PFA Act, 1954
- Egan, Kiv,Sawyer. Pearson's chemical analysis of foods. Addison Wesley England,1991.
- Joslyn. Methods in food analysis.
- Jacob. Chemical methods in food analysis. CBS Publications and Distributors,Delhi,1999

**PAPER CODE –FSQ 203**  
**Food Science and Preservation**  
**(Practical)**

**Credits-02**

**Max Marks-100**

**Contact Hrs. / week-04**

**Total Hrs-60**

### Course Objectives:

**This course will enable the students to –**

1. The basic terms and methods used in cooking.
2. Various food preparations and the principles involved in food preparations.
3. The portion size and nutritional quality of food product.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
FSQ 203	Food Science and Preservation (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO21:</b>Test the common adulterants present in food products</p> <p><b>CO22:</b>Discuss basic principles of common food preservation methods.</p> <p><b>CO23:</b>Use the food preservation methods including preservation using high and low temperature, drying and aseptic processing.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Giving tasks.</p>	Class test, Semester end examinations, Quiz, Individual and group projects

**CONTENTS**

- Food adulteration: Test involving identification of common adulterants present in food products.
- Preservation of food using different methods:
  - Preservation by use of drying and dehydration
  - Preservation by use of high temperature
  - Preservation by use of low temperature
  - Preservation by use of chemical preservatives
  - Preservation by use of sugar and salt
  - Preservation by use of oils and spices
  - Preservation by Microwave

**BOOKS RECOMMENDED:::**

- Srilakshmi. B. Food Science. New - Age International (P) Ltd. Publishers, New Delhi, 1997.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Banaglore 1990.
- Potter, N.N. Food Science, 3rd Ed CBS Publishers and Distributors. Delhi, 1987.
- Bennion, M. Introductory Foods. Eight edition. Macmillan Publishing Company, New York. 1985.
- Bogstrom, G. Principles of Food Science, Vol I and II, The Macmillan Co., New York, 1968.
- Charly, H. Food Science. John Wiley and Sons Inc, New York, Second edition 1970.
- Frazier, W.C. Food Microbiology. Mc Graw Hill book Co., New York, 1968.
- Griswald, R.M. The Experimental study of foods. Houghton Mifflin Co. Boston, 1962.
- Hughes, Osee. Introduction Foods. The Mac Millan Co, New York, 1962.
- Hester R.E. and Harrison, R.M. Food Safety and Food Quality: Issues in Environmental Science and Technology. Royal Society of Chemists, Cambridge, 2001.

- Lowe, B. Experimental Cookery. John Wiley and Sons Inc, New York.
- Manay, N.S. and Shadaksharaswamy M. Food Facts and Principles. Second edition, New Age International Publisher, New Delhi 2001.
- Meyer. L.H. Food Chemistry, CBS Publishers and Distribution, Delhi, 1987.
- Agarwal, Gupta and Khuteta, Food and Nutrition, Ajmer book Company, Jaipur 2001, Singh Varnda (in Hindi)
- Aina U, Kashyap S.K. Narula, V., Thomas, S., Suvira, Vir, S and Chopra, S., Complete Manual, Orient Longma Pvt. Ltd., New Delhi, Third edition, 2002.
- Gupta. S., Seth, R., Khana, K. and Mahna, R. Art and Science of Cooking- A Student's Manual, Blaze Publishers and Distributors Pvt. Ltd., new Delhi 1991.
- Mathur, M., Goyle, A., Gupta, P. and Magon, A Book of Recipes. Indian Book House, Jaipur, 1995.
- Handbook on Food Preservation By Government of India

**COURSE OUTCOMES - Semester III**  
**PAPER CODE -FSQ-301**  
**Food Processing I**  
**(Theory)**

**Credits-03**  
**Max Marks-100**  
**Contact Hrs. / week-03**  
**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to –**

1. Be aware of food processing technologies.
2. Understand various changes occurring in food components during processing.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<b>FSQ 301</b>	<b>Food Processing-I (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO24:</b> Identify the processing techniques used to produce a variety of milk products.</p> <p><b>CO25:</b> Develop the understanding of processing of eggs, poultry, meat and fish to improve its quality.</p> <p><b>CO26:</b> Identify the sources and processing of Edible Fats and Oils.</p> <p><b>CO27:</b> Organize the concept of cereals and legumes processing.</p> <p><b>CO28:</b> Develop an understanding of fruits and vegetables processing to improve shelf life.</p>	<p><b>Approach in teaching:</b> Discussion, Demonstration, power point presentation, Field Trip</p> <p><b>Learning activities for the students:</b> Field activities, Presentation,</p>	Class test, CA test, Semester end examinations, Quiz, Assignments, Presentation,
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## CONTENTS

### Unit I

**9hrs**

- Cereals and legumes
- Processing (milling) of wheat , Rice and Pearl Millet to obtain flour and legumes to obtain dhal
- Oilseeds

### Unit II

**9hrs**

- Processing of oilseeds to obtain oil (extraction and purification)
- Fruits and vegetables
- Processing to increase shelf life of raw fruits and vegetables. (Blanching, freezing, canning and irradiation)

### Unit III

**9hrs**

- Milk & Milk Products (Yoghurt and Cheese)
- Types of milk, and processing of milk to increase shelf life of raw milk (Pasteurization, sterilization, drying)

### Unit IV

**9hrs**

- Eggs and poultry: processing to increase shelf life of eggs and poultry (drying of egg yolk, freezing and irradiation)

### Unit V

**9hrs**

- Meat and fish: processing to increase shelf life of meat and fish. (Smoking, freezing, canning and irradiation)



### **BOOKS RECOMMENDED:::**

- Fellows PJ. Food Processing Technology : Principles and Practice, II edition, CRC Woodhead Publishing Ltd. Cambridge.
- Desrosier N W: Elements of Food Technology, Connecticut, USA: AVI Publishing Company.
- Srilakshmi. B. Food Science. New - Age International (P) Ltd. Publishers, New Delhi, 1997.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Banaglore 1990.
- Potter, N.N. Food Science, 3rd Ed CBS Publishers and Distributors. Delhi, 1987.
- Tressler DK and Joslyn MA : Fruit and Vegetable juice production, Connecticut,USA: AVI Publishing Company.
- S Dey : Outlines of Dairy Technology, Oxford University Press, Delhi.
- Sachrow & Griffin, Food Packing – AVI Publications.
- Stanley & Sachrow , Food Packaging.
- Bhatia SC., Canning and Preservation of Fruits and Vegetables, - New Delhi India.

**PAPER CODE- FSQ 302**  
**Food Microbiology**  
**(Theory)**

**Credits-03**

**Max Marks-100**

**Contact Hrs. / week-03**

**Total Hrs-45**

### **Course Objectives:**

**This course will enable the students to –**

1. Gain deeper knowledge of micro organisms in humans and environment.
2. Understand the importance of microorganisms in food spoilage and to learn advanced techniques used in food preservation.
3. Understand the latest procedures adopted in various food operations to prevent food borne disorders and legal aspects involved in such cases.
4. Become aware of the food quality determinants and their estimation methods.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
FSQ 302	Food Microbiology (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO29:</b> Identify the important pathogens and spoilage microorganisms in foods</p> <p><b>CO30:</b> Examine the principles involving food preservation</p> <p><b>CO31:</b> Identify the principles that make a food product safe for consumption</p> <p><b>CO32:</b> Develop the understanding of food spoilage during preparation, processing and storage to potential spoilage microorganisms</p> <p><b>CO33:</b> Identify the intrinsic and extrinsic factors affecting the growth of microbes in foods.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Seminar presentation</p>	Class test, CA test, Semester end examinations, Quiz, Assignments, Presentation,

**CONTENTS**

**Unit I**

**9hrs**

- The evolution of Food Microbiology
  - Origin of Food Microbiology
  - Scope of Food Microbiology
- Food as a substrate for Microorganism
  - Hydrogen ion concentration (Ph)
  - Moisture requirement: The concept of water activity
  - oxidation reduction potential
  - nutrient content
  - inhibitory substances and biological structure
  - combined effects of factors effecting growth

**Unit II**

**9hrs**

- Consortium of Microorganisms in food
- General characteristics, classification, identification and importance of
  - Moulds
  - Yeast and Yeast like Fungi
  - Bacteria

**Unit III**

**9hrs**

- Contamination of Foods
  - From green plants, fruits, animals, sewage, soil, water, air and during processing and handling.

- General principles underlying spoilage: Chemical changes caused by Microorganisms
  - Fitness or unfitness for consumption
  - Causes of spoilage
  - Classification of Foods by ease of spoilage
  - Factors affecting kinds and numbers of microorganism in food
  - Factors affecting the growth of microorganism in food
- Microbial and biochemical aspects of Food Spoilage
  - Microorganism in Food Spoilage
  - Biochemical Spoilage
  - Yeast and Moulds in Food Spoilage
  - Chemical Spoilage

#### **Unit IV**

**9hrs**

- Microbiology of different foods- Spoilage and contamination- sources, types, effects on the following
  - Cereal and cereal products
  - Sugar and Sugar Products
  - Vegetable and fruits
  - Meat and Meat Products
  - Fish and sea foods
  - Milk and Milk Products
  - Canned Foods

#### **Unit V**

**9hrs**

- Microbial intoxication & Infection- sources of contamination of foods, toxin production and physiological action. Sources of Infection of Foods by pathogenic organisms- symptoms & method of control
- Beneficial effects of microorganism & Probiotic
- Relevance of microbiological standards for food

#### **BOOKS RECOMMENDED::**

- Banwart, G.T. Basic Food Microbiology. CBS Publisher, New Delhi
- Frazier, W.C. 'Food Microbiology' 4<sup>th</sup> Edition 1988. McGraw Hill, New York.
- Pelczar H.J. and Rober D. 'Microbiology' 2<sup>nd</sup> Edition 1968. McGraw Hill, New York.
- Jay J.H. 'Modern Food Microbiology' CBS Pub., New Delhi. Jacob, M. (1989). a safe food handling. A training guide for manager.WHO, Geneva, Marriott, N. G.

**PAPER CODE-FSQ 303**  
**Food Microbiology**  
**( Practical)**

**Credits-02**  
**Max Marks-100**  
**Contact Hrs. / week-04**  
**Total Hrs-60**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the importance of microorganisms in food spoilage.
2. Gain insight into techniques used for analysis microbial quality of foods.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>FSQ 303</b>	<b>Food Microbiology (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO34:</b> Paraphrase the importance of micro-organisms in food spoilage.</p> <p><b>CO35:</b> Demonstrate the techniques used to analyze the microbial quality of foods.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Demonstration, Team teaching</p> <p><b>Learning activities for the students:</b> Self learning assignments, Simulation, Powerpoint presentation, Giving tasks, Laboratory practical</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual projects

**CONTENTS**

- Bacterial staining
- Identification of fungi

- Water potability tests
- Microbiological analysis of different foods
- Preparation of media
- Different methods of sterilization and disinfections
- Aseptic inoculation techniques

**BOOKS RECOMMENDED:**

- Banwart, G.T. Basic Food Microbiology. CBS Publisher, New Delhi
- Frazier, W.C. 'Food Microbiology' 4<sup>th</sup> Edition 1988. McGraw Hill, New York.
- Pelczar H.J. and Rober D. 'Microbiology' 2<sup>nd</sup> Edition 1968. McGraw Hill, New York.
- Jay J.H. 'Modern Food Microbiology' CBS Pub., New Delhi. Jacob, M. (1989). a safe food handling. A training guide for manager.WHO, Geneva, Marriott, N. G.

**COURSE OUTCOMES - Semester IV**  
**PAPER CODE -FSQ-401**  
**Food Safety**  
**(Theory)**

**Credits-03**

**Max Marks-100**

**Contact Hrs. / week-03**

**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to -**

1. Gain deeper knowledge of various ways of maintaining hygiene and sanitation.
2. Understand the importance of microorganisms in food spoilage and to learn advanced techniques used in food preservation.
3. Understand the latest procedures adopted in various food operations to prevent food borne disorders and legal aspects involved in such cases.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>FSQ 401</b>	<b>Food Safety (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO36:</b> Gain basic understanding of food safety and its related issues</p> <p><b>CO37:</b> Illustrate risk factors and newer challenges associated with food safety</p> <p><b>CO38:</b> Understand and apply general principles of food hygiene</p> <p><b>CO39:</b> Relate the relevance of various quality management systems/ approaches of food safety at various levels</p> <p><b>CO40:</b> Discuss basic principles and practices of cleaning and sanitation in food processing operations, as well as requirements for water utilization and waste management.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects

## CONTENTS

### Unit I

9hrs

- Relationship of microorganism to sanitation
  - Role of microbiology – Environmental effects of microbial growth
  - Effects of microorganism on food degradation
  - food borne illness- bacteria, virus, moulds, yeast and parasites
  - Food Hazards- chemical, antibiotics, hormones, metal contamination-poisonous foods

### Unit II

9hrs

- Food contamination- Sources and transmission water, air, sewage and soil as reservoir of infection and warp of spread
- Other agents of contamination-
- Hermans, domestic animals, vermin's, birds.

### Unit III

9hrs

- Importance of personal hygiene of food handler
- Habits- clothes, illness education of food handler in handling and serving food
- Safety in food procurement, storage, handling and preparation- control of spoilage
- Holding time of various foods in food service institutions
- Safety of left over foods.

### Unit IV

9hrs

- Cleaning Methods- Sterilization and disinfection- products and methods- use of detergents, heat , chemicals ,test for sanitizers.
- Sanitation- Kitchen design equipment and systems
- Structure and layout of food premises maintaining clean environment
- Selecting and installing equipment cleaning equipment

### Unit V

9hrs

- Waste Product Handling
  - Planning for waste disposal
  - Solid waste and liquid wastes, ecomanagement
- Control of Infestion
  - Rodent Control- Rats, Mice- Rodent Proofing, Destruction
  - Vector control
  - Use of Pesticide
- Food Sanitation, control and inspection- Planning and Implementation of training programmes for health.

### BOOKS RECOMMENDED:

- Jacob, M (1989)Safe Food Handling. A Training guide for manager. WHO Geneva, Marriott, N.G (1989).

- Principles of Food Sanitation-II Edition. AVI Book. Van Nostrand Reinhold, New York.
- Hobbs, B.C and R.J Gilbert (1978). Food Poisoning and Food Hygiene. 4<sup>th</sup> edition. The English language book society and Edward Arnold (publisher)Ltd
- Longree, K(1967). Quantity Food Sanitation Interscience Publishers, New York
- Kawata, K. (1983) Enviromental Sanitation in India. Lucknow Publishing House.
- Minor, L.J.(1983) Sanitation, Safety and Environmental Standards AVI. Publishing Co. Westport, Connecticut.

**PAPER CODE –FSQ 402**  
**Food Processing II**  
**(Theory)**

**Credits-03**

**Max Marks-100**

**Contact Hrs. / week-03**

**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to -**

1. Be aware of food processing technologies.
2. Understand various changes occurring in food components during processing.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
FSQ 402	Food Processing- II (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO41:</b> Identify different additives and preservatives in food industry</p> <p><b>CO42:</b> Comprehend the processing techniques different spices and functional food</p> <p><b>CO43:</b> Gain Knowledge about the extrusion technology</p> <p><b>CO44:</b> Discuss about the various methods for improving properties and nutritional composition of foods</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects

**Unit I**

**9hrs**

- Additives and preservatives
- Definition of food additives: acids, bases, buffer systems and salts, chelating agents, antimicrobial agents, sweeteners, stablizers and thickeners, fat replacers, firming texturizers, appearance control and clarifying agents.
- Flavor enhancers, aroma substances, sugar substitutes, sweeteners, antioxidants
- Anticaking agents, bleaching agents, protective gases.

**Unit II****9hrs**

- Spices
  - Processing and extraction of essential oils and colours, stability, storage and preservation
  - Functional foods and technology to meet special needs and new advances.

**Unit III****9hrs**

- Fermentation Technology
  - Fermentation Technology, yeast, fermented vegetables, beer, vinegar, fermented soya products

**Unit VI****9hrs**

- Extruded foods – Introduction to extrusion technology, merits and demerits
- Fermentation Technology
- Fermentation Technology, yeast, fermented vegetables, beer, vinegar, fermented soya products

**Unit V****9hrs**

- Methods of improving properties and nutritional composition of foods (definition and concept)
  - Genetic engineering
  - Fermentation
  - Germination
  - Enrichment
  - Fortification

**BOOKS RECOMMENDED:**

- Fellows PJ. Food Processing Technology: Principles and Practice, II edition, CRC Woodhead Publishing Ltd. Cambridge.
- Desrosier N W: Elements of Food Technology, Connecticut, USA: AVI Publishing Company.
- Srilakshmi. B. Food Science. New - Age International (P) Ltd. Publishers, New Delhi, 1997.
- Swaminathan M. Food Science Chemistry and Experimental foods, The Bangalore Printing and Publishing Co. Ltd., Mysore, Banaglore 1990.
- Potter, N.N. Food Science, 3rd Ed CBS Publishers and Distributors. Delhi, 1987.
- Tressler DK and Joslyn MA: Fruit and Vegetable juice production, Connecticut,USA: AVI Publishing Company.
- S Dey : Outlines of Dairy Technology, Oxford University Press, Delhi.
- Sachrow & Grifin, Food Packing – AVI Publications.
- Stanley & Sachrow , Food Packaging.
- Bhatia SC., Canning and Preservation of Fruits and Vegetables, - New Delhi India.



**PAPER CODE –FSQ 403**  
**Food Analysis**  
**(Practical)**

**Credits-02**  
**Max Marks-100**  
**Contact Hrs. / week-04**  
**Total Hrs-60**

**Course Objectives:**

**This course will enable the students to -**

1. Gain knowledge regarding modern methods of food analysis.
2. Gain insight into techniques used for analysis microbial quality of foods.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>FSQ 403</b>	<b>Food Analysis (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO45:</b> Develop the understanding of basic terminology of chemical analysis</p> <p><b>CO46:</b> Investigate the techniques of proximate composition analysis of food</p> <p><b>CO47:</b> Implement the principles and techniques used in the analysis of Vitamins &amp; minerals</p> <p><b>CO48:</b> Implement the applications of spectroscopic techniques used in the analysis of Sodium and potassium</p> <p><b>CO49:</b> Investigate the role of enzymatic activity in foods</p>	<p><b>Approach in teaching:</b>            Demonstration,            Discussion</p> <p><b>Learning activities for the students:</b>            Hands on experience of food product analysis</p>	Class test, CA test, Semester end examinations, Quiz, Assignments, Presentation,

**CONTENTS**

- Titratable acidity & pH
- Estimation of Proximate composition – moisture, fat, carbohydrate, crude protein, fibre, ash.
- Quantitative estimation of vitamins – vitamin A, thiamine, riboflavin, vitamin-C
- Quantitative estimation of minerals – calcium, iron, sodium, potassium, phosphorus
- Enzymatic activity

**BOOKS RECOMMENDED:**

- Joslyn.. methods in food analysis
- Jacob. Chemical methods in food analysis
- Egan and Sawyer. Pearson’s chemical analysis of foods
- Lee. Elementary principles of lab instruments
- AOAC
- NIN

**COURSE OUTCOMES - Semester V**  
**PAPER CODE-FSQ501**  
**Food Toxicology**  
**(Theory)**

**Credits-03**  
**Max Marks-100**  
**Contact Hrs. / week-03**  
**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to –**

1. Familiarize with hazards and toxicity associated with food and their implication for health.
2. Know the various kinds of hazards.
3. Be familiar with various tests.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
FSQ 501	Food Toxicology (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO50:</b> Outline the concept toxicology ,toxicity and different types of toxic responses</p> <p><b>CO51:</b> Evaluate the guidelines for risk Assessment</p> <p><b>CO52:</b> Identify the potential sources of toxicants in food include nutrients , natural food toxicants, contaminants, and chemicals or substances intentionally added to food (food additives).</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, assignments</p> <p><b>Learning activities for the students:</b> Self learning assignments, Seminar presentation</p>	Class test, Semester end examinations, Quiz, Solving problems in tutorials, Assignments, Presentation, Individual and group projects

**CONTENTS**

**Unit I**

**9hrs**

- Introduction to Food safety and toxicology: hazards-microbiological, nutritional, environmental, natural toxicants, pesticide residue.

**Unit II**

**9hrs**

- Assessment of food Toxicology
- Risk assessment and risk benefit
- Indices of human exposure
- General design of toxicity assays
- Acute toxicity
- Mutagen city and carcinogenicity
- Reproductive and developmental toxicity
- Neurotoxicity and behavioral effects
- Immunotoxicity

- Biotechnology and food safety

### **Unit III**

**9hrs**

- Evaluation guidelines and computer modeling of risk assessment
- Microbial problems in food safety including mycotoxins and viruses

### **Unit IV**

**9hrs**

- Intentional Direct Additives
- Preservatives: nitrate, nitrite and N-nitroso compounds
- Indirect additives, residues and contaminants: Multi- contaminants studies. Anti-microbial and veterinary drugs, pesticides, polyhalogenated aromatic hydrocarbons, polycyclic aromatic hydrocarbons.
- Organic residues, packaging materials, heavy metals, radio nuclides in foods.

### **Unit V**

**9hrs**

- Naturally occurring toxicants and food contaminants: Sea food toxins, biogenic amines, mutagens and carcinogens in heated and processed foods, coffee, methylxanthines, toxicity of mushrooms alkaloids, phenolic compounds, glucosinolates, protease inhibitors, phytates, other antinutritional compounds
- Safety aspects of foods produced by technology and genetic engineering.
- Environmental pollution sources: Air, water, sludge, soil. Hazards involved water treatment and waste management.

### **BOOKS RECOMMENDED:**

- OECD Documents (1996): Food Safety Evaluation. Organisation for Economic Co operation and development.
- World Health Organisation (1990): Strategies for assessing the safety of foods produced by biotechnology. Report of a joint FAO/WHO Consultation- Geneva..
- Walker and Quattrucci, E. (eds) (1980) Nutritional and Toxicology Aspects of Food Processing, Tayloss and Franis. New York.
- Lava, K. Muller, E.I: Toxicological Aspects of Foods. Elsevier Applied Sciences, London.
- Bronzetti, G. Hayatsu, H. De Flora, S. Water M.D and Shankel, D.M (1993): Anti carcinogenesis Mechanism Plenum Press, New York.
- Varnham, AH. Evans, M.G.(1991): Food borne pathogens.

**PAPER CODE- FSQ 502**  
**Product Formulation**  
**(Theory)**

**Credits-03**  
**Max Marks-100**  
**Contact Hrs. / week-03**  
**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to –**

1. Develop ability to use sensory evaluation as an analytical tool.
2. Enable students to develop new food products.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>FSQ 502</b>	<b>Product Formulation (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>CO53:</b> Describe the basic anatomy and physiology of the sensory organs used to evaluate food</p> <p><b>CO54:</b> Explain the basic principles of sensory analysis.</p> <p><b>CO55:</b> Demonstrate how to design and undertake sensory testing using different types of methodologies</p> <p><b>CO56:</b> Explain the properties and uses of various packaging materials</p>	<p><b>Approach in teaching:</b>  Lecture method  Power Point presentation  Discussions  Tutorials</p> <p><b>Learning activities for the students:</b>  Seminar Presentations  Giving tasks  Survey to collect various packaging materials</p>	Class test Semester end examinations Quiz Assignments

**CONTENTS**

**Unit I**

**9hrs**

- Sensory assessment of Food Quality
  - Appearance of food- visual perception, color of foods
  - Odor and smell
  - Flavor
  - Texture
  - Taste

**Unit II**

**9hrs**

- Sensory Testing of foods
  - Threshold Tests

- Difference Test
- Ranking
- Scoring
- Hedonic Scale
- Acceptance and preference tests

### **Unit III**

**9hrs**

- Procedure of grading
  - Panel selection
  - Screening and training of judges
  - Requirement of sensory evaluation
  - Factors influencing sensory measurement
- Consideration for testing sensory evaluation
  - Testing Area
  - Testing set up
  - Lighting
  - Testing schedule
  - Preparation of samples
  - Cooling & order of preparation
  - Choosing and training of panelist

### **Unit IV**

**9hrs**

- Food Packaging
  - Functions and Objectives
  - Basic packaging material and their protective quality,
  - Effect of packaging on nutritive value of foods.
  - Packaging methods and performance
  - Packaging methods and controls
  - Food Packaging laws
  - Packaging Evaluation- packaging life theory& testing packaging materials

### **Unit V**

**9hrs**

- Shelf life Testing
  - Biochemical tests
  - Nutritional analysis
  - Organoleptic tests
  - Microbial Analysis

### **BOOKS RECOMMENDED:**

- Principles of Sensory Evaluation of Foods. Amerine, Pangborn and Roessler Academic Press New York (1965)
- Developments in Food Analysis Techniques Vol. 2. Brannan J.G. Elsevier Applied Science Publisher London (1980)
- Guidelines for Sensory Analysis in Food Product Development and Quality Control. Lyon, Francombe, Hasdell & Lawson. Chapman & Hall New York (1992)

- Quality Assurance of Food : Ingredients Processing & Distribution : Foods & Nutrition Press, Westpot C.T. (1988)
- Deman, Voisey and Rasper,. Rheology & texture in Food Quality. AVI Publishing Co. Wespot C.T. (1976)
- Food Structure – Its creation and evaluation. Blanshard, Hutton & Walters. Butterworths, Lonodon (1989)
- Jowitt, Esher, Kent, Rogues, Elsevier, Physical Properties of Food. Applied Science, London & New York (1987)
- Food Packaging Sacharow and Griffir Avi. Publishing Co.
- Packaging for climatic Protection Carins, OswinPaine
- Food Science, Usha Chandra

**PAPER CODE- FSQ 503**  
**Product Formulation**  
**(Practical)**

**Credits-02**

**Max Marks-100**

**Contact Hrs. / week-04**

**Total Hrs-60**

**Course Objectives:**

**This course will enable the students to –**

1. Understand and know various aspects of food product development including food science & technology, marketing and consumer research, finance and communication.
2. Develop products which meet consumer needs, and are nutritionally and commercially viable.
3. Recognize the potential for entrepreneurship through marketing.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
FSQ 503	Product Formulation (Practical)	<p><b>The students will be able to –</b></p> <p><b>CO57:</b> Describe and apply techniques that can be used to monitor quality of raw ingredients</p> <p><b>CO58:</b> Conduct appropriate sensory evaluation tests for the measurement and assessment of sensory differences.</p> <p><b>CO59:</b> Analyze sensory data and draw appropriate conclusions</p>	<p><b>Approach in teaching:</b>            Practical on assessment of quality parameters of new products            Demonstration            Visit to processing units</p> <p><b>Learning activities for the students:</b>            Participation in Competitions            Product development</p>	Class test Semester end examinations Quiz Assignments

**CONTENTS**

- Physical and chemical tests to determine quality and detect adulterants in the following:
  - milk and milk products,
  - oils and fats,

- spices and condiments,
- food grains,
- flours,
- canned foods,
- fruits and vegetables
- baked foods
- beverages
- Sensory evaluation of various foods.
- Product Development

**BOOKS RECOMMENDED:**

- Paine. Modern processing, packaging and distribution system. Blackie, Glasgow, 1987
- Raphael and Olson. Package production management AVI publ. Co. Inc. Connecticut, 1976.
- Food and packaging interaction. Hotchikess American Chemical Society
- ISI publications
- PFA Act,1954
- Jacob. Chemical methods in food analysis. CBS publications and distributors, New Delhi, 1999.
- Hayes. Food engineering data handbook. Longman scientific and technical, New York, 1987
- Sacharow and Griffir. Food packaging. AVI publishing Co.
- Briston and Neil. Packaging management. Gower press

**COURSE OUTCOMES - Semester VI**  
**PAPER CODE –FSQ 601**  
**Food Quality Control**  
**(Theory)**

**Credits-03**

**Max Marks-100**

**Contact Hrs. / week-03**

**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to –**

1. Make the students understand various aspects of quality
2. Make them aware of various quality criteria

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
FSQ 601	Food Quality Control (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO60:</b> Develop an understanding about quality assurance, HACCP etc</p> <p><b>CO61:</b> Gain knowledge about chemical preservatives, pesticides, heavy metals etc.</p> <p><b>CO62:</b> Develop skills required to understand quality criteria of various food products</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, , Team teaching and learning activities</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective discussion , Simulation, Report analysis and presentation, Giving tasks,</p>	CA test, Semester end examinations, Assignment, Group discussion and power point presentation

**CONTENTS**

**Unit I**

**9hrs**

- Introduction to quality assurance and Food safety assurance. Concept of quality control.
- Quality Assurance programme: Quality Plan, Documentation of records, product standards, Product and purchase specifications, process control and HACCP, housekeeping, corrective action, quality and programme and total quality progress.

**Unit II**

**9hrs**

- Residual chemicals used in food production:
- chemical preservatives,
- pesticides,
- heavy metals



- hormones
- colors, antioxidants, stabilizers

### **Unit III**

**9hrs**

- Quality criteria (chemical and biological) for
  - milk and milk products,
  - oils and fats,
  - spices and condiments

### **Unit IV**

**9hrs**

- Quality criteria (chemical and biological) for
  - flours,
  - canned foods,
  - fruits and vegetables

### **Unit V**

**9hrs**

- Quality criteria (chemical and biological) for
  - flesh foods,
  - sugars and preserves,
  - beverages

### **BOOKS RECOMMENDED:**

- ISI publications
- PFA Act, 1954
- Jacob. Chemical methods in food analysis. CBS publications and distributors, New Delhi, 1999.
- Miller. Toxicological aspects of foods. Elsevier applied sciences, London.
- Walker. Nutritional and toxicological aspects of food processing
- Manuals of food quality control

**PAPER CODE -FSQ602**  
**Introduction to Food Manufacturer**  
**(Theory)**

**Credits-03**  
**Max Marks-100**  
**Contact Hrs. / week-03**  
**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to -**

1. Develop new food products which are marketable and nutritionally and economically viable.
2. Develop entrepreneurial abilities for small scale food industries.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
FSQ 602	Introduction to Food Manufacturer (Theory)	<p><b>The students will be able to –</b></p> <p><b>CO63:</b>Gain Knowledge about Additives, preservatives, standardization etc</p> <p><b>CO64:</b>Gain insight related to chemical and physical properties and shelf life</p> <p><b>CO65:</b>Learn details about packaging</p> <p><b>CO66:</b>Develop skills with regards to entrepreneurship, costing, advertizing and marketing</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Designing of questionnaire</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective discussion , Simulation, Review of several successful entrepreneurs Report analysis</p>	CA test, Semester end examinations, Home Assignment, Presentation, Individual and group projects

**CONTENTS**

**Unit I**

**9hrs**

- Introduction to Unit operations
- Market And consumer research. Needs and types of foods- consumption pattern. Economic, psychological, anthropological and sociological dimensions of food consumption pattern
- Trends in social change and its role in diet pattern. Using social trends as framework in new product innovation

**Unit II**

**9hrs**

- Food situation in India and Outside. Tapping the unconventional post harvest losses and prospect for food processing for export
- Additives, preservatives, processing, formulation, standardization and large scale preparation.

**Unit III****9hrs**

- Chemical and physical properties of food shelf life studies and shelf life prediction sanitation and waste disposal
- Packaging- packaging, suitability and functions, development and management. Design and packaging graphics, labeling. Research and testing.

**Unit VI****9hrs**

- Transportation. Types/ Mode, optimizing transportation, taking into account types of product, distance, storage facilities etc
- Sensory Evaluation and product testing/ quality control objectives and subjective testing

**Unit V****9hrs**

- Entrepreneurship, plant location, investment, financing of project
- Costing of the product
- Advertising and marketing

**BOOKS RECOMMENDED:**

- Association of food scientist and technician(India). Trends in Food science & Technology. Proceedings of second international food science and technology (IFCON-88 Feb,18-13(FTR) Mysore.
- Ritson, C. Gofton L, Me Kenzie J. The food consumer . John Willey & sons New York 1986.
- Hayes G.D. Food engineering data hand book. Longman Scientific and technical New York 1987
- Bender , FE. , Kramer, A. , Kahan , G. System analysis for the food industries AVI Publication .Co. Connecticut. 1976

**PAPER CODE -FSQ-603**  
**Food Manufacturing**  
**(Practical)**

**Credits-02****Max Marks-100****Contact Hrs. / week-04****Total Hrs-60****Course Objectives:****This course will enable the students to –**

1. Develop new food products which are marketable and nutritionally and economically viable.
2. Develop entrepreneurial abilities for small scale food industries.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>FSQ 603</b>	<b>Food Manufacturing (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>CO67:</b> Develop understanding related to traditional foods</p> <p><b>CO68:</b> Learn concept of product development and its application</p> <p><b>CO69:</b> Develop understanding about packaging and labeling and perform sensory evaluation</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Team teaching and learning activities</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective discussion , Simulation, Report analysis and presentation, Giving tasks, Field practical related to</p>	CA test, Semester end examinations, Viva, Group discussion and power point presentation

**CONTENTS**

- Traditional foods- Status and need for revival in context of water minded non traditional foods, urbanization and such factors.
- Product Development: Primary processing, Secondary Processing. Types of products eg. Quick cooking, fast foods, fabricated foods, convenience foods, ready to eat foods
- Packaging and Labeling, Research and testing
- Sensory evaluation

**BOOKS RECOMMENDED:**

- Association of food scientist and technologist(India). Trends in Food science& Technology. Proceedings of second international food science and technology (IFCON-88 Feb,18-13(FTR) Mysore.
- Ritson, C. Gofton L, Me Kenzie J. The food consumer . John Willey & sons New york 1986.
- Hayes G.D. Food engineering data hand book. Longman Scientific and technical New York 1987
- Bemder , FE. , Kramer, A. , Kahan , G. System analysis for the food industries AVI Publication .Co. Connecticut. 1976

**Programme- M.Sc. Foods and Nutrition**  
**OUTCOMES - Academic Year- 2020-21**

**PROGRAMME OUTCOMES**

<b>PO1</b>	Identify how families and communities influence the process of growth and development
<b>PO2</b>	Demonstrate skills in using tools to assess human behaviour
<b>PO3</b>	Understand and appreciate the role of interdisciplinary sciences in the development and well- being of individuals, families and communities
<b>PO4</b>	Understand the sciences and technologies that enhance the quality of life of people
<b>PO5</b>	Acquire professional and entrepreneurial skills for economic empowerment of self in particular, and community in general
<b>PO6</b>	Develop professional skills in food, nutrition, textiles, housing, product making, communication technologies and human development
<b>PO7</b>	Adopted and transfer the scientific innovations from lab to the community
<b>PO8</b>	The courses focus on skill development and capacity building to empower women to initiate their own enterprise
<b>PO9</b>	Acquire necessary knowledge and skills to undertake a career in research, either in industry or in an academic set up.
<b>PO10</b>	Possess skills to effectively deliver formal and informal presentations to a variety of audiences in multiple contexts
<b>PO11</b>	Describe socio-cultural competence relative to diversity, equity and/or inclusion
<b>PO12</b>	Understood the role of interdisciplinary sciences in the development of individual, families and communities.

**PROGRAMME SPECIFIC OUTCOMES**  
**MSc H. Sc. (Food and Nutrition)**

<b>PSO</b>	<b>Programme Specific Outcomes</b>
<b>PSO1</b>	Assess nutritional status and plan appropriate diets.
<b>PSO2</b>	Use the knowledge of nutritional sciences in clinical interventions and communication for health promotion.
<b>PSO3</b>	Work as program planners and managers in the field of public health nutrition
<b>PSO4</b>	Work as food scientists, quality assurance managers and analysts
<b>PSO5</b>	Manage a food service establishment
<b>PSO6</b>	Apply theoretical concepts and practical training for research in the field of food science, clinical nutrition and public health nutrition

**COURSE ARTICULATION MATRIX: (MAPPING OF COS WITH POS & PSOs)**

<b>Course</b>	<b>COs</b>	<b>PO 1</b>	<b>PO 2</b>	<b>PO 3</b>	<b>PO 4</b>	<b>PO 5</b>	<b>PO 6</b>	<b>PO 7</b>	<b>PO 8</b>	<b>PO 9</b>	<b>PO 10</b>	<b>PO 11</b>	<b>PO 12</b>	<b>PSO 1</b>	<b>PSO 2</b>	<b>PSO 3</b>	<b>PSO 4</b>	<b>PSO 5</b>	<b>PSO 6</b>
<b>HFN 121</b>	COFN1				✓												✓		
	COFN2			✓	✓												✓		
	COFN3			✓	✓												✓		
	COFN4			✓	✓												✓		
	COFN5			✓	✓												✓		
<b>HFN 122</b>	COFN6			✓	✓												✓		
	COFN7			✓	✓												✓		
	COFN8							✓									✓		
	COFN9				✓			✓									✓		
<b>HFN 123</b>	COFN10				✓									✓	✓				
	COFN11				✓									✓	✓				
	COFN12				✓			✓						✓	✓				
<b>HFN 124</b>	COFN13	✓						✓						✓					
	COFN14							✓						✓					
	COFN15							✓						✓					
	COFN16			✓				✓						✓					
<b>HFN 125</b>	COFN17							✓									✓		✓
	COFN18							✓									✓		✓
	COFN19							✓									✓		✓
	COFN20							✓									✓		✓

	COFN21							✓								✓		✓
HFN 126	COFN22			✓	✓			✓								✓		✓
	COFN23			✓	✓			✓								✓		✓
	COFN24				✓			✓								✓		✓
	COFN25				✓			✓								✓		✓
	COFN26		✓	✓	✓			✓				✓	✓					
HFN 127	COFN27									✓	✓							✓
	COFN28		✓		✓			✓				✓	✓					
	COFN29				✓					✓		✓	✓					
	COFN30									✓	✓							✓
HFN 128	COFN31									✓	✓							✓
	COFN32									✓	✓							✓
	COFN33										✓							✓
	COFN34				✓			✓								✓		
HFN 221	COFN35				✓			✓								✓		
	COFN36				✓			✓								✓		
	COFN37									✓								✓
HFN 222	COFN38									✓								✓
	COFN39									✓								✓
	COFN40									✓								✓
	COFN41			✓	✓		✓	✓	✓							✓		
HFN 223	COFN42			✓	✓		✓	✓	✓							✓		
	COFN43			✓	✓		✓	✓	✓							✓		
	COFN44				✓			✓								✓		
	COFN45		✓		✓									✓				
HFN 224	COFN46		✓		✓									✓				
	COFN47			✓								✓	✓					
	COFN48							✓								✓		
HFN 225	COFN49							✓								✓		
	COFN50		✓							✓								✓
HFN 226	COFN51		✓							✓								✓
	COFN52		✓							✓								✓
	COFN53		✓							✓								✓
	COFN54		✓							✓								✓
	COFN55							✓								✓		
HFN 227	COFN56							✓								✓		
	COFN57				✓	✓		✓										
	COFN58		✓					✓					✓					
HFN 228	COFN59		✓					✓					✓					
	COFN60		✓		✓	✓		✓					✓					
	COFN61									✓								✓
HFN 229	COFN62									✓								✓
	COFN63									✓								✓
	COFN64										✓							✓
	COFN65											✓						✓





**M.Sc. HOME SCIENCE (FOODS & NUTRITION) (2020-2021)**

**COURSE OUTCOMES - Semester I**

**PAPER CODE–HFN -121  
Advanced Nutritional Biochemistry-I  
(Theory)**

**Credits– 04**

**Max. Marks – 100**

**Hrs./week - 04**

**Total Hrs. - 60**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the chemistry of macronutrients.
2. Understand the mechanisms adopted by the human body for regulation of metabolic pathways.
3. Understand the interrelationships between various metabolic pathways.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>HFN 121</b>	<b>Advanced Nutritional Biochemistry -I (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>COFN1:</b> Identify the chemical structures and chemical properties of macronutrients.</p> <p><b>COFN2:</b> Explain the major pathways for metabolism of nutrients and key mechanisms regulating these pathways.</p> <p><b>COFN3:</b> Describe the essential functions of nutrients in human cells and tissues. Pathologies associated with common metabolic disorders and defects.</p> <p><b>COFN4:</b> Illustrate the enzyme action and activity, and their diagnostic importance.</p> <p><b>COFN5:</b> Describe the importance of high energy compounds, electron transport chain, synthesis of ATP under aerobic and anaerobic conditions.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations,</p> <p>Power Point Presentations, Individual and group projects,</p> <p>Open Book Test, Semester End Examination, discussion, demonstration</p>

## CONTENTS

### UNIT I: Introduction to biomolecules

12 hrs

- Types of chemical bonds, significance of asymmetric C atom
- **Carbohydrates Chemistry**
  - Classification, structure and functions of carbohydrates
  - Properties of carbohydrates- Physical and chemical
- **Carbohydrate Metabolism Reactions** of EMP, TCA (with structures), HMP,
  - Gluconeogenesis (no structures), Glycogen metabolism (no structures),
  - Homeostasis of blood glucose

### UNIT II : Protein Chemistry

12 hrs

- Classification, structure and functions of amino acids and protein
- Properties of Protein- Physical and Chemical
- Plasma proteins – Nature, properties and functions
- **Protein metabolism**
  - General reactions of amino acids- transamination, deamination and decarboxylation
  - Detoxification of  $\text{NH}_3$
  - Krebs-Hensleit cycle, Creatinine and creatine synthesis

### Unit III : Lipid Chemistry

12 hrs

- Classification, structures and functions of lipids
- Properties of Lipids –Physical and Chemical
- Structure and functions of Cholesterol
- **Lipid Metabolism**
  - Knoop's  $\beta$ -oxidation of even C fatty acid (no structures), ketone body formation and utilization
  - Fatty acid biosynthesis of Palmitic acid (no structure)
  - Metabolism of Cholesterol
  - Lipid storage disorders

### UNIT IV: Enzyme Chemistry

12 hrs

- Definition, classification IUB (up to 1 digit), Concept of active site Enzyme specificity, Units: Katal, IU, Factors affecting enzyme activity
- Definition of  $K_m$  and significance
- Enzyme inhibition: Definition of Holoenzyme, Coenzyme, cofactor, Allosteric
- site, active site, prosthetic group, isoenzyme
- Mechanism of enzyme action
- Diagnostic importance of enzymes

### Unit V : Biological Oxidation

12 hrs

- Electron transport chain; O-R potential; oxidative phosphorylation; enzymes of biological oxidation; inhibition of respiratory chain and oxidative phosphorylation.
- Acid-Base balance, Buffers: definition, types of buffers, Role of lungs, kidneys and haemoglobin in Acid-Base balance Chloride shift
- Regulation of acid base balance
- Disorders of Acid-Base imbalance-acidosis & alkalosis –symptoms, causes, diagnosis, treatment & complications

## ESSENTIAL READINGS:

- Rao, K.R. (1986) Textbook of Biochemistry, III Edition. Prentice Hall of India Pvt. Ltd., New Delhi.
- Murray, R.K. Granner, P.A. Mayes, V.W. Rodwell (1988) Harper's Biochemistry. 21<sup>st</sup> Edition. Prentice Hall of Australia Pvt. Ltd.
- Lehninger, A.L. (1987) Principles of Bio-chemistry – CBS Publishers and Distributors
- West, E.S. Todd W.R. Mason, H.S. and Van Bruggen J.T (1974) 4<sup>th</sup> Ed. Text Book of Biochemistry, Amerind Publishing Co. Pvt. Ltd.
- Satyanarayan U (2002) Biochemistry.Uppala author-publisher interlinks, Vijaywada.

### **BOOKS RECOMMENDED:**

- White, A., Handler, P. and Smith, E.L. Principles of Biochemistry. W. B. Saunders Book Co. Philadelphia.
- Kahn Conn, E.E. and Stump, P.K. Outlines of Biochemistry. Willey Eastern Pvt. Ltd. New Delhi
- Stryer L. (1995) Biochemistry Freeman WH & Co.
- Sundararaj, P and Siddhu A (1995) Qualitative tests and Quantitative Procedures in Biochemistry.
- Varley H. Gowenlock, A.H. and Bell, M (1980) 5<sup>th</sup> Ed. Practical and Clinical Chemistry Vol. I William Heinemann Medical Book Ltd.
- Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2000): 25th Ed. Harpers Biochemistry. Macmillan Worth Publishers.
- Nelson, D.L. and Cox, M.M. (2000): 3rd Ed. Lehninger's Principles Biochemistry, Macmillan Worth Publishers.
- Devlin, T.M.d (1997): 4th Ed. Text book of Biochemistry with Clinical Correlations, WileLissInc
- Stryer, L. (1998): 4th Ed. Biochemistry, WH Freeman and Co.
- Conn, E.E., Stumpf, P.K., Bruening, G. and Doi, R.H. (2001): 5th Ed. Outlines of Biochemistry, John Wiley and Sons
- Voet, D. Voet, J.G. and Pratt, C.W. (1999). Fundamentals of Biochemistry.
- Tietz, N.W. (1976) Fundamentals of Clinical Chemistry. WB Saunders Co.
- King, E.J. and Wootton, I.D.P. (1956). 3rd ed. Micro-Analysis in Medical Biochemistry. and A Churchill Ltd.
- Plummer, D.T. (1987). 3rd ed. An Introduction to Practical Biochemistry. McGraw-Hill Book Co.

**PAPER CODE-HFN- 122**  
**Food Microbiology& Safety**  
**(Theory)**

**Credits-04**

**Max Marks-100**

**Contact Hrs./ week-04**

**Total Hrs-60**

### **Course Objectives:**

**This course will enable the students to –**

1. Gain deeper knowledge of microorganisms in humans and environment
2. Understand the importance of microorganisms in food spoilage and to learn advanced techniques used in food preservation.

3. Understand the latest procedures adopted in various food operations to prevent food borne disorders and legal aspects involved in such cases.
4. Become aware of the food quality determinants and their estimation methods

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 122	Food Microbiology & Safety (Theory)	<p><b>The students will be able to –</b></p> <p><b>COFN6:</b> Explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival.</p> <p><b>COFN7:</b> Describe the characteristics of food borne, waterborne and spoilage microorganisms, and food borne illness.</p> <p><b>COFN8:</b> Explain the microbiological quality control programmes necessary in food production</p> <p><b>COFN9:</b> Describe the various preservation techniques for foods.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self-learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations,</p> <p>Power Point Presentations, Individual and group projects,</p> <p>Open Book Test, Semester End Examination, discussion, demonstration</p>

**CONTENTS**

**Unit I**

**12hrs**

- Historical background, Morphological characteristics-
  - Bacteria
  - Yeast
  - Mold
- Factors affecting growth of microbes in food: Intrinsic and extrinsic factor
- Role and significance of micro organisms in food industry: - fermented foods (baked preparations, vegetable foods, soyabean products, dairy products, beer, wine, vinegar, antibiotics).

**Unit II: Food Spoilage and Food Borne Diseases**

**12hrs**

- Factors affecting food spoilage
  - Types of food on the basis of perishability
  - Chemical changes due to spoilage
  - Spoilage of different groups of food: Cereal and Cereal products, vegetables and fruits, meat and meat products, eggs and poultry, milk and milk products, canned foods.
  - Food borne infections and intoxications
  - Indicator organisms - their role and significance

**Unit III: Food Contamination and Preservation**

**12hrs**

- Sources and contamination- Air, water, soil, plants, animals and environment.
- Principles and methods of food preservation –

- Physical methods-drying, freezing, heat treatment, irradiation, high pressure processing
- Chemical preservation and natural antimicrobial compounds.
- Biologically based preservation systems and probiotic bacteria.

#### **Unit IV: Food Safety**

**12hrs**

- Factors affecting food safety - physical hazards, chemical hazards and biological hazards. Risk and hazard.
- HACCP – concept and significance.
- Personal hygiene
- Waste product handling (disposal of solid and liquid waste).
- Food Standards : FSSAI, Codex Alimentarius

#### **Unit V**

**12hrs**

- Risk analysis: risk assessment- Chemical & biological agents
  - risk management – Elements & general principles,
  - risk communication – Role & responsibilities, Principles
- Food packaging- concept, significance and functions,
  - Packaging methods,
  - Classification of packaging materials,
  - Interactions between packaging material and food toxicity hazards,
  - Biodegradable material & Environmental issues.
  - Labeling requirement and bar coding.

#### **ESSENTIAL READINGS:**

- Frazier and Westhoff (2006) Food Microbiology by. Tata Mc. Graw Hill Publishing Company Ltd. New Delhi.
- Banwart (2004) Basic Food Microbiology CBS Publishers & Distributors New Delhi.
- Cappucino, James G (1999) Microbiology; A Laboratory Manual (VI Edition) Addison-Wesley Publishing Company.

#### **BOOKS RECOMMENDED:**

- Adams M.R., Moss M.O. (2004) Food Microbiology (II Edition) Panima Publishing Cooperation New Delhi .
- Roday S. (1999) Food Hygiene & Sanitation Tata Mc Graw Hill
- James M. Jay (2005) Modern Food Microbiology (IV Edition), CBS Publishers & Distributors New Delhi.
- Potter & Hotchkiss Food Science CBS Publishers & Distributors New Delhi.
- Ramesh Vijaya K. (2007) Food Microbiology, MJP Publishers Chennai.
- Casida Jr; L.E. (2002)Industrial Microbiology New Age International (p) Ltd. New Delhi.
- Deshmukh A.M. (2007) Handbook of media &Stains & Reagents in Microbiology. Oxford Book Company, India.

**PAPER CODE-HFN- 123**  
**Life Cycle Nutrition**  
**(Theory)**

**Credits-02**

**Max Marks-100**

**Contact Hrs./ week-02**

**Total Hrs-30**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the role of nutrition in different stages of life span
2. Provide the guidelines for adequate nutrition throughout life span
3. Get acquainted with growth, development and physiological changes during pregnancy, lactation and infancy

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>HFN 123</b>	<b>Life Cycle Nutrition (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>COFN10:</b> Acquire knowledge about the nutritional needs and concerns of an individual throughout the life cycle.</p> <p><b>COFN11:</b> Exercise food choices consonant with good health based on sound knowledge of principles of nutrition.</p> <p><b>COFN12:</b> Understand nutrition considerations during throughout their life cycle</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b> Self-learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>

**CONTENTS**

**Unit I : Nutrition during infancy**

**6 hrs**

- Growth and development
- Nutritional requirements
- Advantages of breast feeding
- Artificial feeding or bottle feeding
- Infant milk substitute act 1992, National International Guidelines on Infant and Young Child Feeding (IYCF)
- Preterm baby and nutritional requirements
- Feeding problems
- Complementary Feeding

**Unit II :**

**6hrs**

**Nutrition during preschool age**

- Growth and Development
- Growth monitoring
- Brain development in preschool age -Effect of nutrition
- Nutritional requirements
- Dietary guidelines

- Infection and nutrition related problems

### **Nutrition during school age**

- Growth and development
- Nutritional requirements
- Dietary guidelines
- Factors influencing food intake
- Packed lunch
- School lunch programme
- Child hood Obesity

### **Unit III**

**6hrs**

### **Nutrition during Adolescence**

- Growth and development
- Nutritional requirements
- Dietary guidelines
- Eating disorders: Anorexia nervosa, Bulimia nervosa and binge eating disorder
- Teen age pregnancy

### **Nutrition during Adulthood**

- Nutritional requirements
- Dietary guidelines
- Importance of weight management
- Nutrition during menopausal stage

### **Unit IV**

**6hrs**

### **Nutrition for elderly**

- Process of ageing
- Nutritional requirements
- Dietary guidelines and lifestyle modification
- Nutrition related problems: Non Communicable Diseases (Diabetes, Hypertension, Cardio Vascular Diseases, Cancer and COPD)

### **Unit V**

**6 hrs**

### **Nutrition during Maternal stage**

- Physiological changes
- Developmental stages of pregnancy
- Nutritional requirements
- Dietary guidelines
- Complications of pregnancy and its management

### **Nutrition during Lactation period**

- Physiology of lactation—Prolactin reflex, Let Down Reflex, Lactational Amenorrhoea
- Nutritional requirements and Dietary Considerations

- Human milk composition
- Effect of breast feeding on maternal health

#### **BOOKS RECOMMENDED:**

- Antia, F.P and Abraham, P. 1997 Clinical Dietetics and Nutrition. Oxford University Press, New Delhi (4<sup>th</sup> Ed)
- Bamji, M.S, Rao, N.P. and Reddy, V., 1999. Textbook of Human Nutrition. Oxford & IBH publishing Co Pvt. Ltd, New Delhi.
- Begum, M.R. 1996. A Text Book of Foods, Nutrition and Dietetics. Sterling Publishers Pvt. Ltd., New Delhi. (Revised 2<sup>nd</sup> Ed)
- Burtis, G., Davis, J. and Martin, S. 1998. Applied Nutrition and Diet Therapy. WB. Saunders Company, Philadelphia.
- Garrow, J.S, and James, W.P.t, 1994. Human Nutrition and Dietetics. Churchill Livingstone, New York. (4<sup>th</sup> Ed)
- Joshi, S.A., 2001 Nutrition and Dietetics. Tata Mc Graw Hill Publishing Company Ltd, Delhi. (9<sup>th</sup> Ed).
- Khanna, K., Gupta, S., Pass, S.J, Pass, S.J, Seth, R., Mahan, R. and Puri, S. 1997 Texbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd, New Delhi.
- Kreutler, P.A and Czajka Narins, D.M. 1987 Nutrition in Perspective. Prentice-Hall, INC, Englewood cliffs, New Jersey. (2<sup>nd</sup> Ed)
- Mahan, L.K. and Stump, S.E., 2000. Karuse's Food, Nutrition and Diet Therapy. W.B Saunders Company, Philadelphia, Pennsylvania. (10<sup>th</sup> Ed)
- Mudambi, S.R and Rajagopal, M.V., 1997. Fundamentals of Foods & Nutrition. New Age International (P) Ltd, New Delhi.
- Robinson CH, Lawler MR, Chevoweth WL, Garwick AE. Normal and Therapeutic Nutrition. Mac Millan Publishing Company, New York, 1982.
- Sabarwal, B. 1999 Encyclopedia of Food, Nutrition, Dietetics and Health (4<sup>th</sup> Vol) Efficient Offset, Delhi.
- Sabarwal, B. 1999 Foundations of Nutrition. Common Wealth Publishers, New Delhi.
- Sabarwal, B. 1999. Meal Management. Common Wealth Publishers, New Delhi.
- Sharma, S., 2000. Human Nutrition and meal planning. Jnananda Prakashan (P & D), New Delhi. (1<sup>st</sup> Ed)
- Shills, M.E, Olson, J.A, Shike, M and Ross, A.C; 1998. Modern Nutrition in Health and Disease. Williams & Williams, Baltimone, U.S.A. (9<sup>th</sup> Ed)
- Srilakshmi, B. 1997 Dietetics. New Age International (P) Ltd, Publishers, New Delhi.
- Stanfield, P.S 1992 Nutrition and Diet Therapy. Jones and Barlett Publishers, Boston- London. (2<sup>nd</sup> Ed)

**PAPER CODE- HFN 124**  
**Advanced Human Nutrition**  
**(Theory)**

**Credits - 03**

**Contact Hrs/Sem -60**

**Max Marks -100**

**Course Objectives:**

**This course will enable the students to –**



1. Understand the body composition and patterns of growth and its relationships with nourishment levels.
2. Understand Nutritional Assessment techniques and determine nutritional requirements in special conditions.
3. Understand interrelationship of nutrients.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>HFN 124</b>	<b>Advanced Human Nutrition (Theory)</b>	<p>The students will be able to –</p> <p><b>COFN13:</b> Gain insight of various aspects associated with growth and development.</p> <p><b>COFN14:</b> Understand importance of assessing nutritional status.</p> <p><b>COFN15:</b> Learn association of Nutrition with exercise performance.</p> <p><b>COFN16:</b> Learn emerging concepts in nutrition and nutritional interrelationship</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self-learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>

**CONTENTS**

**Unit I: Growth and Development through the life cycle**

**12 hrs**

- Different types of Growth (Physical and Cellular)
- Malnutrition and Cognitive Development
- Determinants of Growth and Development
- Impact of altered nutrition on Growth and Development
- Maternal Nutrition and Pregnancy outcomes
- Changes in Body Composition through the life cycle
- Altered Body Composition and their consequences

**Unit II: Assessment of Nutritional Status**

**12 hrs**

- Methods of nutritional Assessment  
Anthropometry, Dietary, Clinical, Biochemical
- Critical Analysis of various methods of nutritional Assessment
- Detailed Methodology of various techniques and interpretation of results
- National and International growth standards and references
- National Nutrition Surveys: NNMB, NFHS

**Unit III: Nutrition Exercise and Athletic Performance**

**12 hrs**

- Muscle and Exercise Basics (Muscle and Neuromuscular Junction, Muscle action potential, Sarcomeres and contraction , muscle fiber type, muscle adaption to strength training and endurance exercise muscle fiber type and endurance adaption)
- Hormonal Adaption to Acute and Chronic Exercise (Catecholamines, Insulin and Glucagon, Cortisol, Growth Hormone and ACTH)
- Caffeine and Athletic Performance
- Muscle Carbohydrate Utilization
- Maintaining Blood Glucose levels (During Exercise, cori cycle and alanine cycle)
- Carbohydrate, Fat and Protein metabolism Before, during and after exercise

#### **Unit IV: Nutrigenomics, Nutraceuticals and Functional Foods**

**12 hrs**

- Organization of Nutraceuticals by molecular Structure
- Isoprenoid derivatives, Olive oil as a functional food
- Phenolic compounds, Carbohydrate and carbohydrate derivatives
- Fatty acids and structural lipids
- Amino acid and amino acid derivatives
- Prebiotics and probiotics

#### **Nutritional management in special conditions**

- Emergencies such as draught, famine etc
- Astronautics
- High altitudes

#### **Unit V: Nutritional interrelationships**

**12 hrs**

- Concept of nutritional relationship – proteins – energy, carbohydrates – fat, naicin – typtophane , pyridoxine relationships.
- Effect of carbohydrates, fats and protein on vitamin requirements
- Nutrient adaptation to low intake of energy, protein, vitamin A, calcium and iron.

#### **Emerging concept in Human Nutrition**

- Ongoing Nutrition Transition and its Implication
- Changing trends in Lifestyle patterns in population groups and their Implication

#### **Non Nutritive components and their potential health effect**

- Polyphenols, Phytoesterogens, Saponins, Tannins, Lecitns

#### **ESSENTIAL READINGS:**

- Bamji, M.S., Rao, P.N. and Reddy, V. (Eds) (1996) : Textbook of Human Nutrition, Oxford & IBH Publishing Co. Pvt. Ltd.
- Denis M Medeiros and Robert E.C.Wildman.(2012) : Advanced Human Nutrition. Jones & Bartlett Learning. Third Edition

#### **BOOKS RECOMMENDED:**

- McCollum, E.V. (1957) : History of Nutrition, Houghton Mifflin Co.
- Waterlow, J.C. (1992) Protein Energy Malnutrition, Edward Arnold, A Division of Hodder & Stoughton.
- Bauernfeind, J. Christopher (Ed.) (1986) : Vitamin and its Control, Academic Press.
- Gopalan, C. (Ed) (1993) Recent Trends in Nutrition, Oxford University Press.

- DeMaeyer, E.M. (1989) : Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care, WHO

**PAPER CODE–HFN -125**  
**Advanced Nutritional Biochemistry-I**  
**(Practical)**

**Credits– 04**  
**Max. Marks –100**  
**Hrs./week - 04**  
**Total Hrs. -60**

**Course Objectives:**

**This course will enable the students to –**

- Understand the basic principles of practical biochemistry
- Understand the biochemical methods and approaches used in nutritional biochemistry

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 125	<b>Advanced Nutritional Biochemistry- I (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>COFN17:</b> Apply the concepts of mole, mole fraction, molarity in preparations of solutions of desired strengths and acquire skills to determine pKa value of amino acids.</p> <p><b>COFN18:</b> Develop competence in handling various chromatographic techniques and apply them in isolating and characterizing different biological molecules.</p> <p><b>COFN19:</b> Gain knowledge on the principles of Electrophoresis, Spectrophotometry and Colorimetry and their applications in biological investigations/experiments.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, demonstration</p> <p><b>Learning activities for the students:</b></p> <p>Self-learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Power Point Presentations, Individual and group projects, Semester End Examination, demonstration</p>

		<p><b>COFN20:</b> Determine presence of biomolecules like carbohydrates, proteins, lipids, etc. in known and unknown samples.</p> <p><b>COFN21:</b> Acquire training to determine saponification value and iodine value of oil and different types of fats.</p>		
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## CONTENTS

- Basic knowledge and working principles of
  - Spectrophotometry and colorimetry
  - Chromatography: Paper, TLC, Column
  - pH
- Basic knowledge of normality, molality, percent solutions and dilutions
- Preparation of buffers and measurement of their pH with indicators and pH meter.
- Colours reactions for carbohydrates
- Glucose determination in food and blood by Nelson Somogyi Method.
- Determination of protein content by Biuret Method.
- Separation of Amino acids by TLC
- Estimation of cholesterol using Zlatkis Method..
- Estimation of
  - Saponification Number
  - Free Fatty Acids
  - Iodine Value

## ESSENTIAL READINGS:

- Raghuramulu, Nair, and Kalyansundaram, A Manual of Laboratory Techniques, NIN Publications
- William S, 16<sup>th</sup> Ed. AOAC Official Methods of Analysis of the Association of Official Analytical Chemists
- Sharma Sheel, Practical Biochemistry. Classic Publishing House, Jaipur-Delhi

**PAPER CODE-HFN- 126**  
**Food Microbiology& Safety**  
**(Practical)**

**Credits-04**

**Max Marks-100**

**Contact Hrs./ week-04**

**Total Hrs-60**

### Course Objectives:

**This course will enable the students to –**

1. Learn to isolate, maintain and identify microorganisms.
2. Gain knowledge about characteristics of bacteria and fungi.
3. Determine the food quality of different food products.
4. Have an insight of sanitation and hygiene practices in food industries

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 126	Food Microbiology & Safety (Practical)	<p><b>The students will be able to –</b></p> <p><b>COFN22:</b> Differentiate which organisms would be likely to grow in a specific food product.</p> <p><b>COFN23:</b> Carry out a series of laboratory experiments aimed at isolating and identifying common food borne microbial pathogens</p> <p><b>COFN24:</b> Classify spoilage microorganisms according to the food or foods they are most likely to affect based on the intrinsic and environmental characteristics of the food</p> <p><b>COFN25:</b> Design and carry out a laboratory experiment to evaluate the microbial quality of common food products</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz,</p> <p>Individual and group projects,</p> <p>Semester End Examination, demonstration</p>

### CONTENTS

- Preparation of sterilized media.
- Isolation of pure culture
- Maintenance & preservation of pure culture Simple & Gram's staining
- Determination of potability of water by MPN test.
- Methylene Blue Reductase Time Test for checking microbial quality of milk.
- Analysis of microbial count from air, water, soil by Standard Plate Count (SPC) technique.
- Determination of indicator organisms in water & food on selected media (any two)
  - E.coli (b) Shigella (c)S.aureus (d)Salmonella
- Isolation and identification of microorganisms (fungi & bacteria) from spoiled food items.
- Blotter's Test (a) Cereals- Wheat & Maize
  - Pulses- Blackgram & Chick pea
  - Others-Peanut/Coconut/Ginger/garlic/Turmeric
- Visit to Food Manufacturing Unit/Processing Units/Hotels to observe processing & manufacturing of food products; to learn various microbial techniques & to understand HACCP functioning.

### ESSENTIAL READINGS:

- Frazier and Westhoff (2006) Food Microbiology by. Tata Mc. Graw Hill Publishing Company Ltd. New Delhi.
- Banwart (2004) Basic Food Microbiology CBS Publishers & Distributors New Delhi.
- Cappucino, James G (1999) Microbiology; A Laboratory Manual (VI Edition) Addison-Wesley Publishing Company.

**BOOKS RECOMMENDED:**

- Adams M.R., Moss M.O. (2004) Food Microbiology (II Edition) Panima Publishing Cooperation New Delhi .
- Roday S. (1999) Food Hygiene & Sanitation Tata Mc Graw Hill
- James M. Jay (2005) Modern Food Microbiology (IV Edition), CBS Publishers & Distributors New Delhi.
- Potter & Hotchkiss Food Science CBS Publishers & Distributors New Delhi.
- Ramesh Vijaya K. (2007) Food Microbiology, MJP Publishers Chennai.
- Casida Jr; L.E. (2002)Industrial Microbiology New Age International (p) Ltd. New Delhi.
- Deshmukh A.M. (2007) Handbook of media &Stains & Reagents in Microbiology. Oxford Book Company, India.

**PAPER CODE-HFN- 127**  
**Advanced Human Nutrition**  
**(Practical)**

**Credits: 05**  
**Total Hrs:75**  
**Max Marks: 100**

**Course Objectives:**

**This course will enable the students to –**

1. Understand various techniques nutritional status assessment.
2. Understand Research Design and Body composition estimation.

**Course Outcomes (COs):**

Ourse		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<p><b>HFN 127</b></p>	<p><b>Advanced Human Nutrition (Practical)</b></p>	<p><b>The students will be able to –</b></p> <p><b>COFN26:</b> Develop skills associated with Learn interpretation of stress and cognitive test scores.</p> <p><b>COFN27:</b> Learn to develop research proposals related to micro, macro nutrient deficiency as well as obesity.</p> <p><b>COFN28:</b> Learn to estimate, analyze and interpret body composition.</p> <p><b>COFN29:</b> Learn planning as well as preparation of various recipes.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self-learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Individual and group projects, Semester End Examination, discussion, demonstration</p>
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## CONTENTS

- **Assessment of nutritional status in community using various techniques**
  - Dietary Survey: 24 Hr Dietary recall, Food Frequency Questionnaire, Standardization of recipe
  - Anthropometry: Height, Weight, Waist Circumference, Hip Circumference, MUAC- Analysis of data using WHO Standards
  - Stress scale (Standard), cognition tests.
- **Research plan proposed or a research design**
  - Macronutrient Deficiency: Protein Energy Malnutrition/ Severe Acute Malnutrition
  - Micronutrient Deficiency: Vitamin A, Iron , Iodine
  - Over nutrition or Obesity
- **Body Composition: Estimation, Analysis and Interpretation**
- **Planning and preparation of various nutritious recipes for**
  - Emergency conditions
  - Sports and fitness
  - High altitudes

### ESSENTIAL READINGS:

- Bamji, M.S., Rao, P.N. and Reddy, V. (Eds) (1996) : Textbook of Human Nutrition, Oxford & IBH Publishing Co. Pvt. Ltd.
- Denis M Medeiros and Robert E.C.Wildman.(2012) : Advanced Human Nutrition. Jones & Bartlett Learning. Third Edition

### BOOKS RECOMMENDED:

- McCollum, E.V. (1957) : History of Nutrition, Houghton Mifflin Co.
- Waterlow, J.C. (1992) Protein Energy Malnutrition, Edward Arnold, A Division of Hodder & Stoughton.
- Bauernfeind, J. Christopher (Ed.) (1986) : Vitamin and its Control, Academic Press.

- Gopalan, C. (Ed) (1993) Recent Trends in Nutrition, Oxford University Press.
- DeMaeyer, E.M. (1989) : Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care, WHO

**PAPER CODE-HFN- 128  
Seminar**

**Credits-03**

**Max Marks-100**

**Contact Hrs./ week-03**

**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the nuances of scientific writing; develop skills in collation and presentation of scientific information
2. Understand Research Design.

**Course Outcomes (CLOs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 128	Seminar	<p><b>The students will be able to –</b></p> <p><b>COFN30:</b> Demonstrate knowledge of scientific writing method and styles</p> <p><b>COFN31</b> :Develop a research design on a topic relevant to their field</p> <p><b>COFN32.</b> Prepare a systematic literature review on a select topic</p> <p><b>COFN33:</b> Present a seminar of the literature review</p>	<p><b>Approach in teaching:</b> Orient students about the nuances of technical writing styles Work on deciding a topic for Seminar Guide how to collect Review of literature Preparation of a document based on it.</p> <p><b>Learning activities for the students:</b> Review of old seminar documents and their analysis Watch videos on Seminars Collate the reviews collected for the seminar Seminar Presentation preparation</p>	<p>CA and Semester End Examination to assess Review of literature document by seminar committee, Presentation, Discussions, Plagiarism test done of final document</p>

**CONTENTS**

- Report writing, presentation and viva voice of the seminar based on contemporary issues in the field of nutrition.



## COURSE LEARNING OUTCOMES - Semester II

### PAPER CODE-HFN - 221 ADVANCED NUTRITIONAL BIOCHEMISTRY II (THEORY)

Credits-03  
Max.Marks.-100  
Contact Hrs./ week-03  
Total Hrs-45

#### Course Objectives:

This course will enable the students to –

1. Understand the biochemical role of vitamins and minerals and their disorders and imbalances.
2. Understand toxicity in the body and role of antioxidants in detoxification of the body.

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 221	<b>Advanced Nutritional Biochemistry - II (Theory)</b>	<b>The students will be able to –</b>  <b>COFN34:</b> Develop skills in understanding the biochemistry of DNA and RNA and the application knowledge of purine and pyrimidine metabolism and their management.  <b>COFN35:</b> Develop skills in planning the diets as to consider the biochemical functions of various micronutrients  <b>COFN36:</b> Detoxification of various compounds and the knowledge of xenobiotics and its practical application for the management of various diseases.	<b>Approach in teaching:</b>  Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion  <b>Learning activities for the students:</b>  Self learning assignments, Effective questions, presentations, Field trips	Quiz, Poster Presentations,  Power Point Presentations, Individual and group projects,  Open Book Test, Semester End Examination, discussion, demonstration

#### CONTENTS

Unit I: Nucleic acid Chemistry

9 hrs

- Structures of purines, pyrimidines, Nucleocides, Nucleotides,
- Metabolism of Purine and Pyrimidine,
- Disorders of purine metabolism
- Composition, classification, structure and properties of DNA and RNA; functions of nucleic acids - DNA replication and RNA transcription.

### **Unit II: Hormones**

**9 hrs**

- Definition, classification, mode of action, Chemistry and functions of Thyroxine, Insulin, Catecholamines
- Disorders associated with the hormones
- **Antioxidants**
  - Antioxidants and free radicals; role of O<sub>2</sub> free radicals; production of O<sub>2</sub> free radicals; physiological mechanisms to limit free radical damage; free radical in human pathology and disease.

### **Unit III: Vitamins**

**9 hrs**

- Classification and Biochemical role of vitamins –
  - Fat soluble vitamins A, D, E, K, C and B-complex.
  - Water soluble vitamins B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, B<sub>6</sub>, B<sub>12</sub>, Pantothenic acid,

### **Unit IV: Minerals**

**9 hrs**

- Biochemical roles of
  - Macro minerals: Calcium, Phosphorous, magnesium, sodium, potassium and chloride
  - Micro Minerals: Iron, copper, zinc, manganese, iodine, fluoride
  - Trace Minerals: Selenium, cobalt, chromium, vanadium, silicon, nickel

### **Unit V: Detoxification of Foreign Compounds - metabolism of xenobiotics**

**9 hrs**

- Phase I, Phase II and Phase III
- Regulation of detoxification
- Diet and Nutrients that support detoxification
- Inhibition of detoxifying enzymes

### **ESSENTIAL READINGS:**

- Rao, K.R. (1986) Textbook of Biochemistry, III Edition. Prentice Hall of India Pvt. Ltd., New Delhi.
- Murray, R.K. Granner, P.A. Mayes, V.W. Rodwell (1988) Harper's Biochemistry. 21<sup>st</sup> Edition. Prentice Hall of Australia Pvt. Ltd.
- Lehninger, A.L. (1987) Principles of Bio-chemistry – CBS Publishers and Distributors
- West, E.S. Todd W.R. Mason, H.S. and Van Bruggen J.T (1974) 4<sup>th</sup> Ed. Text Book of Biochemistry, Amerind Publishing Co. Pvt. Ltd.
- Harper, H.A. Review of Physiological Chemistry. Lange medical Library
- White, A., Handler, P. and Smith, E.L. Principles of Biochemistry . W. B. Saunders Book Co. Philadelphia.

### **BOOKS RECOMMENDED:**

- Berg, Jeremy Mark, Tymoczko, John L and Stryer. (2002). *Biochemistry 5th ed.* New York. W.H. Freeman and Co.
- Brody Tom. (2004). *Nutritional Biochemistry 2nd ed.* New Delhi. Elsevier/Reed. Elsevier. India Pvt. Ltd.

- Chatterjee, M.N. Shinde and Rana. (2005). *Textbook of Medical Biochemistry, 6th ed.* New Delhi, Jaypee Brothers. Medical Publisher.
- DandekarSucheta P. (2002). *Medical Biochemistry (Prep Manual for U.G.) 2nd ed.* New Delhi B-1 Churchill Livingstone Pvt. Ltd.
- Rastogi S.C. (1993). *Biochemistry New Delhi*, Tata McGraw Hill Publishing Co. Ltd. Definition, classification of lipids. Simple, Compound and derived
- Kahn Conn, E.E. and Stump, P.K. *Outlines of Biochemistry.* Willey Eastern Pvt. Ltd. New Delhi
- Stryer L. (1995) *Biochemistry* Freeman WH & Co.
- Sundararaj, P and Siddhu A (1995) *Qualitative tests and Quantitative Procedures in Biochemistry.*
- Varley H. Gowenlock, A.H. and Bell, M (1980) 5<sup>th</sup> Ed. *Practical and Clinical Chemistry Vol. I* William Heinemann Medical Book Ltd.

**PAPER CODE-HFN-222**  
**Research Methodology**  
**(Theory)**

**Credits-02**  
**Max Marks-100**  
**Contact Hrs./ week-02**  
**Total Hrs-30**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the significance of research methodology in Home Science.
2. Understand the types, tools and methods of research
3. Develop the ability to construct data gathering instruments appropriate to the research design

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 222	Research Methodology (Theory)	<p><b>The students will be able to –</b></p> <p><b>COFN37:</b> Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.</p> <p><b>COFN38:</b> Describe qualitative and quantitative research techniques</p> <p><b>COFN39:</b> Develop skills on measurement &amp; scaling techniques as well as the quantitative data analysis</p> <p><b>COFN40:</b> Analyse data for hypothesis testing procedures and report writing.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective</p>	<p>Quiz, Poster Presentations,</p> <p>Power Point Presentations, Individual and group projects,</p> <p>Open Book Test, Semester End Examination, discussion, demonstration</p>

			questions, presentations, Field trips	
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**CONTENTS**

**Unit I** **6hrs**

- Introduction to research methodology:
  - Meaning and definition of research
  - Methodology, Method and Technique
  - Process of conduction research,
  - Types of research

**Unit II** **6 hrs**

- Research design
  - meaning, need,
  - features of good research design,
  - concepts related to research design
  - types of research design- in case of exploratory research studies, in case of descriptive & diagnostic research studies, in experimental designs
- Variables: types and relationship
- Hypothesis: meaning, characteristics of hypothesis, types, criteria for the construction of good hypothesis

**UNIT III** **6 hrs**

- Design of Sample Surveys
  - Sample design and its steps
  - sampling & non sampling errors
  - census Vs sampling survey
  - Sampling design - probability and non probability
  - Sample size determination.
- Measurement & scaling- nominal, ordinal, interval & ratio scale
  - Goodness of measurement scales
  - Sources of error in measurement

**Unit IV** **6hrs**

- Data collection techniques:

- Questionnaire
- Schedule
- Interview
- Observations
- Case study
- Content analysis
- Focussed group discussion

## Unit V

6hrs

- Data processing and Data analysis
  - Data preparation process- questionnaire checking, editing, coding, classification and tabulation, graphical presentation, data cleaning & data adjusting
  - Report writing- significance, steps, layout of the report, types of report
  - The elements of research project

### **ESSENTIAL READINGS:**

- Kothari , C.R.(2015): Research Methodology- Methods and Techniques .(Third Edition) New Age International Publishers, New Delhi.

### **BOOKS RECOMMENDED:**

- Ahuja, R. (2014). Research Methods. Rawat Publications, Jaipur.
- Badarkar, P.L. and Wilkinson T.S. (2000): Methodology and Techniques of Social Research, Himalaya Publishing House, Mumbai
- Batnagar, G.L.(1990): Research Methods and Measurements in Behavioural and Social Sciences, Agri.ColePublishingAcademy, New Delhi.
- Dwivedi, R.S.(1997): Research Methods in Behavioural Sciences, Macmillan India, Delhi.
- Agarwal, J.C.: Educationl Research- An Introduction, Arya Book Depot, New Delhi.
- Best, J.W.: Research in Education, Prentice Hall of India, New Delhi.
- Chadra, S.S. and Sharma, R.K.: Research in Education, Atlantis Publishers, New Delhi.

**PAPER CODE-HFN- 223**  
**Principles of Food Science**  
**(Theory)**

**Credits-03**

**Max.Marks.-100**

**Contact Hrs./ week-03**

**Total Hrs-45**

### **Course Objectives:**

**This course will enable the students to –**

1. Understand the properties and characteristics of food components
2. Understand the Physico-chemical properties of foods
3. Understand the phases of product development
4. Understand the importance and tests used for Sensory evaluation

### **Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 223	Principles of Food Science (Theory)	<p><b>The students will be able to –</b></p> <p><b>COFN41:</b> Gain knowledge on various aspects of food product development including food science &amp; technology</p> <p><b>COFN42:</b> Gain knowledge on various aspects of sensory characteristics and sensory evaluation</p> <p><b>COFN43:</b> Will identify various properties of food components</p> <p><b>COFN44:</b> Acquire knowledge of the physic-chemical properties of foods</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations,</p> <p>Power Point Presentations, Individual and group projects,</p> <p>Open Book Test, Semester End Examination, discussion, demonstration</p>

## CONTENTS

### Unit I: Introduction to food science

9hrs

- Carbohydrates
- Classification and composition
- Physical, Chemical and Functional properties of carbohydrates
- Food polysaccharides (starch and non starch polysaccharides)

### Unit II: Lipids

9hrs

- Classification and composition
- Physio-chemical and Functional properties
- Deteriorative changes(Rancidity- types and significance)
- Antioxidants(Types and actions)

### Unit III: Proteins

9hrs

- Classification and composition
- Physio chemical and Functional properties
- Protein concentrates ,isolates and hydrolysates

### Unit IV: Physico chemical properties of foods

9hrs

- Sols, gels , foams and emulsions
- Naturally occurring toxicants in food
- Nutraceuticals
- Vegetarianism and other popular nutritional practices

- Genetically modified foods

#### **Unit V: Product development and evaluation**

**9hrs**

- Selection of the product
- Different phases of product development
- Sensory evaluation – Subjective and Objective
- Shelf life study –Chemical , Microbial and Sensory
- Food laws and standards

#### **ESSENTIAL READINGS:**

- Fellows PJ. Food Processing Technology : Principles and Practice, II edition, CRC Woodhead Publishing Ltd. Cambridge.
- Desrosier N W: Elements of Food Technology, Connecticut, USA: AVI Publishing Company.

#### **BOOKS RECOMMENDED:**

- Tressler DK and Joslyn MA : Fruit and Vegetable juice production, Connecticut,USA: AVI Publishing Company.
- S Dey : Outlines of Dairy Technology, Oxford University Press, Delhi.
- Sachrow & Griffin, Food Packing – AVI Publications.
- Stanley & Sachrow , Food Packaging.
- Bhatia SC., Canning and Preservation of Fruits and Vegetables, - New Delhi India.

#### **JOURNALS :**

- Nutrition Reviews
- Journal of Nutrition
- British Journal of Nutrition
- International Journal of Vitamin and Nutrition Research
- International Journal of Food Science and Nutrition
- Nutrition Research Robertson GL, Food Packaging – Marcell Dekker, Inc.New York.

### **PAPER CODE- HFN 224 Human Nutritional Requirement (Theory)**

**Credits: 4**

**Contact Hrs/week- 03**

**Max. Marks- 100**

**Total hours- 60**

#### **Course Objectives:**

**This course will enable the students to –**

1. Understand the basis of human nutrient requirements and recommendations through life cycle.
2. Understand the factors affecting protein quality and methods of evaluating and improving the same.

#### **Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 224	Human Nutritional Requirement (Theory)	<p><b>The students will be able to –</b></p> <p><b>COFN45:</b> Develop skills in determining requirements of macro as well as micronutrients.</p> <p><b>COFN46:</b> Gain knowledge about health implication of water, dietary fiber and protein quality.</p> <p><b>COFN47:</b> Gain information related to national and International Recommended Dietary Allowances</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self-learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations,</p> <p>Power Point Presentations, Individual and group projects,</p> <p>Open Book Test, Semester End Examination, discussion, demonstration</p>

## CONTENTS

### Unit I:

9 hrs

- **Energy**
  - Basis of requirement, factors affecting total energy requirement and recommendation through life cycle.
  - Requirement techniques of measuring intake and expenditure.
- **Water**
  - Properties and body distribution of water
  - Sweat water and urinary water
  - Water Balance
  - Hydration while Exercising
  - Dehydration and edema

### Unit II

9hrs

- **Carbohydrates**
  - Intake , Food Sources ,Monosaccharides and disaccharides
  - Sugar and caloric sweeteners, Cereal Grains
- **Dietary Fibers**
  - Fibers and Functional Fibers; Soluble and Insoluble Fibers; Types Characteristics
  - Health Benefits of fiber and structural carbohydrates
  - Gastrointestinal fermentation and health, Satiety and reduced glycemic effect
  - Cholesterol binding and reduction of lipids, Fecal bulking, constipation and diverticulosis
  - Metal binding , Daily intake and recommendation



**Unit III****9hrs**

- **Protein**
  - Basis of requirement and recommendation through the life cycle
  - Methods of assessing protein quality.
  - Critical overview of amino acid requirement and imbalance.
- **Lipids**
  - Food sources, Cis vs trans fatty acids Fat Substitutes in diet (non nuclear receptors), Health Implications and interpretation of lipoprotein cholesterol levels, Basis of requirement and recommendation through the life cycle.

**Unit IV****9hrs**

- **Vitamins**
  - Requirement and recommendation through the life cycle
    - Fat soluble vitamins – A, D, E and K
    - Water-soluble vitamins - Ascorbic acid, Thiamine, Riboflavin, Niacin, Biotin, Pantothenic acid, Pyridoxin, Folic acid, Cyanocobalamine and choline.

**Unit V****9hrs.**

- **Minerals**
  - Requirement and recommendation through the life cycle
    - Macro minerals: Calcium, Phosphorus, Magnesium, Sodium and Potassium.
    - Micro minerals: Iron, Copper, Iodine, Zinc, Fluoride, Manganese and Selenium.
    - Critical evaluation of national and International allowances ; Factors affecting nutrient Requirements.

**ESSENTIAL READINGS:**

- Pike and Brown: Nutrition-An Integrated approach-John Wiley and sons, New York
- Denis M Medeiros and Robert E.C.Wildman.(2012) : Advanced Human Nutrition. Jones & Bartlett Learning. Third Edition
- Jim Mann and A. Stewart Truswell.(2012): essentials of Human Nutyrition. Oxford University Press. Fourth Edition.

**BOOKS RECOMMENDED:**

- Shills, M.E. Olson, J. ; Shike, M. and Roos, C. (2006) : Modern Nutrition in Health and Disease. 9<sup>th</sup> edition. Williams and Williams. A Beverly Co. London.
- Bodwell, C.E. and Erdman, J.W. (1988) Nutrient Interactions. Marcel Dekker Inc. New York.
- Indian Council of Medical Research. Recommended Dietary Intakes for Indians – Latest Recommendations.
- Indian Council of Medical Research. Nutritive Value of Indian Foods – Latest Publication.
- Davidson, Passmore and Eastwood: Human Nutrition and Dietetics- FLBS
- Bamji, M.S., Rao, N.P. and Reddy, V. (2010) : Textbook of Human Nutrition, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi
- Robinson, C.H. and Lawler, M.R. (2001). Normal and Therapeutic Nutrition. Macmillan, New York.

**JOURNALS :**

- Nutrition Reviews
- Journal of Nutrition
- British Journal of Nutrition

- International Journal of Vitamin and Nutrition Research
- Nutrition Research

**PAPER CODE-HFN -225**  
**Advanced Nutritional Biochemistry II**  
**(Practical)**

**Credits-04**  
**Max.Marks.-100**  
**Contact Hrs./ week-04**  
**Total Hrs-60**

**Course Objectives:**

**This course will enable the students to –**

1. Analyze and estimate the micronutrient content in various food samples.
2. Analyze and estimate the total antioxidant activity of food samples.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 225	<b>Advanced Nutritional Biochemistry II (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>COFN48:</b> To be able to analyze and estimate the micronutrient content in various food samples.</p> <p><b>COFN49:</b> To be able to analyze and estimate the total antioxidant activity of food samples.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations,</p> <p>Individual and group projects,</p> <p>Semester End Examination, discussion, demonstration</p>

**CONTENTS**

- Titrimetric estimations
  - Vitamin C in food samples
  - Calcium in food samples
- Colorimetric determination of
  - Calcium in food samples
  - Iron in food samples
  - Inorganic phosphorus in food samples
  - Vitamin C in food samples

- Estimation of Vitamin A
- Estimation of hemoglobin by haemoglobinometer
- Estimation of total polyphenols
- Estimation of flavonoids
- Analysis of antioxidant activity by DPPH & FRAP

**ESSENTIAL READINGS :**

- Sadasivam S and Manickam A (2011). Biochemical methods. New Age International Publisher.
- Raghuramulu, Nair, and Kalyansundaram, A Manual of Laboratory Techniques, NIN Publications
- William S, 16<sup>th</sup> Ed. AOAC Official Methods of Analysis of the Association of Official Analytical Chemists
- Sharma S, Practical Biochemistry. Classic Publishing House, Jaipur-Delhi

**PAPER CODE-HFN- 226  
Applied Statistics  
(Practical)**

**Credits-04  
Max Marks-100  
Contact Hrs./ week-04  
Total Hrs-60**

**Course Objectives:**

**This course will enable the students to –**

1. Understand the role of statistics and computer applications in research.
2. Apply statistical techniques to research data for analyzing and interpreting data carefully.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 226	Applied Statistics (Practical)	<p><b>The students will be able to –</b></p> <p><b>COFN50:</b> The students are able to understand enter, organize, and save data in a SPSS.</p> <p><b>COFN51:</b> Calculate variables and prepare data for analysis in SPSS.</p> <p><b>COFN52:</b> Understand the basic workings of SPSS, and perform basic statistical analyses.</p> <p><b>COFN53:</b> To perform database management tasks, descriptive statistics and graphics, and basic</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations,</p> <p>Power Point Presentations, Individual and group projects,</p> <p>Open Book Test, Semester End Examination, discussion, demonstration</p>

		inferential statistics for comparisons and correlations. <b>COFN54:</b> Able to carry out a statistical analysis that can test hypotheses.		
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## CONTENTS

### The following test should be perform on computer

- Formation of frequency distribution table (inclusive and exclusive)
- Graphical representation- histogram, frequency polygon, ogives
- Measures of Central Tendency- Mean, Median and Mode
- absolute and relative Measures of Dispersion- range, Quartile Deviation, Mean Deviation, Standard Deviation
- Coefficient of correlation- karl pearson and spearmens rank
- Fitting of Regression lines and prediction.
- normal Distribution-area under the curve
- Chi-square tests- Goodness of fit, Independence of Attributes 2x2 and rxc contingency tables, testing of single variance
- Application of Student's t-test for small samples- test of significance of single mean, difference in means, independent and paired T test..
- F-test for two sample variances.
- Analysis of Variance- one-way classification ,two-way classification

### ESSENTIAL READINGS:

- Gupta, S.P.: Statistical Methods, Sultan Chand and Company, New Delhi.
- Elhane,D.N.: Fundamentals of Statistics, Kitab Mahal,Allahbad.

**PAPER CODE-HFN- 223**  
**Principles of Food Science**  
**(Theory)**

**Credits-03**

**Max.Marks.-100**

**Contact Hrs./ week-03**

**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to –**

1. To learn about the physical ,chemical and nutritional analysis of commonly consumed foods
2. To develop new product and conduct organoleptic evaluation
3. To study the various functional properties of flours

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<p><b>HFN 227</b></p>	<p><b>Principles of Food Science (Practical)</b></p>	<p><b>The students will be able to –</b></p> <p><b>COFN55:</b> Use appropriate laboratory techniques in food analysis and food processing.</p> <p><b>COFN56:</b> Conduct appropriate sensory evaluation tests to evaluate food attributes or consumer preferences.</p> <p><b>COFN57:</b> Modify develop recipe/formulation for specific purposes, such as nutrient enhancement, quality improvement and ingredient substitution.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>
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## CONTENTS

- Determination of moisture content in various food products.
- Determination of crude fiber in flour samples.
- Determination of fat content in flour samples.
- Determination of protein in flour samples.
- Determination of reducing sugar in honey.
- Determination of acid value of fats and oils.
- Determination of fat content in milk samples.
- Determination of protein in milk.
- Determination of SNF in milk.
- Functional properties of flour – bulk density, water absorption, oil absorption, swelling power & solubility index
- Chemistry of colloidal particles.
- To perform sensory evaluation of food products.
- New Product development
  - Conducting Market Research for various new products available.
  - Developing a new product.

### **ESSENTIAL READINGS:**

- Fellows PJ. Food Processing Technology : Principles and Practice, II edition, CRC Woodhead Publishing Ltd. Cambridge.
- Desrosier N W: Elements of Food Technology, Connecticut, USA: AVI Publishing Company.

### **BOOKS RECOMMENDED:**

- Tressler DK and Joslyn MA : Fruit and Vegetable juice production, Connecticut,USA: AVI Publishing Company.
- S Dey : Outlines of Dairy Technology, Oxford University Press, Delhi.
- Sachrow & Griffin, Food Packing – AVI Publications.
- Stanley & Sachrow , Food Packaging.
- Bhatia SC., Canning and Preservation of Fruits and Vegetables, - New Delhi India.

### **JOURNALS :**

- Nutrition Reviews

- Journal of Nutrition
- British Journal of Nutrition
- International Journal of Vitamin and Nutrition Research
- International Journal of Food Science and Nutrition
- Nutrition Research Robertson GL, Food Packaging – Marcell Dekker, Inc. New York.

**PAPER CODE-HFN- 228**  
**Human Nutritional Requirement**  
**(Practical)**

**Credits-04**

**Max Marks-100**

**Contact Hrs./ week-04**

**Total Hrs-60**

**Course Objectives:**

**This course will enable the students to –**

1. Understand various methods for estimating energy and protein requirements of an individual
2. Understand methods for determining protein quality and requirements of iron etc.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 228	Human Nutritional Requirement (Practical)	<p><b>The students will be able to –</b></p> <p><b>COFN58:</b> Calculate requirements of both macro and micro nutrients.</p> <p><b>COFN59:</b> Determine total fat and fiber requirement</p> <p><b>COFN60:</b> Develop skills to determine and improve protein quality of dishes.</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self-learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>

**CONTENTS**

- Estimation of Energy Requirements-
  - BMR
- Energy expenditure on physical activities
- Factorial Approach
- Estimation of Protein requirements

- Factorial Approach
- Estimation of Protein Quality using NDP-Cal%
- Balance Studies-Nitrogen Balance
- Calculate dietary fatty acid according to FAO/ WHO 2008 recommendation for adult male and Female in all three physical activity level, children and physiological status
- Calculate iron requirement of Pregnant for all three trimester. Calculate RDA for pregnant women.
- Calculate iron requirement for normal development of Foetus
- Expansion of maternal Red Cell Mass
- Placenta and cord during all three trimester
- Determine total fat and fibre intake of self using data on dietary intake using 24 hrs dietary recall method for a period of 3 days fat (MUFA, PUFA AND SATURATED FAT);[
- Dietary Fibre (Insoluble, Soluble)

### **ESSENTIAL READINGS:**

- Pike and Brown: Nutrition-An Integrated approach-John Wiley and sons, New York
- Denis M Medeiros and Robert E.C.Wildman.(2012) : Advanced Human Nutrition. Jones & Bartlett Learning. Third Edition
- Jim Mann and A. Stewart Truswell.(2012): essentials of Human Nutrition. Oxford University Press. Fourth Edition.

### **BOOKS RECOMMENDED:**

- Shills, M.E. Olson, J. ; Shike, M. and Roos, C. (2006) : Modern Nutrition in Health and Disease. 9<sup>th</sup> edition. Williams and Williams. A Beverly Co. London.
- Bodwell, C.E. and Erdman, J.W. (1988) Nutrient Interactions. Marcel Dekker Inc. New York.
- Indian Council of Medical Research. Recommended Dietary Intakes for Indians – Latest Recommendations.
- Indian Council of Medical Research. Nutritive Value of Indian Foods – Latest Publication.
- Davidson, Passmore and Eastwood: Human Nutrition and Dietetics- FLBS
- Bamji, M.S., Rao, N.P. and Reddy, V. (2010) : Textbook of Human Nutrition, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi
- Robinson, C.H. and Lawler, M.R. (2001). Normal and Therapeutic Nutrition. Macmillan, New York.

### **JOURNALS :**

- Nutrition Reviews
- Journal of Nutrition
- British Journal of Nutrition
- International Journal of Vitamin and Nutrition Research
- Nutrition Research

**PAPER CODE-HFN- 228**  
**Human Nutritional Requirement**  
**(Practical)**

**Credits-04**  
**Max Marks-100**  
**Contact Hrs./ week-04**  
**Total Hrs-60**

**Course Objectives:**

**This course will enable the students to –**

3. Understand the nuances of scientific writing; develop skills in collation and presentation of scientific information
4. Understand Research Design.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>HFN 229</b>	<b>Seminar</b>	<p><b>The students will be able to –</b></p> <p><b>COFN61:</b> Demonstrate knowledge of scientific writing method and styles</p> <p><b>COFN62 :</b>Develop a research design on a topic relevant to their field</p> <p><b>COFN63.</b> Prepare a systematic literature review on a select topic</p> <p><b>COFN64:</b> Present a seminar of the literature review</p>	<p><b>Approach in teaching:</b>  Orient students about the nuances of technical writing styles  Work on deciding a topic for Seminar  Guide how to collect Review of literature  Preparation of a document based on it.</p> <p><b>Learning activities for the students:</b>  Review of old seminar documents and their analysis  Watch videos on Seminars  Collate the reviews collected for the seminar  Seminar Presentation preparation</p>	<p>CA and Semester End Examination to assess Review of literature document by seminar committee, Presentation, Discussions, Plagiarism test done of final document</p>

**CONTENTS**

- Report writing, presentation and viva voice of the seminar based on contemporary issues in the field of health and nutrition.



## COURSE LEARNING OUTCOMES - Semester III

### PAPER CODE-HFN- 228 Human Nutritional Requirement (Practical)

**Credits-04**  
**Max Marks-100**  
**Contact Hrs./ week-04**  
**Total Hrs-60**

#### Course Objectives:

**This course will enable the students to –**

1. Understand the Approaches to food service management
2. Understand the Food Management
3. Understand the Financial and Personnel Management
4. Understand Entrepreneurship Development

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>HFN 321</b>	<b>Food Service Management (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>COFN65:</b> Comprehend the process of planning, organizing, in the management of human material and financial resources.</p> <p><b>COFN66:</b> Understand the Management of human resources within a food services organization or department</p> <p><b>COFN67:</b> Develop menus for different food service organization</p> <p><b>COFN68:</b> Manage food service production within budgets</p> <p><b>COFN69:</b> Adhere to the quality standards &amp; best practices of food service industry</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>

#### CONTENTS

##### Unit I

**12 hrs**

- **Development of Food Service Institutions**
  - Approaches to food service management

- Management Philosophy, Principles and Functions, Tools of Management
- Management of Resources (Capital, equipment, functions, space, staff etc)

- **Setting up a food service Unit (Layout design and Planning)**

- Different Phases
  - Kitchen, Storage and Service areas
  - Evaluation of Plans
  - Equipments (Selection, Design, purchase, Care and Maintenance)

## **Unit II**

**12hrs**

- **Food Management**
- **Food Characteristics**
- Food Purchasing
  - Purchasing - A food Management Activity (The market and the Buyer, Mode of purchasing (Centralized and group purchasing)
  - Methods of purchasing, Identifying needs amounts to buy (Minimum and maximum stock level and quantities of food to be bought)
- Menu Planning (Importance of Menu planning in food service organization).
- Types of Menu and its applications, Steps in Menu Planning and its evaluation.
- Food Production (Quality and Quantity )
- Food Service Food Service system (Model and its significance, Types of food service system (conventional, commissary, ready prepared and assembly serve and Centralized and decentralized)

## **Unit III**

**12 hrs**

- **Financial Management**
  - Costing and Budgeting
  - Pricing and Accounting
- **Personnel Management**
  - Leadership (definition, components, approaches to leadership, styles)
  - Staff planning and Management (Approaches, issues and steps , Staff scheduling)

## **Unit IV**

**12Hrs**

- Employment Process
  - Determining staff requirements, policies , recruitment and selection.
  - Staff Training (Need for training, Areas of Training, Training Process, Evaluation & appraisal)
  - Laws governing staff planning and management
  - Employees laws, Trade unions and contract negotiations.
- **Personnel Function** - Work productivity:-
  - Meaning and definition of work productivity , formal relationship and duties.
  - Work Design, Work measurement in food service operation, Productivity Improvement & quality circles.

## **Unit V**

**12 Hrs**

- **Hygiene and Sanitation**
  - Personal Hygiene and Sanitary Practices.
  - Sanitation training and education for food service worker.
  - Sanitation training & education, Training program , employment practices.
  - Hazard Analysis and critical control point (HACCP)

- Safety and Security
- Plant sanitation and safety (Three E's of safety)
- Standard policies and Schedules
- **Entrepreneurship Development**
  - Definition, concept and importance.
  - Characteristics: - Types of entrepreneur: Qualities, qualifications of good entrepreneur. Factors determining the development of entrepreneurship, entrepreneurship education and training; obstacles in the development of entrepreneurship.

#### **ESSENTIAL READINGS:**

- S. Malhan & M. Sethi, 1989: Catering Management-in Intergrated approach.
- Sethi Mohini, 2008: Istitutional Food Management\_ New Age International (P) Limited, Published

#### **BOOKS RECOMMENDED:**

- West, Wood, Shugart, Harger, 1977 : Food service in Institutions.
- Koontz O Donnel - 1976 : Management - A systems contingency Analysis and Managerial Functions.
- Dessler B. 1978: Personnel Management - Modern Concept & Technique.
- Kotshevar L.N. Terrekk M.E., 1967 : Food Service Planning, layout and equipment.
- Kolshvner L.M. : Standard Principles and Techniques in Quantity Food Production, 1974.
- Kinton & Gesarani : The Theory of Catering. Edward Arnold 1974.
- Longree K. : Food service sanitation, Waley 1973.
- Philip T.E. : Modern Cookery for teaching and Trade Vol - I & II, 1983.
- Avery A.C. : Modern guide of food service equipment C.B. Publishing 1981.
- Anderson Home Appliance : Servicing D.B. Tareporevda & Sons. 1976.
- Fuller J. Chefs : Manual of Kitchen Management B.F. Balefore, 1977.
- Minor, L.J. Chicy, R. F. (1984). Food service systems management Connecticut AVI Pub.
- Hitchcock, M.J. (1980). Food service system administration Macimillan, New York.
- Drucker, P.S. (1975). Management. Allied Publishing, Delhi.
- Boella M.J. (1983). Personnel Management in the Hotel and catering industry. Hutchinson, London.
- Living stone, G.E. (1979). Food Service System Analysis, Design and Implementation. Academic Press.
- Powers, T.F. and Powers, T.M. (1984). Food Service Operations Planning and control, John Wiley and Sons.
- Buchanan, R. D. Armstrong, R.A. Merchant, P. Cleveland, E. Crabrec, S. Varge, E. and Kozeluh L. W (1975). The Anatomy of Food service design. CAHNERS Books. CAHNERS Publ. Co. Inc.
- Wood, C. Kluge, E.O. Annssem, P.E. Robinson, S. Golden, P. Clini, F. J Eaton, W.V. (1978). The Anatomy of food service design. C.B.I. Publishing Co.

**PAPER CODE-HFN - 322**  
**Public Nutrition**  
**(Theory)**

**Credits-04**  
**Max Marks-100**  
**Contact Hrs./ week -04**  
**Total Hrs-60**

#### **Course Objectives:**

**This course will enable the students to –**

1. To understand the multi-faceted nature of malnutrition problem.
2. To understand the role and responsibilities of various sectors in improving health and nutritional status of population.
3. To be aware of policies and various intervention programmes operating in India to overcome malnutrition.

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 322	Public Nutrition (Theory)	<p><b>The students will be able to –</b></p> <p><b>COFN70:</b> Describe the concept of public health nutrition. Government initiatives for addressing malnutrition</p> <p><b>COFN71:</b> Explain the concepts, methods and applications of Epidemiology</p> <p><b>COFN72:</b> Describe the causes, consequences and preventive strategies for triple burden of malnutrition in community</p> <p><b>COFN73:</b> Planning and designing of programmes using various models</p> <p><b>COFN74:</b> Describe the monitoring and evaluation strategies for programme</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>

**CONTENTS**

**Unit I**

**12hrs**

- Concept and scope of Public Health Nutrition, Health Care Delivery System
- Relationship Between Eating Behavior and Chronic Diseases
- Reducing Risk through Preventive Mechanism
- Levels of Prevention and Promotion
- Public and Community Health Objectives
- Knowledge and Skills of Public Health and Community Nutritionist, Places of Employment

**Unit II**

**12hrs**

- An introduction on Epidemiology
  - Methods.
  - Epidemiological reasoning.

- Epidemiological studies.
- Nutritional Epidemiology- Measurement.
- Importance of nutritional epidemiology in developing countries.
- Nutritional epidemiology and Public Health Nutrition.

### **Unit III**

**12hrs**

- Triple burden of Malnutrition
  - An introduction
  - Emergence of Dual Burden of Malnutrition in India.
  - Overview of Nutritional Status of Vulnerable group.
  - Overview of causes and consequences.
  - Food based strategies for prevention and management of malnutrition.
- **Policy and Program in Public Nutrition**
  - National/ Public sector policies for promotion of nutrition and Health status of the population
  - National Nutrition Policy
  - National Nutrition Mission
  - National Food Security Act
  - National Water Policy
  - National Urban Sanitation Policy
- **National / Public Sector Programs for Promotion of Nutrition and Health**
- Nutrition sensitive and specific programs (ICDS, Mid Day Meal, Poshan Abhiyan ,National Anemia Prophylaxis Program, National Vitamin A Prophylaxis Program, National Goiter Control Program)

### **Unit IV**

**12hrs**

- Delivering Successful Nutrition Services
- Principles of Planning Effective Community Nutrition Programs: need assessment, setting goals and objectives, selecting indicators, selecting intervention, planning for program, implementation and resources, planning for program monitoring and evaluation, planning for program termination, stakeholder participation in program management, Program planning using theories/Model (Health Belief Model (HBM), Knowledge, Attitude and Behavior Model (KABM), Social Learning Theory (SLT), Theory of Reasoned Action (TRA), Diffusion of Innovation Theory, Transtheoretical /Stages of Change Model , Social Marketing Theory (SMT), Healthy Communities: The Process P- Process PRECEDE\_PROCEED)

### **Unit V**

**12hrs**

- Program monitoring: Significance and purpose , selection of indicators, data collection and analysis
- Program evaluation : Principles, Types, models and steps in evaluation, selection of indicators
- Critical Appraisal of ongoing public sector Program and some success stories

### ESSENTIAL READINGS :

- Park J E and park K. 2009,Textbook of Preventive and Social Medicine; Edition: 20<sup>th</sup>, Jabalpur. Banarsidas Bhanot..
- Jelliffe and jelliffe 1989, Assessment of Nutritional Status in the Community.
- Gopalan C, Combating Undernutrition, Nutrition Foundation of India; Special Publication Series
- Vir Chander Sheila. 2011. Public Health Nutrition in Developing Countries Part I & II. Woodhead Publishing India.
- Hughes R and Margetts M.B. 2011. Practical Public Health Nutrition. Wiley- Blackwell.
- Nnakwe E.N. 2013. Community Nutrition Planning Health Promotion and Disease Prevention. Second Edition. Jones & Bartlett Learning.
- Measuring Change in Nutritional Status1983: World Health Organization. Geneva.

### BOOKS RECOMMENDED :

- Francis E.Johmstom, Nutritional Anthropology, Publisher; Alan R.Liss Inc., New York.
- Vital Statistics of India: Office of the Registrar General, India, Ministry of Home-Affairs : GOI, New Delhi.
- Economic Survey, GOI, Ministry of Finance; Economic Division.
- Bamji Rao and Reddy, Textbook of Human Nutrition, Publisher: Oxford & IBH Publishing Co. Pvt. Ltd.
- Beaton and Bengoa; 1976, Nutrition in Preventive Medicine. World Health Organization, Geneva.
- National Plan of Action 1995–FNB, DWCD, MHRD.
- 1995, National Plan of Action –FNB, DWCD, MHRD.
- 1993, National Nutrition Policy – GOI, DWCD, MHRD.
- Jacob T. Food Adulteration. 1976. Delhi, Macmillan, Adulteration.
- Gibson R. Principles of Nutritional Assessment. 1990. Oxford University.
- Shukla P.K. Nutritional Problems of India. 1982.

**PAPER CODE-HFN - 323**  
**Clinical And Therapeutic Nutrition -I**  
**(Theory)**

**Credits-04**

**Max Marks-100**

**Contact Hrs./ week-04**

**Total Hrs-60**

#### Course Objectives:

**This course will enable the students to –**

- Acquire knowledge and functions related to human body
- Enable them to understand nutrition management in infection, stress and diseases conditions

#### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<p><b>HFN 323</b></p>	<p><b>Clinical and Therapeutic Nutrition -I (Theory)</b></p>	<p><b>The students will be able to –</b></p> <p><b>COFN75:</b> Gain knowledge about anatomy and functions of different organs of the body</p> <p><b>COFN76:</b> Describe the importance of nutritional care process of patients</p> <p><b>COFN77:</b> Identify causative factors and metabolic changes in various diseases/disorders and the associated principles of medical nutrition therapy.</p>	<p><b>Approach in teaching:</b> Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b> Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>
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## CONTENTS

### Unit I

**12hrs**

- **Introduction to human body and chemistry of life**
  - Various organs and their position
  - Homeostasis and Homeostatic imbalance
  - Meaning of Terms – anatomy, physiology, etiology, pathogenesis, pathophysiology
  - Cells, tissues, membrane, glands, body cavities
- **Lymphatic System**
  - Lymph vessels, Lymph organs and tissues
  - Non specific defense mechanism. ImmUnity - cell mediated and humoral immUnity, Acquired immUnity
  - Hypersensitivity, diagnosis and dietary management
  - Autoimmune diseases – Systemic Lupus, Celiac disease, Addison disease

### Unit II

**12hrs**

- **Respiratory System and associated organs**
  - Transport and exchange of gases
  - Control of Respiration
  - Lung volume and capacity Incidence, etiology, diagnosis, clinical manifestations, COPD (*Chronic obstructive pulmonary disease*)
- **Reproductive system** – structure and functions of female reproductive organs, menstrual cycle, menopause, PCOS and its nutritional management

### Unit III:

**12hrs**

- **Bone structure, types and formation**
- **Incidence, etiology, pathology. clinical manifestations, dietary management and counseling in** Rheumatoid arthritis, osteoarthritis, osteoporosis and cancer
- **Nervous System** – Structure of neurons, Nerve impulse transmission, structure and functions of brain and spinal cord, Disorders of brain – stroke, dementia, Parkinson's disease, multiple sclerosis and their nutritional management

### Unit IV Nutrition Care Process

**12hrs**

- Nutritional screening and assessment of out-patients and hospitalized patients, Nutritional interpretation of laboratory data

- Use of screening tools (Activity)
- Nutritional Intervention – Diet modifications
- Special feeding methods in nutritional support
- Significance of Anti inflammatory foods

#### **Unit V**

**12 hrs**

- **Nutrition and stress** -Stress types, body's response (endocrine and metabolic) to short term and long term stress. Role of nutrition in stress coping
- **Surgery**- pre operative and post operative nutritional care
- **Burns** –classification, dietary management and mode of feeding
- **Trauma** –physiological, metabolic and hormonal response to injury, dietary management
- **Diet, nutrient and drug interaction**
  - Basic concept, Effect of Nutrition on drugs
  - Effect of drug on Nutritional status, food intake, digestion, absorption and metabolism of nutrient.

#### **ESSENTIAL READINGS:**

- Robinson, C.H. and Lawler, M.R. (1986). Normal and Therapeutic Nutrition. Macmillan, New York.

#### **BOOKS RECOMMENDED:**

- Mahan, L.K. & Ecott-Stump, S. (2000) : Krause's Food, Nutrition and Diet Therapy, 10<sup>th</sup> Edition, W.B. Saunders Pvt. Ltd.
- Shils, M.E., Olson, J.A., Shike, N. and Ross, A.C. (Ed) (1999) : Modern Nutrition in Health & Disease, 9<sup>th</sup> Edition, Williams and Wilkins.
- Escott-Stump, S. (1998) : Nutrition and Diagnosis Related Care, 4<sup>th</sup> Edition, Williams and Wilkins.
- Garrow, J.S., James, W.P.T. and Ralph, A. (2000) : Human Nutrition Dietetics, 10<sup>th</sup> Edition, Churchill Livingstone.
- Williams, S.R. (1993) : Nutrition and Diet Therapy, 7<sup>th</sup> Edition, Times Mirror/Mosby College Publishing.
- 6 Guyton, A.C. and Hall, J.E. (1999) : Textbook of Medical Physiology, W.B. Saunders Co.
- 7 Ritchie, A.C. (1990) : Boyd's Textbook of Pathology, 9<sup>th</sup> Edition, Lea and Febiger, Philadelphia.
- 8 Fauci, S.A. et al (1998) : Harrison's Principles of Internal Medicine, 14<sup>th</sup> Edition, McGraw Hill.
- Ganong W.F.(2003)-Review of Medical Physiology.21st ed. McGraw Hill.
- Guyton A.C. and Hall J.E. (2000) Textbook of Medical Physiology.10th ed. India: Harcourt Asia..
- Tortora G.J and Grabowski S.R. (2000) Principles of Anatomy and Physiology. 9th ed. John Wiley and Sons.Inc.
- West J.B.(1996): Physiological Basis of Medical Practice .12th Edition. B. I. Waverly Pvt. Ltd.
- Marieb E.N (2001) Human Anatomy and Physiology (5th ed) Pearson Education ,Inc, publishing as Benjamin Cummings.
- Jain A. K (2014) Human Physiology for BDS (5th Edition), Publisher: Avichal Publishing Company; ISBN: 9788177394337 .
- 15 Pal G.K and Pal Pravati (2016) Comprehensive Textbook Of Medical Physiology (2Vols) Publisher:Jaypee Brothers Medical Pub (P) Ltd. ) ISBN:5551234080758
- Ross and Wilson(1973). Foundation of Anatomy and Physiology, Medical Division of Longman Group Ltd.

#### **JOURNALS :**

- Nutrition Update Series.
- World Review of Nutrition and Dietetics.



- Journal of the American Dietetic Association.
- Indian Journal of Nutrition and Dietetics
- American Journal of Clinical Nutrition.
- European Journal of Clinical Nutrition.
- Nutrition Reviews.

**PAPER CODE: HFN 324**  
**Food Service Management**  
**(Practical)**

**Credits: 6**  
**Contact Hours: 90**  
**Max. Marks: 100**

**Course Objectives:**

**This course will enable the students to –**

1. Gain knowledge on quantity food production, menu planning, purchasing and inventory control

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>HFN 324</b>	<b>Food Service Management (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>COFN78:</b> Develop skills in planning menus for various food service organizations within specific budgets.</p> <p><b>COFN79:</b> Standardize recipes for different cuisines at a large scale</p> <p><b>COFN80:</b> Apply acquired skills in menu planning and quantity food production, pricing and sale of the product</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>

**CONTENTS**

- **Planning and organization of meals for**
  - Institutions that cater to children (Mid Day Meals)
  - Food Service Units in Hostels
  - Food Service college canteen
  - Industrial Catering (Railway catering, Industrial Canteens (Subsidized pricing)
  - Catering for special occasion and events (Conferences and Moktail parties)
- **Standardization of Recipes' (6,20, 50 portions) any two of the following**

- Snacks
- Cakes
- Cereal Preparations
- Curry Preparations
- **Project : Birthday party , Canteen**
- **Development of sales promotion Tool**
- **Training Module for Food Service Personnel in Hygiene and Sanitation**

#### **ESSENTIAL READINGS:**

- S. Malhan & M. Sethi, 1989: Catering Management-in Intergrated approach.
- Sethi Mohini, 2008: Istitutional Food Management\_ New Age International (P) Limited, Published

#### **BOOKS RECOMMENDED:**

- West, Wood, Shugart, Harger, 1977 : Food service in Institutions.
- Koontz O Donnel - 1976 : Management - A systems contingency Analysis and Managerial Functions.
- Dessler B. 1978: Personnel Management - Modern Concept & Technique.
- Kotshevar L.N. Terrekk M.E., 1967 : Food Service Planning, layout and equipment.
- Kolshvner L.M. : Standard Principles and Techniques in Quantity Food Production, 1974.
- Kinton & Gesarani : The Theory of Catering. Edward Arnold 1974.
- Longree K. : Food service sanitation, Waley 1973.
- Philip T.E. : Modern Cookery for teaching and Trade Vol - I & II, 1983.
- Avery A.C. : Modern guide of food service equipment C.B. Publishing 1981.
- Anderson Home Appliance : Servicing D.B. Tareporevda & Sons. 1976.
- Fuller J. Chefs : Manual of Kitchen Management B.F. Balefore, 1977.
- Minor, L.J. Chicy, R. F. (1984). Food service systems management Connecticut AVI Pub.
- Hitchcock, M.J. (1980). Food service system administration Macimillan, New York.
- Drucker, P.S. (1975). Management. Allied Publishing, Delhi.
- Boella M.J. (1983). Personnel Management in the Hotel and catering industry. Hutchinson, London.
- Living stone, G.E. (1979). Food Service System Analysis, Design and Implementation. Academic Press.
- Powers, T.F. and Powers, T.M. (1984). Food Service Operations Planning and control, John Wiley and Sons.
- Buchanan, R. D. Armstrong, R.A. Merchant, P. Cleveland, E. Crabrec, S. Varge, E. and Kozeluh L. W (1975). The Anatomy of Food service design. CAHNERS Books. CAHNERS Publ. Co. Inc.
- Wood, C. Kluge, E.O. Annssem, P.E. Robinson, S. Golden, P. Clini, F. J Eaton, W.V. (1978). The Anatomy of food service design. C.B.I. Publishing Co.

**PAPER CODE-HFN - 325**  
**Public Nutrition**  
**(Practical)**

**Credits-06**  
**Max Marks-100**  
**Contact Hrs./ week-06**  
**Total Hrs-90**

## Course Objectives:

### This course will enable the students to –

1. Basic Principles for planning and preparing low cost nutritious dishes for vulnerable groups.
2. Simple techniques of assessment of nutritional status.
3. Critical evaluation of a nutrition and health programme.
4. Organization of a nutrition education activity.
5. Computer application in imparting nutrition and health education

## Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 325	Public Nutrition (Practical)	<b>The students will be able to –</b>  <b>COFN81:</b> Develop low cost standardized recipes for different age groups and physiological states.  <b>COFN82:</b> Design and implement an action plan for addressing a public health nutrition problem in the community.	<b>Approach in teaching:</b> Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion  <b>Learning activities for the students:</b> Self learning assignments, Effective questions, presentations, Field trips	Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration

## CONTENTS

- Development, Organoleptic evaluation and calculation of nutritive value of low cost recipes for vulnerable sections of society considering the dual burden of malnutrition.
  - Pregnancy and Lactation
  - Infancy
  - Childhood
  - Adolescence
  - Elderly
- An overview of Ongoing Public Health and Nutrition program and report writing
- Formulation of Interventions in Nutrition and Health Education
  - Preparation of Intervention summary
  - Community analysis
  - Problem analysis
  - Stakeholder analysis
  - Determinant analysis
  - Mandates for action
  - Capacity analysis
- Establishment of intervention governance structure
  - Formulation of goals and objective
  - Intervention research
  - Development and implementation of strategies

- Evaluation of plan

### ESSENTIAL READINGS :

- Park J E and park K. 2009,Textbook of Preventive and Social Medicine; Edition: 20<sup>th</sup>, Jabalpur. Banarsidas Bhanot..
- Jelliffe and jelliffe 1989, Assessment of Nutritional Status in the Community.
- Gopalan C, Combating Undernutrition, Nutrition Foundation of India; Special Publication Series
- Vir Chander Sheila. 2011. Public Health Nutrition in Developing Countries Part I & II. Woodhead Publishing India.
- Hughes R and Margetts M.B. 2011. Practical Public Health Nutrition. Wiley- Blackwell.
- Nnakwe E.N. 2013. Community Nutrition Planning Health Promotion and Disease Prevention. Second Edition. Jones & Bartlett Learning.
- Measuring Change in Nutritional Status1983: World Health Organization. Geneva.

### BOOKS RECOMMENDED :

- Francis E.Johmstom, Nutritional Anthropology, Publisher; Alan R.Liss Inc., New York.
- Vital Statistics of India: Office of the Registrar General, India, Ministry of Home-Affairs : GOI, New Delhi.
- Economic Survey, GOI, Ministry of Finance; Economic Division.
- Bamji Rao and Reddy, Textbook of Human Nutrition, Publisher: Oxford & IBH Publishing Co. Pvt. Ltd.
- Beaton and Bengoa; 1976, Nutrition in Preventive Medicine. World Health Organization, Geneva.
- National Plan of Action 1995–FNB, DWCD, MHRD.
- 1995, National Plan of Action –FNB, DWCD, MHRD.
- 1993, National Nutrition Policy – GOI, DWCD, MHRD.
- Jacob T. Food Adulteration. 1976. Delhi, Macmillan, Adulteration.
- Gibson R. Principles of Nutritional Assessment. 1990. Oxford University.
- Shukla P.K. Nutritional Problems of India. 1982.

### PAPER CODE-HFN - 326 Dissertation Synopsis

**Credits-04**

**Max Marks-100 (CA-30 ,SEE-70)**

**Contact Hrs./ week-04**

**Total Hrs-60**

### Course Objectives:

**This course will enable the students to :**

1. Understand the skill in selection of relevant topic for research
2. Apply the knowledge in reviewing the existing literature
3. Understand the different methodology to conduct the research

### Course Outcomes (COs):

Course		Learning Outcomes	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			

<p><b>HFN 326</b></p>	<p><b>Dissertation Synopsis</b></p>	<p><b>The student will be able to –</b></p> <p><b>COFN83:</b> Explore subject related ideas and issues for research</p> <p><b>COFN84:</b> Describe the rationale for research</p> <p><b>COFN85:</b> Know the methodology and practical aspects of collecting data for research work</p> <p><b>COFN86:</b> Evaluate and select appropriate strategies for analysis and presentation of data</p> <p><b>COFN87:</b> Prepare and present a clear and effective laboratory/field appropriate research plan proposal, using appropriate media</p>	<p><b>Approaches in Teaching:</b></p> <p>Interactive Lectures, Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b></p> <p>Self learning assignments, field practicals.</p>	<p>CA test, Semester End Examination, Presentation and communication skills, Successful completion of the oral defence of research plan proposal.</p>
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## CONTENTS

- Conduction of innovative and fruitful research in various fields of nutrition. It shall include research in fields of community nutrition, clinical nutrition, food processing and technologies, biochemical, biophysical and organoleptic assessment of various prevalent as well as under prevalent food sources and products. It should enrich the existing stock of knowledge related to foods and nutrition to strengthen the normal nutritional pattern of the common people, as well as, at the same time enhance the scale of food processing at all levels.
- Evaluation (CA): Based on Interaction with the supervisor, attendance, Library work, Internet Browsing and Preparation of the Synopsis.

### PAPER CODE-HFN- 327 Internship

**Credits-04**  
**Max Marks-100**  
**Contact Hrs./ week-04**  
**Total Hrs-60**

#### Course Objectives:

#### This course will enable the students to:

1. Work in diverse areas of food, nutrition, dietetics, biochemistry, microbiology and community nutrition through a variety of supervised practice experiences
2. Be competent entry level practitioners, investigators and nutritionists who demonstrate an evidence based approach to their practice

#### Course Outcomes (COs):

Course		Learning Outcomes	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HFN 327	Internship	<p><b>The student will be able to –</b></p> <p><b>COFN88:</b> Get hands on training of real field setting.</p> <p><b>COFN89:</b> Understand the issues and strategies organizations work on.</p> <p><b>COFN90:</b> Use communication skills for personal and professional development.</p> <p><b>COFN91:</b> Enhance ability to work with groups and use managerial and problem solving skills</p>	<p><b>Approaches in Teaching:</b> The students could work with NGOs, Govt. agencies, international agencies hospitals, analytical laboratories, etc.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field training.</p>	CA test, Semester End Examination. Report presentation

## CONTENTS

- In the end of II Semester, students will undergo internship training of 45 days in a hospital/ health clinic/ analytical labs/ food processing Units/ food industries/ catering Units/ NGOs etc. so that they get to understand the existing working practices, conditions and acquire an in depth technical know how. The student shall prepare a report and submit it. She will be required to make the presentation of the work followed by viva-voce. The student is also required to get the certificate from the concerned organization/ institution/ industry, etc. regarding successful training.
- Panel of examiners consisting of Head of the department, and two other examiners appointed by the Principal shall conduct a vice-voce and evaluate the reports.

## COURSE LEARNING OUTCOMES - Semester IV

### PAPER CODE: HFN 421 Clinical & Therapeutic Nutrition – II (Theory)

**Credits: 4**  
**Contact Hours: 60**  
**Max. Marks: 100**

#### Course Objectives:

**This course will enable the students to –**

1. Understand the anatomy and functioning of human body system
2. Understand the pathophysiology of commonly occurring diseases.
3. *Understand the role of diet in the management of various diseases*

### Course Outcomes (COs):

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
<b>HFN 421</b>	<b>Clinical &amp; Therapeutic Nutrition – II (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>COFN92:</b> Comprehend functional organization of different organ systems in the human body.</p> <p><b>COFN93:</b> Gain knowledge about causative factors, symptoms and metabolic changes in various diseases/disorders and the associated principles of diet therapy.</p> <p><b>COFN94:</b> Apply the knowledge in planning therapeutic diets for the disease conditions</p> <p><b>COFN95:</b> Acquire professional diet counseling skills</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>

### CONTENTS

#### Unit I: Diseases of Gastro-intestinal tract

**12hrs**

- Organs of digestive System – structure and their functions (mouth, salivary gland, pharynx, oesophagus, stomach, small intestine, large intestine)
- Composition, function and regulation of secretions – salivary, gastric, pancreatic, bile and intestinal juices
- Digestion and absorption of nutrients
- Incidence, etiology, metabolic changes, clinical manifestations, complications and dietary management of the following - Gastro-Intestinal Diseases and Disorders –Gastro Oesophageal Reflux Disorder (GERD), Hiatus Hernia, Dyspepsia, Gastritis, Diverticular disease, Peptic Ulcer, Haemorrhoids
- Malabsorption Syndrome (Tropical sprue, Steatorrhoea, Lactose intolerance), Inflammatory Bowel Syndrome, Ulcerative Colitis, Short Bowel Syndrome.
- Bariatric surgery

#### Unit II: Diseases related to accessory organs of Digestive system

**12 hrs**

- Accessory Organ - Liver, Pancreas, Gall bladder – structure and functions  
Incidence, etiology, metabolic changes, clinical manifestations, complications and dietary management for the following -
- Liver, Gall bladder and Pancreatic diseases
  - Liver Diseases –Liver Cirrhosis, Hepatic Encephalopathy (HE)/ Hepatic Coma,
  - Pancreatic Diseases – Pancreatitis
  - Gall Bladder Diseases – Cholelithiasis, Cholecystitis, Cholecystectomy
- Eating Disorders

**Unit III: Diseases of Cardiovascular system****12 hrs**

- Heart – Structure, blood circulation, conducting system of heart, cardiac cycle,
- Blood composition
- Anatomy of blood vessels and physiology of circulation
- Blood pressure and its control
- Incidence, etiology, metabolic changes, clinical manifestations, complications and dietary management for the following
- Cardio vascular disease (CVD) – Dyslipideimia, Atherosclerosis, Hypertension (HT), Angina Pectoris, Myocardial Infarction (MI), Congestive Cardiac failure (CCF), Rheumatic Heart Disease (RHD) Prevention of CHD.

**Unit IV: Metabolic Disorders****12hrs**

- Endocrine System - Endocrine glands – Pituitary, Thyroid, Parathyroid, Adrenal, Pancreatic Islets, Pineal
  - Hormones and their mechanism of action and control of hormone secretions
- Metabolic disorders
  - Diabetes Mellitus (Type 1, Type 2 and Gestational), Gout, Thyroid
- Inborn errors of metabolism
  - Disorders of Amino Acid metabolism – Phenylketonuria, hypertyrosinemia, hypervalinemia, hyperhistidinemia, hyperlysinemia, homocystinuria.
  - Disorders of carbohydrate metabolism – Galactosemia, Pentosuria, MSUD
  - Disorders of lipid metabolism – Hyperchylomicronemia, hypercholesterolemia – pure and mixed.

**Unit V: Diseases related to renal system****12hrs**

- Urinary System
  - Structure and functions of urinary organs, blood supply
  - Physiology of urine formation – glomerular filtration
  - Urine volume and composition
  - Pathophysiology of renal stones
- Fluid, Electrolyte and Acid-base Homeostasis
  - Fluid compartments and fluid balance, Concentration of solution, Electrolytes, Movement of body fluids, Acid base balance
- Renal Diseases – Glomerulonephritis (Acute and Chronic), Nephrotic Syndrome, Nephrolithiasis (Renal calculi), Nephrosclerosis, Renal Failure (Acute and chronic), End Stage Renal Failure (ESRD), Dialysis (Haemodialysis and Peritoneal Dialysis), Kidney Transplantation

**ESSENTIAL READINGS:**

- Swaminathan, M.S. (1985). Advanced Textbook on Food and Nutrition. Vol. I & II. The Bangalore Printing & Publishing Co. Ltd. Bangalore.
- Antia, F.P. and Abraham, P. (2001). 4<sup>th</sup> Edition. Clinical Dietetics and Nutrition. Oxford University Press, Delhi.
- Robinson, C.H. and Lawler, M.R. (1990). Revised 17<sup>th</sup> Edition. Normal and Therapeutic Nutrition. Macmillan, New York.

**BOOKS RECOMMENDED:**

- Mahan, L.K. & Ecott-Stump, S. (2000): Krause's Food, Nutrition and Diet Therapy, 10<sup>th</sup> Edition, W.B. Saunders Pvt. Ltd.
- Shils, M.E., Olson, J.A., Shike, N. and Ross, A.C. (Ed) (1999) : Modern Nutrition in Health & Disease, 9<sup>th</sup> Edition, Williams and Wilkins.



- Escott-Stump, S. (2015) : Nutrition and Diagnosis Related Care, 8<sup>th</sup> Edition, Williams and Wilkins.
- Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition Dietetics, 10<sup>th</sup> Edition, Churchill Livingstone.
- William's Essentials of Nutrition and Diet Therapy (2018) 12<sup>th</sup> Edition. Authors - Eleanor Schlenker Joyce Ann Gilbert .Times Mirror/Mosby College Publishing.
- Davis, J. and Sherer, K. (1993): Applied Nutrition and Diet Therapy for Nurses, 2<sup>nd</sup> Edition, W.B. Saunders Co.
- Walker, W.A. and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown & Co.
- Guyton, A.C. and Hall, J.E. (2010) : Textbook of Medical Physiology. 12<sup>th</sup> Edition. W.B. Saunders Co.
- Ritchie, A.C. (1990): Boyd's Textbook of Pathology, 9<sup>th</sup> Edition, Lea and Febiger, Philadelphia.
- 10.Fauci, S.A. et al (1998) : Harrison's Principles of Internal Medicine, 14<sup>th</sup> Edition, McGraw Hill.
- 11.World Cancer Research Fund, 3<sup>rd</sup> Expert Report (2017). Diet, Nutrition and Physical Activity – A Global Perspective. Washington E.D. WCRF
- 12.Khanna, K., Gupta, S. and Seth, R. (2001). Textbook of Nutrition and Dietetics, 2<sup>nd</sup> Edition. Phoenix Pub. House Pvt. Ltd. , New Delhi.
- 13.Bamji, M.S., Rao, N.P. and Reddy, V. (2009) : Textbook of Human Nutrition, 4<sup>th</sup> Edition. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi
- 14.Ganong W.F.(2003)-Review of Medical Physiology.21st ed. McGraw Hill.
- 16.Tortora G.J and Grabowski S.R. (2016) Principles of Anatomy and Physiology. 15th ed. John Wiley and Sons.Inc.
- 17.West J.B.(1996): Physiological Basis of Medical Practice .12th Edition. B. I. Waverly Pvt. Ltd.
- 18.Marieb E.N (2001) Human Anatomy and Physiology (5th ed) Pearson Education ,Inc, publishing as Benjamin Cummings.
- 19.Jain A. K (2014) Human Physiology for BDS (5th Edition), Publisher: Avichal Publishing Company; ISBN: 9788177394337 .
- 20. Pal G.K and Pal Pravati (2016) Comprehensive Textbook Of Medical Physiology (2Vols) Publisher:Jaypee Brothers Medical Pub (P) Ltd. ) ISBN:5551234080758
- 21.Ross and Wilson (2014). Anatomy and Physiology in Health and Illness. Authors: Anne Waugh Allison Grant.12<sup>th</sup> Edition. Churchill Livingstone

## **JOURNALS :**

- Nutrition Update Series.
- World Review of Nutrition and Dietetics.
- Journal of the American Dietetic Association.
- Indian Journal of Nutrition and Dietetics
- American Journal of Clinical Nutrition.
- European Journal of Clinical Nutrition.
- Nutrition Reviews.

## **PAPER CODE: HFN 422** **Scientific Writing** **(Theory)**

**Credits: 3**  
**Contact Hours: 45**  
**Max. Marks: 100**

### **Course Objectives:**

**This course will enable the students to –**

1. Understand the nuances of scientific writing.
2. Gain an insight into ethics in scientific publication
3. Learn the process of developing a research proposal/ project proposal

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 422	Scientific Writing (Theory)	<p><b>The students will be able to –</b></p> <p><b>COFN96:</b>Demonstrate knowledge of scientific writing and produce clear and effective scientific documents</p> <p><b>COFN97:</b>Develop skills in collation and presentation of scientific information</p> <p><b>COFN98:</b> Develop a research design/project on a topic relevant to their field</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>

**CONTENTS**

**Unit I:**

**9 hrs**

- **Key elements of scientific writing**
  - Quality information
  - Nature of language
  - Structure
- **Characteristics of scientific writing**
  - Clear and precise use of language
  - Accessibility to the intended audience
  - Correct information
  - Logical sequencing of information
  - Use of correct grammar
  - Appropriate use of technical terms, illustrations or diagrams

**Unit II:**

**9hrs**

- **Drafting a scientific document**
  - Research the document
  - Gather information
  - Plan the format
  - Create an outline
  - Write first draft
  - Check the accuracy
  - Revise and amend the document
- **Type of academic journal articles**
  - Letters/communications
  - Research notes
  - Articles
  - Supplemental articles

- Review articles

**Unit III:**

**9hrs**

- **Writing effective scientific documents**
  - Reports (Research/Progress)
  - Scientific paper (Journal/Conference)
  - Review paper
  - Abstracts
  - Theses
  - Electronic/Web based document
- **Elements of scientific documents**
  - Sections/subsections
  - Headings/subheadings
  - Front matter (Title, Title page, Abstract, Table of contents, List of figures, List of tables, List of terms, Acknowledgements)
  - Body (Introduction, Review of literature, Methodology, Results, Discussions, Summary, Conclusion, Recommendations)
  - End Matter (References, Appendices, Indices)

**Unit IV:**

**9hrs**

- **Ethics and scientific publication**
  - Ethics in Paper writing
  - Permission
  - Data fabrication and falsification
  - Plagiarism
  - Redundant and duplicate publication
  - Conflict of interest
  - Authorship issues
  - Animal and human welfare concerns
  - Reviewer responsibility
- **Oral Presentation**
  - Format of oral presentation (Informal/formal)
  - Visual aids – LCD projector, overhead projector (OHP) and transparencies or other display media
  - Delivery – Voice projection, Body language, Spoken v. written language, Notes, Time limit

**Unit V:**

**9hrs**

- **Writing a project proposal for grants**
  - Rationale and importance of research
  - Empirical and Theoretical conceptualization
  - Presenting pilot study/ data
  - Research proposal and time frame
  - Clarity and specificity of method
  - Clear organization
  - Outcome of research and its implications
  - Budgeting
  - Available infrastructure and resources
  - Executive summary

**ESSENTIAL READINGS:**

- Robert A. Day. How to Write and Publish a Scientific Paper, 7<sup>th</sup> edition, Greenwood, 2011.
- Martha Davis. Scientific Papers and Presentations. (2012). 3<sup>rd</sup> Edition. Academic Press.
- Michael Alley. The Craft of Scientific Writing. (2018). 4th edition Springer-Verlag New York.

- Janice R. Matthews, John M. Bowen, Robert W. Matthews. (2014). Successful Scientific Writing: A Step-By-step Guide for the Biological and Medical Sciences, 4<sup>th</sup> Edition. University Press.
- Peter J. Gosling. Scientist's Guide to Poster Presentations, Kluwer academic/Plenum publishers, 1999
- Edward Barrett, Leslie Perelman. The Mayfield Handbook of Technical and Scientific Writing, McGraw-Hill, 1997.
- Alley, M. (2018) The Craft of Scientific Writing. New York: Springer.
- Bernard, H.R. (2012). Social Research Methods: Qualitative and Quantitative Approaches. Thousand Oaks, CA: Sage Publications
- Black, J.A. and Champion, D.J. (1976). Methods and Issues in Social Research. New York: John Wiley and Sons.
- Blaxter, L., Hughes, C, and Tight, K. (2006). How to research. New Delhi: 3<sup>rd</sup> Edition. Open University Press.
- Blum, D., Knudson M., and Henig, R. M. (2005) Field Guide for Science Writers: The Official Guide of the National Association of Science Writers. USA; Oxford University Press. <http://www.nasw.org/field-guide>
- Elmes, D.G., Kanowitz, B.H. and Roediger, H.L. (1989). Research Methods in Psychology (Third Edition). New York: West Publishing Company.
- Katz, M. (2009) From Research to Manuscript: A Guide to Scientific Writing (2nd Ed). New York: Springer

**E-CONTENT:**

- <http://www.apastyle.org/>
- <http://www.citethisforme.com/guides>

**PAPER CODE: HFN 423  
Therapeutic Nutrition  
(Practical)**

**Credits: 6**  
**Contact Hours: 90**  
**Max. Marks: 100**

**Course Objectives:**

**This course will enable the students to –**

1. Understand - planning, preparation and service of therapeutic diets for various diseases

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			

<p><b>HFN 423</b></p>	<p><b>Clinical &amp; Therapeutic Nutrition (Practical)</b></p>	<p><b>The students will be able to –</b></p> <p><b>COFN99:</b> Develop skills in planning therapeutic diets based on patient needs</p> <p><b>COFN100:</b> Calculate nutrient content of diet plans and prepare various types of diets</p> <p><b>COFN101:</b> Provide dietary counselling for prevention/ treatment of various diseases/ disorders and familiarize with special therapeutic/ health foods</p>	<p><b>Approach in teaching:</b></p> <p>Interactive Lectures, Discussion, Power Point Presentations, Informative videos, group discussion</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, presentations, Field trips</p>	<p>Quiz, Poster Presentations, Power Point Presentations, Individual and group projects, Open Book Test, Semester End Examination, discussion, demonstration</p>
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## CONTENTS

- **Planning, preparation and service of the therapeutic diets for the following diseases-**
  - Peptic Ulcer
  - Celiac disease
  - Lactose intolerance
  - Ulcerative Colitis
  - Liver Cirrhosis
  - Pancreatitis
  - Dyslipidemia
  - Hypertension (HT)
  - Myocardial Infarction (MI)
  - Diabetes Mellitus
  - Glomerulonephritis
  - Nephrotic Syndrome
  - Chronic Renal Disease
- **Observation of a Dietetics Unit in a hospital**

## ESSENTIAL READINGS:

- Swaminathan, M.S. (1985). Advanced Textbook on Food and Nutrition. Vol. I & II. The Bangalore Printing & Publishing Co. Ltd. Bangalore.
- Antia, F.P. and Abraham, P. (2001). 4<sup>th</sup> Edition. Clinical Dietetics and Nutrition. Oxford University Press, Delhi.
- Robinson, C.H. and Lawler, M.R. (1990). Revised 17<sup>th</sup> Edition. Normal and Therapeutic Nutrition. Macmillan, New York.

## BOOKS RECOMMENDED:

- Mahan, L.K. & Ecott-Stump, S. (2000): Krause's Food, Nutrition and Diet Therapy, 10<sup>th</sup> Edition, W.B. Saunders Pvt. Ltd.
- Shils, M.E., Olson, J.A., Shike, N. and Ross, A.C. (Ed) (1999) : Modern Nutrition in Health & Disease, 9<sup>th</sup> Edition, Williams and Wilkins.
- Escott-Stump, S. (2015) : Nutrition and Diagnosis Related Care, 8<sup>th</sup> Edition, Williams and Wilkins.

- Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition Dietetics, 10<sup>th</sup> Edition, Churchill Livingstone.
- William's Essentials of Nutrition and Diet Therapy (2018) 12<sup>th</sup> Edition. Authors - Eleanor Schlenker Joyce Ann Gilbert .Times Mirror/Mosby College Publishing.
- Davis, J. and Sherer, K. (1993): Applied Nutrition and Diet Therapy for Nurses, 2<sup>nd</sup> Edition, W.B. Saunders Co.
- Walker, W.A. and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown & Co.
- Guyton, A.C. and Hall, J.E. (2010) : Textbook of Medical Physiology. 12<sup>th</sup> Edition. W.B. Saunders Co.
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- 14.Ganong W.F.(2003)-Review of Medical Physiology.21st ed. McGraw Hill.
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- 20. Pal G.K and Pal Pravati (2016) Comprehensive Textbook Of Medical Physiology (2Vols) Publisher:Jaypee Brothers Medical Pub (P) Ltd. ) ISBN:5551234080758
- 21.Ross and Wilson (2014). Anatomy and Physiology in Health and Illness. Authors: Anne Waugh Allison Grant.12<sup>th</sup> Edition. Churchill Livingstone

## **JOURNALS :**

- Nutrition Update Series.
- World Review of Nutrition and Dietetics.
- Journal of the American Dietetic Association.
- Indian Journal of Nutrition and Dietetics
- American Journal of Clinical Nutrition.
- European Journal of Clinical Nutrition.
- Nutrition Reviews.

## **PAPER CODE-HFN- 424 Dissertation + Research Paper**

**Credits-16**

**Max Marks-100**

**Contact Hrs./ week-14**

**Total Hrs-240**

## **Course Objectives:**

**This course will enable the students to –**

1. Familiarize the students with the process of research with focus on foods and nutrition
2. Train the students on all steps of research process from problem identification to data dissemination

3. Develop skills in conducting a research study and learn the process of writing a dissertation thesis
4. Train students to gain an insight into ethics in scientific publication

**Course Outcomes (COs):**

Course		Learning outcomes (at course level)	Learning and teaching strategies	Assessment Strategies
Paper Code	Paper Title			
HFN 424	Dissertation & Research Paper	<p><b>The students will be able to –</b></p> <p><b>COFN102:</b> Know the practical aspects of collecting data</p> <p><b>COFN103:</b> Evaluate, select and use appropriate strategies for analysis and presentation of data collected during research process</p> <p><b>COFN104:</b> Suitably illustrate data/ insights using various graphical and other methods</p> <p><b>COFN105:</b> Prepare a dissertation document based on research process</p> <p><b>COFN106:</b> Demonstrate counseling techniques to facilitate behavior change.</p> <p><b>COFN107:</b> Coordinate and design training modules for conducting training</p>	<p><b>Approach in teaching:</b></p> <p>Lectures, Discussions, Self directed: Read journal articles, books to collate information on related topic</p> <p><b>Learning activities for the students:</b></p> <p>Self learning assignments, Effective questions, Presentations, Field work/ experimental work</p>	<p>CA Test, Semester End Examination, Power Point Presentations, Successful defence of original research work, Preparation of a manuscript for submission to a peer-reviewed journal, plagiarism check and ethical clearance</p>

**CONTENTS**

- Conduction of innovative and fruitful research in various fields of nutrition. It shall include research in fields of community nutrition, clinical nutrition, food processing and technologies, biochemical, biophysical and organoleptic assessment of various prevalent as well as under prevalent food sources and products. It should enrich the existing stock of knowledge related to foods and nutrition to strengthen the normal nutritional pattern of the common people, as well as, at the same time enhance the scale of food processing at all levels.
- Evaluation (CA): Based on Interaction with the supervisor, attendance, Library work, Internet Browsing and Preparation of the Dissertation Report.

**Programme- M.Sc. Human development**  
**OUTCOMES - Academic Year- 2020-21**

**PROGRAMME OUTCOMES**

<b>PO1</b>	Identify how families and communities influence the process of growth and development
<b>PO2</b>	Demonstrate skills in using tools to assess human behaviour
<b>PO3</b>	Understand and appreciate the role of interdisciplinary sciences in the development and well- being of individuals, families and communities
<b>PO4</b>	Understand the sciences and technologies that enhance the quality of life of people
<b>PO5</b>	Acquire professional and entrepreneurial skills for economic empowerment of self in particular, and community in general
<b>PO6</b>	Develop professional skills in food, nutrition, textiles, housing, product making, communication technologies and human development
<b>PO7</b>	Adopted and transfer the scientific innovations from lab to the community
<b>PO8</b>	The courses focus on skill development and capacity building to empower women to initiate their own enterprise
<b>PO9</b>	Acquire necessary knowledge and skills to undertake a career in research, either in industry or in an academic set up.
<b>PO10</b>	Possess skills to effectively deliver formal and informal presentations to a variety of audiences in multiple contexts
<b>PO11</b>	Describe socio-cultural competence relative to diversity, equity and/or inclusion
<b>PO12</b>	Understood the role of interdisciplinary sciences in the development of individual, families and communities.



## PROGRAMME SPECIFIC OUTCOMES

### MSc H. Sc. (Human Development)

PSO	Programme Specific Outcomes
<b>PSO1</b>	Develop skills in outreach consultancies in the fields of: ECCE training, Inclusive Education, Elementary Education, Theatre in Education, and Media
<b>PSO2</b>	Support and advocacy skills for Gender Justice, Child Rights, Inclusion and Adoption help students to gain professional advantage.
<b>PSO3</b>	Students are enabled to critique, propose and formulate research design strategies
<b>PSO4</b>	Student will engage with the diversity and plurality of childhood in India and gain knowledge of the status of children in India
<b>PSO5</b>	Acquire a repertoire of skills for working with children and relevant adults in different contexts and will be familiar with selected standardized tests/protocols for the study including assessment of individuals, families/settings
<b>PSO6</b>	Demonstrate strategies for effective capacity building, implementation and assessment of early childhood education and development programmes.
<b>PSO7</b>	Examine and analyze the significance of children's social and ecological contexts, study the approaches and practices for inclusion and empowerment of children and families.
<b>PSO8</b>	Develop a holistic understanding of the educational ecosystem, processes and practices with reference to human development.
<b>PSO9</b>	The students are oriented to the linkages between social policy, legislations and implementation of schemes and programmes.

### COURSE ARTICULATION MATRIX: (MAPPING OF COS WITH POS)

Course	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
<b>HHD 121</b>	COHD1		✓					✓										✓			✓	✓
	COHD2		✓					✓					✓					✓			✓	✓
	COHD3		✓					✓	✓									✓			✓	✓
	COHD4		✓					✓										✓			✓	✓
<b>HHD 122</b>	COHD5												✓		✓						✓	✓
	COHD6						✓								✓						✓	✓
	COHD7	✓							✓						✓						✓	✓
	COHD8	✓									✓				✓						✓	✓

	COHD9			✓											✓				✓	✓
<b>HHD 123</b>	COHD10	✓													✓	✓			✓	✓
	COHD11				✓		✓								✓	✓			✓	✓
	COHD12						✓		✓						✓	✓			✓	✓
	COHD13						✓					✓			✓	✓			✓	✓
	COHD14						✓								✓	✓			✓	✓
<b>HHD 124</b>	COHD15			✓					✓					✓			✓			
	COHD16			✓										✓			✓			
	COHD17	✓		✓					✓					✓			✓			
	COHD18						✓							✓			✓			
	COHD19								✓					✓			✓			
<b>HHD 125</b>	COHD20		✓						✓	✓							✓		✓	✓
	COHD21		✓	✓													✓		✓	✓
<b>HHD 126</b>	COHD22		✓	✓													✓		✓	✓
	COHD23		✓														✓		✓	✓
	COHD24		✓												✓				✓	✓
	COHD25		✓	✓					✓						✓				✓	✓
	COHD26		✓	✓				✓							✓				✓	✓
	COHD27		✓		✓				✓						✓				✓	✓
	COHD28		✓				✓								✓				✓	✓
<b>HHD 127</b>	COHD29	✓	✓				✓								✓	✓			✓	✓
	COHD30	✓	✓						✓						✓	✓			✓	✓
	COHD31		✓						✓			✓			✓	✓			✓	✓
	COHD32		✓						✓						✓	✓			✓	✓
<b>HHD 128</b>	COHD33						✓		✓						✓	✓			✓	✓
	COHD34						✓		✓				✓				✓		✓	✓
	COHD35						✓		✓					✓			✓		✓	✓
	COHD36						✓		✓					✓			✓		✓	✓
<b>HHD 221</b>	COHD37	✓			✓	✓	✓								✓			✓		
	COHD38	✓			✓	✓	✓								✓			✓		
	COHD39	✓			✓	✓	✓								✓			✓		
	COHD40	✓			✓	✓	✓								✓			✓		
	COHD41				✓	✓	✓								✓			✓		
	COHD42				✓	✓	✓								✓			✓		
<b>HHD 222</b>	COHD43		✓						✓							✓		✓		✓
	COHD44		✓						✓							✓		✓		✓
	COHD45		✓						✓							✓		✓		✓
	COHD46		✓						✓							✓		✓		✓
<b>HHD 223</b>	COHD47	✓			✓									✓	✓		✓		✓	
	COHD48				✓		✓	✓						✓	✓		✓		✓	
	COHD49				✓		✓		✓					✓	✓		✓		✓	
	COHD50				✓		✓							✓	✓		✓		✓	
<b>HHD 224</b>	COHD51			✓	✓				✓						✓		✓		✓	
	COHD52		✓					✓							✓		✓		✓	

	COHD53	✓			✓		✓							✓		✓		✓		
	COHD54							✓						✓		✓		✓		
	COHD55										✓			✓		✓		✓		
HHD 225	COHD56			✓					✓							✓		✓	✓	✓
	COHD57								✓			✓				✓		✓	✓	✓
	COHD58		✓					✓	✓			✓				✓		✓	✓	✓
	COHD59		✓						✓			✓				✓		✓	✓	✓
HHD 226	COHD60								✓			✓				✓		✓	✓	✓
	COHD61							✓		✓		✓				✓		✓	✓	✓
	COHD62		✓							✓						✓		✓		
	COHD63		✓							✓						✓		✓		
	COHD64		✓							✓						✓		✓		
HHD 227	COHD65		✓							✓						✓		✓		
	COHD66	✓		✓										✓				✓	✓	
	COHD67						✓		✓			✓				✓		✓	✓	
	COHD68			✓							✓					✓		✓	✓	
	COHD69	✓						✓				✓				✓		✓	✓	
	COHD70					✓	✓									✓		✓	✓	
HHD 228	COHD71			✓	✓											✓		✓	✓	
	COHD72			✓			✓							✓	✓			✓		
	COHD73								✓	✓				✓	✓			✓		
	COHD74		✓			✓	✓							✓	✓			✓		
HHD 229	COHD75							✓	✓	✓				✓	✓			✓		
	COHD76				✓			✓		✓						✓	✓			
	COHD77							✓		✓	✓					✓	✓			
	COHD78			✓							✓					✓	✓			
HHD 321	COHD79	✓		✓					✓					✓				✓	✓	
	COHD80	✓		✓					✓					✓				✓	✓	
	COHD81	✓		✓	✓	✓			✓					✓				✓	✓	
	COHD82			✓					✓		✓		✓					✓	✓	
	COHD83	✓									✓			✓				✓	✓	
HHD 322	COHD84	✓	✓	✓										✓				✓	✓	✓
	COHD85	✓		✓										✓				✓	✓	✓
	COHD86	✓		✓							✓			✓				✓	✓	✓
	COHD87	✓		✓										✓				✓	✓	✓
	COHD88	✓					✓							✓				✓	✓	✓
	COHD89	✓									✓	✓		✓				✓	✓	✓
	COHD90		✓											✓				✓	✓	✓
HHD 323	COHD91	✓		✓				✓	✓					✓					✓	✓
	COHD92								✓		✓		✓						✓	✓
	COHD93			✓			✓		✓		✓		✓						✓	✓
	COHD94	✓				✓		✓			✓		✓						✓	✓
	COHD95					✓		✓		✓			✓						✓	✓
	COHD96	✓				✓							✓			✓	✓	✓		✓

HHD 324	COHD97			✓				✓				✓		✓			✓	✓	✓		✓	
	COHD98					✓		✓				✓					✓	✓	✓		✓	
	COHD99		✓				✓	✓				✓					✓	✓	✓		✓	
	COHD100				✓				✓			✓					✓	✓	✓		✓	
HHD 325	COHD101					✓	✓	✓				✓						✓	✓	✓		
	COHD102					✓		✓				✓							✓	✓	✓	
HHD 326	COHD103	✓				✓	✓	✓				✓							✓	✓	✓	
	COHD104	✓				✓	✓					✓							✓	✓	✓	
	COHD105					✓	✓					✓							✓	✓	✓	
HHD 327	COHD106	✓	✓			✓	✓	✓				✓						✓	✓	✓		
	COHD107		✓				✓					✓							✓	✓	✓	
	COHD108		✓					✓				✓							✓	✓	✓	
	COHD109		✓					✓				✓							✓	✓	✓	
	COHD110		✓		✓						✓		✓						✓	✓	✓	
HHD 328	COHD111						✓	✓					✓							✓	✓	
	COHD112						✓	✓					✓							✓	✓	
	COHD113								✓		✓			✓							✓	✓
	COHD114	✓					✓						✓							✓	✓	
HHD 329	COHD115			✓									✓								✓	✓
	COHD116			✓			✓						✓								✓	✓
	COHD117			✓			✓				✓		✓								✓	✓
	COHD118	✓						✓					✓								✓	✓
HHD 421	COHD119	✓						✓				✓	✓					✓	✓			
	COHD120	✓						✓				✓	✓					✓	✓			
	COHD121	✓										✓	✓					✓	✓			
	COHD122	✓						✓				✓	✓					✓	✓			
	COHD123			✓					✓			✓	✓					✓	✓			
HHD 422	COHD124							✓	✓				✓	✓						✓	✓	
	COHD125							✓	✓				✓	✓						✓	✓	
	COHD126							✓	✓				✓	✓						✓	✓	
HHD 423	COHD127	✓				✓						✓						✓			✓	
	COHD128		✓			✓						✓						✓			✓	
	COHD129					✓		✓				✓						✓			✓	
	COHD130							✓				✓						✓			✓	
HHD 424	COHD131	✓												✓						✓	✓	
	COHD132	✓							✓					✓						✓	✓	
	COHD133	✓							✓					✓						✓	✓	
	COHD134	✓							✓					✓						✓	✓	
	COHD135	✓							✓					✓						✓	✓	
HHD 425	COHD136		✓							✓		✓	✓					✓			✓	
	COHD137		✓					✓				✓	✓					✓			✓	
	COHD138		✓					✓				✓	✓					✓			✓	
	COHD139		✓	✓				✓	✓			✓	✓					✓			✓	
	COHD140	✓	✓				✓					✓	✓					✓			✓	

HHD 426	COHD141		✓			✓							✓	✓			✓				✓	
	COHD142		✓			✓								✓			✓	✓				
	COHD143		✓			✓								✓			✓	✓				
	COHD144		✓			✓								✓			✓	✓				
	COHD145		✓			✓								✓			✓	✓				
	COHD146		✓			✓								✓			✓	✓				
	COHD147	✓	✓			✓	✓						✓	✓			✓	✓				
HHD 428	COHD148						✓		✓					✓			✓	✓				
	COHD149								✓					✓			✓	✓				
	COHD150		✓				✓							✓			✓	✓				
	COHD151		✓						✓					✓			✓	✓				

### MSc. H. Sc. Human Development (2020-2021)

#### COURSE OUTCOMES, SEMESTER-I

#### PAPER CODE-HHD121

#### Techniques of Studying Human Development (Theory)

**Credits– 04**

**Max. Marks – 100**

**Hrs./week- 04**

**Total Hrs.- 60**

#### Course Objectives:

**This course will enable the students to :**

1. Understand the role of tools and computer applications in research.
2. Apply tools and techniques to gather data for analyzing and interpreting the development
3. Understand the significance of studying children
4. To analyze with the various methods for studying children
5. To apply the ability to select appropriate methods for studying children

#### Course Outcomes (CO's):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 121	Techniques of Studying Human Development	<p><b>Student will be able to –</b></p> <p><b>COHD1:</b> Examine the methods of child study, their advantages and disadvantages.</p> <p><b>COHD2:</b> Gain knowledge about projective techniques</p> <p><b>COHD3:</b> Execute the knowledge in drawing and interpreting sociogram and develop skills of taking anthropometric measurement</p>	<p><b>Approaches in Teaching:</b> Discussions and dialogue, Power Point Presentation,</p> <p><b>Learning activities for the Students:</b></p>	<p>Quiz. MCQ's ,PPT, Group projects, Filling and analysing Psychological tools and assignments, Semester End Examination.</p>

		<b>COHD4:</b> Develop professional skills in use of appropriate psychological tests	Self learning assignments, presentations	
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## CONTENTS

### Unit I: Child Study Methods

**12hrs**

- Techniques of research in Human Development –Time span approach-cross sectional, longitudinal, sequential approach across the age span.
- Methods of studying behaviour – Observation, Interview, Questionnaire, Case study, Report writing– Meaning, Types, factors involved in preparation and administration, Advantages and disadvantages of techniques.

### Unit II: Psychological & Intelligence test

**12hrs**

- Psychological Test –Characteristics and uses, limitations and ethical considerations in testing
- Assessment of mental ability – Verbal and non-verbal tests – Bayle Scales of Infant Development, Wechsler Intelligence Scales for adults, Raven (Colour) Progressive Matrices, Modern Binet tests – Uses and limitations of tests
- Intelligence- Definition, types and assessment (any two Tool).

### Unit III: Sociometric & Emotional intelligence test

**12hrs**

- Measurement of Social and Emotional Development – Sociometric method and sociogram
- Emotional intelligence - Test and Uses and limitations.
- Methods of studying Growth and Body Size– Significance of Anthropometric measurements.

### Unit IV: Personality and Projective techniques

**12hrs**

- Personality Assessment – Rating Scales and Inventories -Cattle 16 PF
- Projective Techniques – Children Apperception tests, Word Association test, Draw-a-man test, Rorschach ink-blot test, Thematic Apperception Test, psychodrama

### Unit V: Assessment Methods

**12hrs**

- Meaning, types and assessment (any one tool) of:
  - Attitude
  - Aptitude
  - Achievement
  - Interest
  - Adjustment
- Evaluation of available tools, Relevance of tools to the Indian conditions, precautionary measures in the use of tools.

**BOOKS RECOMMENDED:**

- Child Behaviour and Development- B Kuppuswamy-Vikas Publishing House, Ghaziabad.
- Contemporary Fields of Psychology and Experiments-M. Rajarnanikar-Concept Publishing, New Delhi.
- Fundamentals of Educational Research- R.A. Sharma.
- Research Methodology-Methods & Techniques-C.R. Kothari- Wishwa Prakashan. New Delhi.
- Training Instruments in HRD and OD-Udai Pareek-Tata Mc.graw Hill Publishing Company Ltd, New Delhi.
- Research Methods-Ram Ahuja,Rawat publications, New Delhi.

**PAPER CODE-HHD122****Family Dynamics  
(Theory)****Credits– 03****Max. Marks – 100****Hrs./week- 03****Total Hrs.- 45****Course Objectives:****This course will enable the students to:**

1. Understand the goals, significance and functions of marriage
2. To understand the concept of family , parenthood and parent child relationship
3. Analyze family life cycle.
4. Evaluate problems related to family and women.
5. Remember social structure.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 122	Family Dynamics	<p><b>Student will be able to –</b></p> <p><b>COHD5:</b> Discuss the concept of family dynamics and Identify the macro level changes and its impact on Indian family.</p> <p><b>COHD6:</b> Describe the types of Kinship and society.</p> <p><b>COHD7:</b> Develop the familiarity with the marriage and its related issues and adjustments.</p> <p><b>COHD8:</b> Construct the alternate forms of family and identify the reasons and characteristics for their formation</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Reading assignments, Power Point Presentation,</p> <p><b>Learning activities for the Students:</b> Relevant books, papers – students read, collate and make presentations on selected theme</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> ,_Semester End Examination.

		<b>COHD9:</b> Discuss the status , issues and interventions related to women.		
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## CONTENTS

### Unit I: Family

9hrs

- Definition of family from different perspectives.
- Approaches to family study-
  - Development approach
  - Interactional approach
  - Institutional approach
  - Structural functional approach
  - Systems approach
- Changing structural and functional aspects of Indian family.
- Family life cycle and their developmental task

### Unit II: Personality and society

9hrs

- Kinship: Types of Kinship, degree of kinship, range of a kinship system, kinship descent, kinship usages, kinship and their influence on the child.
- Society: Structure- rural & urban, modern society and its influence on the family.
- Personality and society - Inter-relation, cultural influences on human personality and social behavior<sup>1</sup>
- Family life education.

### Unit III: Marriage

9hrs

- Marriage -Concept, need, importance
- Readiness for marriage- physiological, social, psychological, economical etc.
- Adjustments in marriage- sexual, economical, in- laws, parenthood and problems in marriage desertion, separation, divorce, widowhood and remarriage.
- Legal aspects of marriage- Legislation pertaining to marriage, property, Hindu-marriage act, Hindu succession act, Anti dowry act.
- Marital and pre-marital counseling

### Unit IV: Changing trends

9hrs

- Effect of modernization on marriage.
- Employment of women and family conflict& adjustment
- Generation Gap and adjustment
- Alternatives to marriage – co-living, living single, child marriage, group marriage, lesbianism and gay culture.

### Unit V: Issues & Interventions

9hrs

- Status of women- Demographic, political, social, educational, economic, legal.
- Factors influencing status, roles and responsibilities of men and women.
- Problems of women- Dowry, suicide, health, women and mass media, sexual exploitation, women criminals, prostitution, eve teasing , rape.
- Woman and the Law: Legislation pertaining to marriage, property, Hindu-marriage act, Hindu succession act, Anti dowry act.
- Intervention and relief programs- family violence, battered women, child maltreatment, sexual abuse, separation and divorce, mother employed outside.



## BOOKS RECOMMENDED:

- Duvall, E.M. Family, The Macmillon Company, New York 1961.
- Lanois, F.R. and Landis, M.O. Personal adjustments in Marriage and family living, Prentice Hall Inc., New York 1955.
- Renkel, F. The Family in perspective. Appleton Century, Crofts, Inc. New Delhi, 1960.
- Rao. C.N.S. Introduction to Sociology. Vol. 1. S. Chand & Company (pvt.) Ltd.
- Kapur, S. Changing status of working women in India, Vikas 1974.
- Mandelbaum, D.G., Society in India, Popular Prakashan, 1972.
- Nye, I and Berardo, the family its structure and interaction. Macmillan, 1973.
- Jack, N. Modern society, George Allen and Union, 1981.
- Rai, B.C., Social Psychology, Prakashan Kendra, 1982.
- Nye and Berarde, Emerging conceptual framework in Family Analysis.
- Kapadia K.M. Marriage & Family in India Madras, Oxford University Press, 1955.
- Newman and Newman: Infancy and Childhood development and its Context, John Willey, 1978

**PAPER CODE-HHD123**  
**Life Span Development - I- Prenatal and Childhood**  
**(Theory)**

**Credits – 04**

**Max. Marks – 100**

**Hrs./Week- 04**

**Total Hrs.- 60**

### Course Objectives:

**This course will enable the students to :**

1. Understand genetic foundation of life & prenatal development.
2. Understand care of neonate, their capabilities and assessment
3. Apply the knowledge of the developmental milestones and development during infancy
4. Understand development during childhood and factors influencing the development

### Course Outcomes (CO's):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 123	Life span development – Prenatal and childhood	<b>Student will be able to –</b>  <b>COHD10:</b> Demonstrate knowledge of developmental changes, stages, birth process of prenatal stage  <b>COHD11:</b> Examine the care of neonate and mother in detail and understand the techniques of assessment of newborn.  <b>COHD12:</b> Interpret the development, immunization	<b>Approaches in Teaching:</b> Lecture & discussion specific to areas, Charts Power Point Presentation, Invited expert speakers on select areas	Quiz. Classroom presentation and discussions, assignments, <b>CA test</b> , Semester End Examination.

		<p>schedule and importance of infant stimulation.</p> <p><b>COHD13:</b> Formulate the knowledge of milestones, various developments and meaning of gender roles and typing during early childhood years.</p> <p><b>COHD14:</b> Define the developmental changes during late childhood and recognize the importance of parent, child and sibling relationship.</p>	<p><b>Learning activities for the Students:</b> Self learning assignments, Read journal articles, books</p>	
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## CONTENTS

### Unit I: Prenatal Stage (Conception – Birth)

**12 hrs**

- Physiological, psychological and hormonal changes during pregnancy
- Stages of prenatal development, prenatal environmental Influences and Teratogens.
- Complications during pregnancy and child birth.
- Birth process-methods of childbirth(Medication, Natural & Prepared )
- Birth process-methods of delivery, uses of analgesia, anesthesia, oxytoxics.
- Care of mother during pregnancy

### Unit II: Neonate (Birth-4 weeks)

**12 hrs**

- Care of new born and mother after delivery
- Prematurity – Preterm, small for date and its impact on future development of the child
- Assessment of newborn- APGAR scale, Brazelton neonatal behavioral assessment scale (NBAS), NNNS
- Newborn reflexes
- Sensory and perceptual capabilities
- The sleep / wake cycle- REM, NREM.
- Massage therapy of infants, kangaroo care and bonding.

### Unit III: Development in Infancy (4 weeks-2 yrs)

**12 hrs**

- Milestones in development and developmental delay
- Immunization schedule
- Physical development-Growth of Brain, Sensory capacities
- Motor Development- fine and gross motor skills
- Emotional & Social development - Primary and self conscious emotions, temperament & child rearing
- Cognitive development during infancy (Piaget sensori-motor Stage)
- Language development- tracing language development during first two years.
- Psychosocial development-Emotions, Temperament, Attachment, Social relationships
- Infant Stimulation

### Unit IV: Early Childhood (2-7 yrs)

**12 hrs**

- Milestones in development and developmental delay
- Physical growth and motor skills: Body growth, brain development and perceptual development

- Cognitive development in early childhood- Piaget (Pre-operational stage)and Vygotsky theory
- Language development-Vocabulary, speech , and private speech during 3-6 years
- Socio-Emotional development - Foundation of self (Erikson -Initiative versus Guilt), Self understanding& others, emotional self-regulation, empathy, Parenting & Family Relationships
- Gender roles & gender typing

#### **Unit V: Late Childhood (7-12yrs)**

**12 hrs**

- Milestones in development and developmental delay
- Body growth -body size & proportion, skeletal growth, brain development
- New motor capacities & organized games with rules
- Operational thoughts, Information processing in late childhood & individual difference
- Emotional development - development of self-concept & self esteem
- Language Development
- Parent-child relationship, sibling & impact of maternal employment
- Moral Development-Kohlberg stages
- Peer relationship-Friendship
- Bullying, aggression, adjustments to school

#### **BOOKS RECOMMENDED:**

- Berk, L. E. (2007). Development through the lifespan. Delhi: Pearson Education.
- Rice. F. P. (1998). Human Development: A lifespan approach. New Jersey: Prentice a. Hall.
- Santrock, J. W. (2007). A topical approach to life-span development. New Delhi: Tata a. McGraw- Hill.
- Singh, A. (Ed). 2015. Foundations of Human Development: A life span approach. New Delhi: Orient BlackSwan.
- Berk, L.E (1995) Child Development, London: Allyn and Bacon
- Gupta (1991) Speaking of Child Care, Everything you wanted to know (II Ed.), New Delhi, Sterling Publishers
- Hurlock, E.B., Child Development McGraw Hill, New York 1988.

#### **JOURNALS**

- Child Development
  - Childhood Education
  - Disabilities and Impairments
  - Developmental Psychology
  - Indian Journal of Disability and Rehabilitation

**PAPER CODE-HHD 124**  
**Early Childhood Care and Education**  
**(Theory)**

**Credits– 04**  
**Max. Marks – 100**  
**Hrs./Week- 04**  
**Total Hrs.- 60**

**Course Objectives:**

**This course will enable the students to :**

1. Understand genetic foundation of life & prenatal development.
2. Understand care of neonate, their capabilities and assessment
3. Remember the developmental milestones and development during infancy
4. Understand development during childhood and factors influencing the development

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 124	Early childhood care and education	<p><b>Student will be able to –</b></p> <p><b>COHD15:</b> Explain the significance, objectives and stages of early childhood</p> <p><b>COHD16:</b> Explain the importance of early intervention and ECE philosophies.</p> <p><b>COHD17:</b> Design the Essential features and component of ECCE curriculum and pedagogical strategies</p> <p><b>COHD18:</b> Explain the program policies and issues related to ECCE</p> <p><b>COHD19:</b> Identify various methods of engaging children</p>	<p><b>Approaches in Teaching:</b> Lecture &amp; discussion specific to current research in ECCE , Audio visual resources, Experiential learning through demonstration</p> <p><b>Learning activities for the Students:</b> Self -directed /: Read joournal articles, books to collate information on need and rationale of ECCE, assignments, field practicals.</p>	<p>Quiz. PPT, Group discussion, Class test focusing on definitions, short notes, match the following,assignments, <b>CA test</b> ,_Semester End Examination.</p>

**CONTENTS**

**Unit I: Early Childhood Education**

**12 hrs**

- Childhood- Meaning , Importance of early childhood in the lifespan

- Significance of early childhood: neuro- science perspective, rights perspective, economic investment and the criticality of early years in the human life cycle
- Goals and objectives of ECCE within an integrated and whole child approach
- present status of ECCE in India
- Sub Stages in ECCE – Birth to 3 years: Three to six years & Six to eight years

**Unit II: Developmental delay during Childhood and ECE philosophies** **12 hrs**

- Developmental delay, early detection and intervention
- Contributions and writings of thinkers such as Tagoreji, Gandhiji, Gijubhai Badheka, Tara Bai Modak, Montessori and Froebel for early childhood education
- Different kinds of early childhood settings and the role in meeting needs of children in crèches, anganwadis, balwadis, mobile crèche, fee paying ECCE centers & ECCE centers run by NGOs.

**Unit III: Early Childhood care & Education Curriculum and Pedagogy** **12hrs**

- Essential features and component of ECCE curriculum
- Approaches to curriculum- Child Development, Verbal Cognitive, Verbal Didactic, Sensory Cognitive
- School Readiness-3R's
- Play, development and learning in ECCE
- Programme Planning- Types and principles
- Understanding different approaches to learning with emphasis on "child as an active learner": - Holistic approach, active participation, child centeredness, constructivism
- Balancing between discipline- participation, exploring and mediation, self directed and guided activity

**Unit IV: Policy, Programmes and issues in ECCE** **12 hrs**

- National policy on education (1986) on ECCE, National Plan of Action (2015)
- ECCE in Right to Education Act, 2010
- National Policy on ECCE ( 2013)
- NCF for ECCE
- Programmes: ICDS, Mobile crèche, Rajiv Gandhi crèche scheme
- Issues in ECE in India: Saliency to ECCE for national development, issue of equity, quality, regulation and monitoring of ECCE

**Unit V: Methods of engaging with children** **12hrs**

- Music and movement and the appeal of rhythm
- Free conversations, free hand drawing, creative activity, role play, drama as sources of learning
- Story-telling and its functions in imagination and cultural literacy
- Indoor and outdoor play in structured and free situations
- TLMs for ECCE
- Cooperation and Collaboration with parents, families, and the community

**BOOKS RECOMMENDED:**

- Aggarwal, J. C. (2007). Early Childhood Care and Education: Principles and Practices. Shipra: New Delhi.
- Arni, K. and Wolf G. (1999). Child Art with Everyday Materials. TARA Publishing.
- Mohanty, J. Mohanty, B. (1996). Early childhood care and Education. Deep And Deep Publication, New Delhi.
- Morrison, G. S. (2003). Fundamentals of early childhood education. Merrill/Prentice Hall: Virginia
- Singh, A. (1995). Playing to Learn: A training manual for Early Childhood Education. M. S. Swaminathan Research Foundation.
- Swaminathan, M. (1998). The First five Years. Sage Publications.

**PAPER CODE-HHD 125**  
**Techniques of Studying Human Development**  
**(Practical)**

**Credits– 04**  
**Max. Marks – 100**  
**Hrs./Week- 04**  
**Total Hrs.- 60**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the role of tools and computer applications in research
2. Apply tools and techniques to gather data for analyzing and interpreting the development
3. Create schedule/ questionnaire to study the behaviors of an individual.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 125	Techniques of Studying Human Development	<p><b>Student will be able to –</b></p> <ul style="list-style-type: none"> <li>• <b>COHD20:</b> Implement theory and techniques to understand contemporary problems and real-world situation.</li> <li>• <b>COHD21:</b> Construct, explore and practice available psychological tools to practice and incorporate into regular developmental studies.</li> </ul>	<p><b>Approaches in Teaching:</b>            Interactive Lectures, Charts Power Point Presentation,</p> <p><b>Learning activities for the Students:</b>            Self learning assignments, field practicals.</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> ,_Semester End Examination.

**CONTENTS**

- Preparation of schedule/questionnaire to study the behaviors of children/adolescents/ adults.
- Administration and Assessment of Intellectual development by using intelligence scales
- Understanding the Self : To apply the various methods studied in a practical context. SWOT analysis
- Administration and Assessment of personality of children/ adolescents/ adults by using personality inventories and projective techniques.
- Administration and Assessment of aptitude, interest, achievement and attitude of children / adolescents/ adults/old age.
- Evaluation of a tool - Report of study.
- Administration of Sociogram in a class room set up.

**BOOKS RECOMMENDED:**

- Research Methodology-Methods & Techniques-C.R. Kothari- WishwaPrakashan. New Delhi.
- Vikasatmak and samajmanovigyan-RajeshawariParsad Singh-BhartiBhawan, Patna.
- Baal Vikas and Parivariksambadha-MdhureshwarPareek-Research Publication, Jaipur.
- Baal Vikas and Parivariksambadha-AshaPareek-College Book Dipo, Jaipur.
- Baal Vonovigyan: Baal Vikas-Dr. PritiVerma, Dr. D.N. Srivastav, VinodPustakMandir.

**PAPER CODE-HHD 126****Life Span Development - I- Prenatal and Childhood  
(Practical)****Credits– 04****Max. Marks – 100****Hrs./Week- 04****Total Hrs- 60****Course Objectives:****This course will enable the students to :**

1. Understand an infant and his capabilities.
2. Evaluate the physiological status of an infant.
3. Apply the knowledge in the development in childhood.
4. Apply program and activities for children.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 126	Life span development - Prenatal and childhood	<p><b>Student will be able to –</b></p> <p><b>COHD22:</b> Develop the skills to measure and assess the anthropometric measurements of children in different age groups.</p> <p><b>COHD23:</b> Construct check list to assess the developmental characteristics of development.</p> <p><b>COHD24:</b> Demonstrate ways to assess the case study of a selected child.</p> <p><b>COHD25:</b> Develop ways to relate theoretical knowledge about reflexes and clarify the concepts learned.</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Charts Power Point Presentation, Psychometric Tests- Children Apperception Test (CAT)</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	<p>Quiz. PPT, Pamphlet/Poster making Observation analysis,assignments, <b>CA test</b> ,_Semester End Examination.</p>

		<p><b>COHD26:</b> Formulate activities based on different aspects of development</p> <p><b>COHD27:</b> Develop skills to use projective techniques and apply the knowledge on children assessment.</p> <p><b>COHD28:</b> Select the concept and theory in development of the stimulation kits for infants.</p>		
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## CONTENTS

- Anthropometric Measurement and Assessment of Children in Different Age Groups and Settings: Plotting and interpretation of Growth Charts.
- Preparation and implementation of Check List to Assess Physical, Motor, Social, Language, Emotional and Cognitive Developmental Tasks.
- Case Study of a Selected Child.
- Observation of neonatal reflexes.
- Formulating activities for Infants and Children to promote development- Motor, cognitive, language and socio-emotional.
- To understand one projective test.
- Visit to NICU and child care centers

## BOOKS RECOMMENDED:

- Hurlock, E.B., Child Development McGraw Hill, New York 1988.
- Subash C. Arya, Infant and child care for Indian Mothers. Vikas Publishers, Delhi 1972.
- Devadas, R.P. and Jaya. N. Text Book of child development McMullan and Co., 1981.

**PAPER CODE-HHD 127**  
**Early Childhood Care and Education**  
**(Practical)**

**Credits– 04**

**Max. Marks– 100**

**Hrs./Week- 04**

**Total Hrs.- 60**

### Course Objectives:

**This course will enable the students to :**

1. Acquire knowledge about the planning and activities of early childhood education.
2. Draw information regarding some of the major practices of different curriculum in children's institutions.
3. Gain information about suitable pedagogical practices in ECE classroom.

### Course Outcomes (CO's):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			



<b>HHD 127</b>	<b>Early Childhood Care and Education</b>	<b>Student will be able to –</b>  <b>COHD29:</b> Design, implement and evaluate inclusive and play-based early learning curriculum and programs that support children’s holistic development <b>COHD30:</b> Describe services for typical and atypical 3-8 year-old children in appropriate early childhood classroom environments, with a developmentally and individually appropriate curriculum <b>COHD31:</b> Delineate the significance of stimulating environment for fostering holistic development and assess developmental indicators using tools and checklists <b>COHD32:</b> Develop skills in planning and creating development and programmatic activities with respect to all domains of development for children in first six years of life.	<b>Approaches in Teaching:</b> Interactive Lectures, Charts Power Point Presentation, Use of audio visual resources and field visits to study developmental indicators among young children Guided observations and classroom discussion, Workshops,  <b>Learning activities for the Students:</b> Self learning assignments, field practicals.	Quiz. PPT, Pamphlet/Poster making Observation analysis, assignment s, Documentation of observations followed by classroom discussions, <b>CA test</b> , Semester End Examination.
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## CONTENTS

- Participation in ECE center- Observation and participation in the preschool, crèche and day care centers.
- Plan and conduct a group activity in the classroom using play way, activity or project method.
- Planning and executing daily / weekly /annual lessons for children.
- Planning and preparing Teaching Learning Materials for young children for all domains of development.
- Prepare literature for parents on children’s/ parent’s problems.
- Case study of ICDS/ Mobile Crèche
- Evaluation and Review of mother and child protection card
- Studying quality of private and government preschools

## BOOKS RECOMMENDED:

- Hohmann, M.; Banet, B. & Weikart, D.P. (1979). Young children in action. Michigan: High/Scope Press.
- Decker, C.A. & Decker, J.R. (1976). Planning and administering early childhood programs.
- Brown, J. (1982). Curriculum planning for young children. New York: NAEYC.
- Ferguson, R. & Kelly, M. (2005). Enhancing Emotional Intelligence, New York: Raleigh Consulting.
- Geldard, K. & Geldard, D. (2004). Counseling Adolescents, New Delhi: Sage Publications.
- Gladding, S.T. (1996). Counseling : A Comprehensive Profession, Ohio: Prentice Hall.
- Matthews, T. (2001). Being a Happy Teen, Australia: Seashell Publishers.

**PAPER CODE-HHD 128**  
**Seminar**

**Credits-03**

**Max Marks-100**

**Contact Hrs./ Week-03**

**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to :**

1. Reviewing scientific literature of at least ten researches, Report writing, presentation and viva voice of the seminar based on contemporary issues in the Human Development and Psychology.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 128	Seminar	<p><b>Student will be able to –</b></p> <p><b>COHD33:</b> Demonstrate knowledge of scientific writing method and styles</p> <p><b>COHD34 :</b>Develop a research design on a topic relevant to their field</p> <p><b>COHD35.</b> Prepare a systematic literature review on a select topic</p> <p><b>CLO4:</b> Present a seminar of the literature review</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Charts Power Point Presentation,</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	<p>Students will do field visit and conduct interviews observation questionnaire to study various topics. File work will be maintained. Discussion will take place after every practical and analysis will be done in depth Quiz. PPT, Group projects, assignments, <b>CA test</b> , Semester End Examination.</p>

**CONTENTS**

- Reviewing scientific literature of al least ten researches, Report writing, presentation and viva voice of the seminar based on contemporary issues in the Human Development and Psychology.

**COURSE OUTCOMES, SEMESTER-II**  
**PAPER CODE-HHD 221**  
**Life Span Development II- Adolescence and Adulthood**  
**(Theory)**

**Credits: 03**  
**Max Marks: 100**  
**Contact Hrs/Week: 03**  
**Total Hrs: 45**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the developmental milestones and transition from adolescence to adulthood
2. Understand the problems of adolescence and adulthood
3. Understand the different domains of development in adolescence and adulthood - physical, cognitive, language and socio-emotional
4. Get familiarized with the use of different techniques of studying various domains of development in adolescence and adulthood

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
<b>HHD 221</b>	Life Span Development-II- Adolescence and Adulthood	<p><b>Student will be able to –</b></p> <p><b>COHD36:</b> Describe the different domains of development in adolescence physical, cognitive, language and socio-emotional</p> <p><b>COHD37:</b> Acquire the knowledge of relationships, issues, risks and interests of adolescent years.</p> <p><b>COHD38:</b> Recognize the various physical and health concerns associated with early adulthood.</p> <p><b>COHD39:</b> Critically analyse the changes in interest, personality and career adjustments of early adulthood.</p> <p><b>COHD40:</b> Understand the changes in physical, sexual and reproductive functioning in middle and late adulthood.</p> <p><b>COHD41:</b> Recognize the problems related to midlife crisis and retirement.</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Audio visual resources- films, documentaries, Power Point Presentation,</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	<p>Quiz. PPT, Long essay, assignments, <b>Observations, Internal Assessment methods</b> - quiz, identification tests, assignments Semester End Examination.</p>

## **CONTENTS**

### **Unit I: Adolescence (12-19 yrs)**

**9 hrs**

- Definition, Milestones in development
- Physical development (puberty, adolescent growth spurt, primary and secondary sex characteristics).
- Adolescence: Identity development
- Body image and health issues.
- Cognitive development : Piaget formal Operational Stage, Information Processing
- Development of language
- Sexuality- Heterosexual Attractions, Homosexuality, STD

### **Unit II Adolescent relationships and issues**

**9 hrs**

- Social and emotional Development –Attachment , Significance of Peers and Family , Parent – Child relationships and Discipline/freedom.
- Moral development during adolescence
- Dating scripts –Proactive and reactive
- Issues in Adolescence: Rebellion and Conflict with Home and School Authorities, Delinquency and Psycho – emotional Problem; Educational and career Choices and Co – curricular Interests
- Risks in adolescence

### **Unit III : Early Adulthood**

**9 hrs**

- Milestones of development
- Health and Physical conditions
- b. Change in interests: personal, recreational and social interests
- c. Personality development: normative, timing of events and trait models
- d. Career adjustments: selection of vocation and adjustment to work
- e. Sternberg Triad

### **Unit IV: Challenges of young adulthood**

**9hrs**

- Marital adjustments: mate, sexual, financial and in-law
- Foundations of intimate relationships
- Parenthood: adjustment, becoming parents and men and women involvement
- Issues in adulthood: Live-in-relationship, Being single, Divorce, Remarriage, Gay marriage, DINKS, Adoption and single parent adoption.

### **Unit V: Middle and Late adulthood**

**9hrs**

- Characteristics and developmental tasks
- Physical changes: sensory and psychomotor functioning
- Sexuality and reproductive functioning
- Health concerns
- Cognitive Development-Intelligence and Information Processing
- Midlife crisis and Relationship with maturing children, Empty Nest
- Challenges and adjustment -Declining physical/motor, memory and sensory capacity(late adulthood)
- Levinson stages
- Adjustment to approaching retirement and old age

## BOOKS RECOMMENDED

- Berk, Laura E. (1993). Infants, Children and Adolescents, Third edition
- Diane E. Papalia (2004), Human Development, Ninth Edition, McGrawHillElizabeth B. Hurlock, Developmental psychology-A life span Approach,5<sup>th</sup>edition,McGraw Hill
- Sharma, N. (2009). Understanding Adolescence, New Delhi: National Book Trust.
- Rice, F. P. (2007). Adolescent: Development, Relationships and Culture.
- Santrock, J. W. (2010). Life Span Development: A Topical Approach, New Delhi: TataMcGraw Hill
- Linda Nielson Adolescent Psychology: Contemporary view (1987) Holt, Rinehart and Winston, Inc, Chicago, U.S.A.
- K. Warner Schaie and Sherry 1. Willis, Adult Development and Aging 3<sup>rd</sup> edition (1991) Harper – Collins Publishers, U.S.A.
- Ausuted D.P (1984) Theory & Problems of adolescent Development. New York, Gsun and Stratten.
- Alison, Clark Stewart,Susan& Friedman, Child Development: Infancy through adolescence (1987) John Willey & Sons New York
- Harris, Life span Development

### PAPER CODE-HHD 222 Research Methodology (Theory)

**Credits-02**

**Max Marks-100**

**Contact Hrs./ Week-02**

**Total Hrs-30**

#### Course Objectives:

**This course will enable the students to :**

1. Understand the significance of research methodology in Home Science.
2. Understand the types, tools and methods of research
3. Develop the ability to construct data gathering instruments appropriate to the research design

#### Course Outcomes (CO's):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 222	Research Methodology	<b>Student will be able to –</b> <b>COHD42:</b> Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling. <b>COHD43:</b> Describe qualitative and quantitative research techniques	<b>Approaches in Teaching:</b> Interactive Lectures, Brain storming sessions, Power Point Presentation, Discussion on Planning the research , Methodology and tools Data reduction,	Quiz. PPT, Group projects, assignments, <b>CA test</b> ,_Semester End Examination.

		<p><b>COHD44:</b> Develop skills on measurement &amp; scaling techniques as well as the quantitative data analysis</p> <p><b>COHD45:</b> Analyse data for hypothesis testing procedures and report writing.</p>	<p>analysis assignments, quiz, MCQs, Preparing a list of references 71 and representation</p> <p><b>Learning activities for the Students:</b> Presentation on research approaches and research designs, Self learning assignments, field practicals.</p>	
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## CONTENTS

### Unit I

6hrs

- Introduction to research methodology:
  - Meaning and definition of research
  - Methodology, Method and Technique
  - Process of conduction research,
  - Types of research

### Unit II

6hrs

- Research design
  - meaning, need,
  - features of good research design,
  - concepts related to research design
  - types of research design- in case of exploratory research studies, in case of descriptive & diagnostic research studies, in experimental designs
- Variables: types and relationship
- Hypothesis: meaning, characteristics of hypothesis, types, criteria for the construction of good hypothesis

### UNIT III

6hrs

- Design of Sample Surveys
  - Sample design and its steps
  - sampling & non sampling errors
  - census Vs sampling survey
  - Sampling design - probability and non-probability
  - Sample size determination.
- Measurement & scaling- nominal, ordinal, interval & ratio scale
  - Goodness of measurement scales
  - Sources of error in measurement

### Unit IV

6hrs

- Data collection techniques:
  - Questionnaire
  - Schedule
  - Interview

- Observations
- Case study
- Content analysis
- Focussed group discussion

## Unit V

6Hrs

- Data processing and Data analysis
  - Data preparation process- questionnaire checking, editing, coding, classification and tabulation, graphical presentation, data cleaning & data adjusting
  - Report writing- significance, steps, layout of the report, types of report
  - The elements of research project

### ESSENTIAL READINGS:

- Kothari, C.R.(2015): Research Methodology- Methods and Techniques .(Third Edition) New Age International Publishers, New Delhi.

### BOOKS RECOMMENDED:

- Ahuja, R. (2014). Research Methods. Rawat Publications, Jaipur.
- Badarkar, P.L. and Wilkinson T.S. (2000): Methodology and Techniques of Social Research, Himalaya Publishing House, Mumbai
- Batnagar, G.L.(1990): Research Methods and Measurements in Behavioural and Social Sciences, Agri.ColePublishingAcademy, New Delhi.
- Dwivedi, R.S.(1997): Research Methods in Behavioural Sciences, Macmillan India, Delhi.
- Agarwal, J.C.: Educationl Research- An Introduction, Arya Book Depot, New Delhi.
- Best, J.W.: Research in Education, Prentice Hall of India, New Delhi.
- Chadra, S.S. and Sharma, R.K.: Research in Education, Atlantis Publishers, New Delhi.

### PAPER CODE-HHD 223

### Organization and Management of Early Childhood Centres (Theory)

**Credits– 3**

**Max. Marks – 100**

**Hrs./Week-4**

**Total Hrs.-45**

### Course Objectives:

#### This course will enable the students to:

1. Understand the consideration for selecting a location for ECCE centre.
2. Apply the effective and efficient ways of maintaining and utilizing indoor and outdoor space.
3. Execute and categorize different types of equipment and learning materials for ECCE centre.
4. Understand different aspects of staff management at ECCE centre.
5. Apply the ways to monitor and supervise the work of ECCE workers.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 223	<b>Organization and management of early childhood centers</b>	<p><b>Student will be able to –</b></p> <p><b>COHD46:</b> Organize the different criteria for selecting location and building infrastructure for ECCE center.</p> <p><b>COHD47:</b> Develop knowledge of availability, selection and use of equipment and materials in multiple ways for ECCE centre.</p> <p><b>COHD48:</b> Develop knowledge and apply the skills while selecting human resources for ECCE centre</p> <p><b>COHD49:</b> Describe the knowledge of inclusion policy and will get skill in supervision and monitoring of ECCE centre</p>	<p><b>Approaches in Teaching:</b> Lecture &amp; discussion specific to areas ,Audio visual resources,Power Point Presentation,</p> <p><b>Learning activities for the Students:</b> Self learning assignments, Examine select readings</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> ,_Semester End Examination.

**CONTENTS**

**Unit I: Concept of ECCE centre, Location & Infrastructure**

**9hrs**

- Planning an ECCE centre : Identification of local needs, nature of services, Location
- Infrastructure/physical facilities-Building & its beautification, aesthetics, cleanliness, safety and approach ,water facility, toilet facility, outdoor facilities, Indoor facilities, Safety (Disaster Management and First- aid facility)
- Renting space and procuring space for ECCE center

**Unit II: Equipment & Materials**

**9hrs**

- Type of Equipment and Learning Materials- Indoor & outdoor equipment
- Selection of Equipment and Learning Materials-Age appropriateness, multiple uses, adequacy, variety, safety, diversity & natural
- Allocation of learning materials- Action corner, storage space
- Utilization & maintenance of Equipment and Learning Materials

**Unit III: Human Resource Management**

**9 hrs**

- Types of ECCE personnel
- Role& quality of ECCE personnel
- Criteria for Selection of Staff
- Teacher-child ratio
- Need and importance of in-service training

**Unit IV: Maintenance of records& Finance in ECE settings**

**8 hrs**



- Records & Registers : Need and Importance
- Records : Monitoring and regulating children's growth such as health, anecdotal and cumulative records, Daily /weekly diaries
- Registers: Attendance, Admission, fees, library, stock, teachers and other financial matters.
- Budgeting and Accounting

**Unit V: Inclusion & supervision of ECCE centre**

**10 hrs**

- Respecting diversity
- Inclusion of children with disability in an ECCE.
- Fund raising for ECCE centre- Grant-in-aid from the government, donations, Organize materials and stationary donation camp, Volunteerism, renting out the space
- Supervision and monitoring of ECCE centre

**BOOKS RECOMMENDED:**

- Singh, A. (1995). Playing to Learn: A training manual for Early Childhood Education. M. S. Swaminathan Research Foundation.
- Combs, B. (2011) Assessing and Addressing Literacy Needs. New York: Sage Global
- Aubrey, C. (2011) Leading and Managing in the Early Years. New York: Sage Global
- White, J. ( 2011) Outdoor Provision In the Early Years. New York : Sage Global
- Knight, S (2011) Risk and Adventure in Early Years Outdoor Play. New York : Sage Global

**PAPER CODE-HHD 224  
Theories of Human Development and Behavior  
(Theory)**

**Credits: 04**

**Max Marks: 100**

**Contact Hrs/Week: 04**

**Total Hrs: 60**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the students about different theories of human development and psychology.
2. Remember the application of theories in present context of development.
3. To evaluate critically theoretical approaches in the study of Child development
4. To apply the practical application of theory in Child development and to promote research.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
<b>HHD 224</b>	<b>Theories of human</b>	<b>Student will be able to –</b>	<b>Approaches in Teaching:</b> Interactive Lectures,	Analyse the writings of any one philosopher

	<b>development and behavior</b>	<p><b>COHD50:</b> Describe the concept ,history and application of psychological theories.</p> <p><b>COHD51:</b>Understand personality and cognitive theories and their application.</p> <p><b>COHD52:</b>Demonstrate knowledge of ethological theories and their application</p> <p><b>COHD53:</b> Appreciate and analyse the different ecological and language theories and their application.</p> <p><b>COHD54:</b> Discuss the moral and emotional theories and their Application.</p>	<p>Flowcharts/diagrammatic representations of theory construction process, Workshops/ Talks</p> <p><b>Learning activities for the Students:</b> Self learning assignments, Watching short films on early philosophers, Critically evaluate select theoretical constructs</p>	<p>(Western and Indian) Make a presentation of the same in class, assignments, <b>CA test</b> ,_Semester End Examination.</p>
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## CONTENTS

### Unit I Introduction to Theory

**12hrs**

- Define theory and its role in human development
- Historical perspective in the trends in theoretical development to child.
- Personality theory-Freud
- Psychosocial Theory- Erickson

### Unit II: Theories of Personality and Cognitive

**12hrs**

- A humanistic theory of personality- Erich From
- Psychoanalytic theory - Harry Stack Sullivan
- Cognitive development theory-Jean Piaget
- Social Cognitive theory- Vygotsky.

### Unit III : Learning & Ethological Theory

**12hrs**

- Theory of learning and behavior- Pavlov and Skinner
- Social learning theory –Bandura
- Hierachy of Needs theory- Abraham Maslow
- Ethological theory- John Bowlby

### Unit IV: Ecological ,Need &Language Theories

**12hrs**

- Ecological system theory- Bronfenbrenner
- Need Theory- Henry Murray
- Language theory -Chomsky's theory

### Unit V : Theories of Moral & Emotional Development

**12hrs**

- Trait theory-Allport
- Moral development theory – Kohlberg
- James Lange Theory of Emotion

## BOOKS RECOMMENDED

- Papalia,D.E.andolds,S.W.Human Development McGraw Hill,1978.
- Maier,H.W.Three Theories on Child Development Harper and Row,1978.
- Langer,J.Theories of Child Development,Holt Rinehart,1969.
- Dyrne,D.andRelley,K.An Introduction to Personality.Prentice Hall,1981.
- Looft,A Development Psychology,A Book of Readings Dryden Press,1972.
- Gruber,H.E.andVonecha,J.J. the essential Piaget Vincent Torre,1976.
- Baldwin theories of Child Development.
- Newman, B.M. &newman, P. R. (2007). Theories of Human development. Mahwah, NJ:Lawrance Erlbaum.
- Patterson, C.J. (2009). Infancy and Childhood.International Ed. New York: McGrawHill.

**PAPER CODE-HHD 225**  
**Genetics and Reproductive Health**  
**(Theory)**

**Credits– 04**

**Max. Marks – 100**

**Hrs./Week- 04**

**Total Hrs.- 60**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the role of heredity and environment in development.
2. Understand problems and solutions regarding child bearing.
3. Understand postnatal psychological problems and treatment.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 225	Genetics and Reproductive Health	<p><b>Student will be able to –</b></p> <p><b>COHD55:</b> Develop familiarity with importance of sex education and reproductive health.</p> <p><b>COHD56:</b>Demonstrate understanding of role of heredity and environment in lifespan development and different types of hereditary and sex linked syndromes</p> <p><b>COHD57:</b>Develop an understanding of diagnostic and preventive methods for genetic disorder and role of genetic counselling in preventing them</p> <p><b>COHD58:</b>Discuss the factors causing infertility and develop knowledge about various assisted reproductive methods.</p> <p><b>COHD59:</b> Develop knowledge about post partum care and HIV/AIDS</p>	<p><b>Approaches in Teaching:</b></p> <p>Interactive Lectures, Brain storming sessions,Power Point Presentation,</p> <p><b>Learning activities for the Students:</b></p> <p>Self learning assignments, field practicals.</p>	<p>Quiz. PPT, Group projects, Poster making,assignments,<b>CA test</b> , Semester End Examination.</p>

## CONTENTS

### **Unit I: Introduction to Genetics & reproductive Health** **12 hrs**

- Basic concept of reproductive health and its importance
- Sex Education: meaning & importance
- Family Planning Methods
- Genes & Chromosomes, Structure & Function
- Identical and Fraternal Twins
- Risk Factors: Sexually transmitted diseases, suicide, Teen age pregnancy

### **Unit II: Heredity and Environment** **12 hrs**

- Meaning & interaction of heredity and environment in determining intelligence, personality and behavior
- Hereditary diseases/ gene linked syndromes- Sickle cell anemia, hemophilia, PKU, autism, alzheimer's, apert, sticklers and ushers syndrome, cystic fibrosis, Huntington, spina bifida, tay- sachs.
- Sex linked syndrome-Fragile X, XYY, down, cat cry, turners, klinefelter syndrome

### **Unit III: Diagnosis Prevention and Counseling of Genetic Disorders** **12 hrs**

- Genetic Disorders, diagnosis and treatment- Human Karyotype, pedigree construction and its analysis
- Prenatal screening methods
- Genetic counseling-need, essential qualities of genetic counselor.
- Direct and indirect counseling.
- Prevention of genetic disorders and gene therapy.

### **Unit IV: Infertility and Assisted Reproduction** **12 hrs**

- Factors causing infertility- Stress, problems in ovulation, blocked or scarred fallopian tubes, endometriosis and low sperm count, drugs, alcohol- treatment
- Assisted reproduction- In-vitro fertilization and test tube baby, surrogate mothers- legal and ethical issues.

### **Unit V: Post Partum care and HIV/AIDS** **12 hrs**

- Post partum depression-Types, causes and treatment.
- Maternal and infant mortality- present status and major causes
- HIV/AIDS in India- Prevalence, sign and symptoms, causes and prevention

### **BOOKS RECOMMENDED:**

- Fundamentals of Genetics by R.P.Meyyan, Saras Publication
- Genetics by Strickberger Monroe W. Prentice-Hall; 3 edition (1995)
- Development Through the Lifespan, Books a la Carte Edition (6th Edition) Loose Leaf – August 15, 2013, by Laura E. Berk

**PAPER CODE-HHD 226**  
**Applied Statistics**  
**(Practical)**

**Credits-04**  
**Max Marks-100**  
**Contact Hrs./Week-04**  
**Total Hrs-60**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the role of statistics and computer applications in research.
2. Apply statistical techniques to research data for analyzing and interpreting data carefully.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 226	Applied Statistics	<p><b>Student will be able to –</b></p> <p><b>COHD60:</b> The students are able to understand enter, organize, and save data in a SPSS.</p> <p><b>COHD61:</b> Calculate variables and prepare data for analysis in SPSS.</p> <p><b>COHD62:</b> Understand the basic workings of SPSS, and perform basic statistical analyses.</p> <p><b>COHD63:</b> To perform database management tasks, descriptive statistics and graphics, and basic inferential statistics for comparisons and correlations.</p> <p><b>COHD64:</b> Able to carry out a statistical analysis that can test hypotheses.</p>	<p><b>Approaches in Teaching:</b>            Interactive Lectures, Brain storming sessions, Power Point Presentation,</p> <p><b>Learning activities for the Students:</b>            Self learning assignments, field practicals.</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> ,_Semester End Examination.

**CONTENTS**

**Note:** Students should be given hand-on experiences to use appropriate software packages for selected statistical analysis.

**The following test should be perform on computer**

- Formation of frequency distribution table (inclusive and exclusive)
- Graphical representation- histogram, frequency polygon, ogives
- Measures of Central Tendency- Mean, Median and Mode
- absolute and relative Measures of Dispersion- range, Quartile Deviation, Mean Deviation, Standard Deviation

- Coefficient of correlation- Karl Pearson and Spearman's rank
- Fitting of Regression lines and prediction.
- Normal Distribution-area under the curve
- Chi-square tests- Goodness of fit, Independence of Attributes 2x2 and rxc contingency tables, testing of single variance
- Application of Student's t-test for small samples- test of significance of single mean, difference in means, independent and paired T test.
- F-test for two sample variances.
- Analysis of Variance- one-way classification, two-way classification

**ESSENTIAL READINGS:**

- Gupta, S.P.: Statistical Methods, Sultan Chand and Company, New Delhi.
- Elhane, D.N.: Fundamentals of Statistics, Kitab Mahal, Allahbad.

**BOOKS RECOMMENDED:**

- Simpson and Kafka: Basic Statistics, Oxford and IBH Publishers.
- Goon, Gupta and Das: Fundamentals of Statistics Vol. I and II.
- Snedecor and Cochran: Statistical Methods, Oxford and IBH Publishers.
- Shukla, M.C. and Gulshan S.S.: Statistics Theory and Practice, Sultan Chand and Company, New Delhi.
- Gupta, S.C. and Kapoor V.K.: Fundamental of Mathematical Statistics, Sultan Chand and Company, New Delhi

**PAPER CODE-HHD 227**  
**Life Span Development-II- Adolescence and Adulthood**  
**(Practical)**

**Credits: 04**

**Max Marks: 100**

**Contact Hrs/Week: 4**

**Total Hrs: 60**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the role of statistics and computer applications in research.
2. Apply statistical techniques to research data for analyzing and interpreting data carefully.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 227	Life span development-II- Adolescence and Adulthood	<p><b>Student will be able to –</b></p> <p><b>COHD65:</b> Demonstrate knowledge of various problems and conflicts during adolescence</p> <p><b>COHD66:</b> Explain the role that sexuality, alcoholism and substance</p>	<p><b>Approaches in Teaching:</b></p> <p>Interactive Lectures, Brain storming sessions, Power Point Presentation,</p>	<p>Quiz. PPT, Group/individual PPT on domains and concepts, assignments, <b>CA test</b>, Semester End Examination.</p>

		<p>abuse play in adolescent development</p> <p><b>COHD67:</b> Engage in focused discussion on issues of adulthood.</p> <p><b>COHD68:</b> Plan and execute the recreational activity for adolescent and adult.</p> <p><b>COHD69:</b> Create an awareness among adolescent and adult regarding issues and health concerns.</p> <p><b>COH70:</b> Paradigm the case study to understand adolescent.</p>	<p><b>Learning activities for the Students:</b> Self learning assignments, Examine select readings, Read journal, articles and books.</p>	
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## CONTENTS

- Formulation of questionnaire to assess adolescent problem sand conflicts
- Survey on Adolescents' attitude towards Sexuality/Alcoholic and Substance abuse
- Planning guidance and counseling programme for various problems of adolescents
- Case profile of an adolescent with behavior problem
- Preparation of interview schedule for adults taking into account their developmental tasks
- Organizing interactive session and focus group discussions on significant issues of adulthood
- Preparation of questionnaire regarding health problems of menopausal women
- Plan a recreational activity for elderly people.
- Visit to old age home

## BOOKS RECOMMENDED

- Berk, Laura E. (1993). Infants, Children and Adolescents, Third edition
- Diane E. Papalia (2004), Human Development, Ninth Edition, McGrawHill Elizabeth B. Hurlock, Developmental psychology-A life span Approach, 5<sup>th</sup> edition, McGraw Hill
- Sharma, N. (2009). Understanding Adolescence, New Delhi: National Book Trust.
- Rice, F. P. (2007). Adolescent: Development, Relationships and Culture.
- Santrock, J. W. (2010). Life Span Development: A Topical Approach, New Delhi: TataMcGraw Hill

**PAPER CODE-HHD 228**  
**Organization and Management of Early Childhood**  
**(Practical)**

**Credits– 03**  
**Max. Marks – 100**  
**Hrs./Week- 03**  
**Total Hrs.- 45**

### Course Objectives:

**This course will enable the students to :**

1. Learn the effective and efficient ways of maintaining and utilizing indoor and outdoor space.
2. Raise fund for ECCE centre
3. Understand the organization & management of ECCE centre.
4. State the ways to monitor and supervise the work of ECCE workers.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 228	<b>Organization and management of early childhood Center</b>	<p><b>Student will be able to –</b></p> <p><b>COHD71:</b> Execute the space, appropriateness of play equipment and materials, their use and content and quality of display, human resources and other requirements to run an ECCE centre.</p> <p><b>COHD72:</b> Demonstrate the skill of preparing proposal for ECCE projects</p> <p><b>COHD73:</b> Advocate for quality early learning environments and collaborate with members of the early learning team, families and community partners to establish and promote such settings</p>	<p><b>Approaches in Teaching:</b></p> <p>Interactive Lectures, Brain storming sessions, Power Point Presentation,</p> <p><b>Learning activities for the Students:</b></p> <p>Self learning assignments, field practicals.</p>	<p>Quiz. PPT, Group projects, assignments, Essay Writing, Mind Mapping, <b>CA test</b>, Semester End Examination.</p>

**CONTENTS**

- Visits few ECE centers assessing and comparing the organization of space, appropriateness of play equipments and materials, their use and content and quality of display of ECCE center
- Preparing blue print of centers of early childhood education- physical infrastructure, learning material and equipments and budgeting
- Prepare a project proposal for starting an ECCE centre
- Market survey for selection of suitable materials and equipments for children
- Plan and organize a parent teacher meeting /parent education program
- Mapping of one day of a child in an ECCE center
- Interview of supervisor or center head of a preschool
- Plan and organize the different corners in day care.

**BOOKS RECOMMENDED:**

- Singh, A. (1995). Playing to Learn: A training manual for Early Childhood Education. M. S. Swaminathan Research Foundation.
- Combs, B. (2011) Assessing and Addressing Literacy Needs. New York: Sage Global
- Aubrey, C. (2011) Leading and Managing in the Early Years. New York: Sage Global
- White, J. ( 2011) Outdoor Provision In the Early Years. New York : Sage Global
- Knight, S (2011) Risk and Adventure in Early Years Outdoor Play. New York : Sage Global



**PAPER CODE-HHD 229**  
**Seminar**

**Credits-03**  
**Max Marks-100**  
**Contact Hrs./Week-03**  
**Total Hrs-45**

**Course Objectives:**

**This course will enable the students to :**

1. Mini research on any relevant topic, Report writing, presentation and viva voice of the seminar based on contemporary issues in the Human Development and Psychology.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 229	Seminar	<b>Student will be able to –</b> <b>COHD74:</b> Demonstrate knowledge of scientific writing method and styles <b>COHD75 :</b> Develop a research design on a topic relevant to their field <b>COHD76.</b> Prepare a systematic literature review on a select topic <b>COHD77:</b> Present a seminar of the literature review	<b>Approaches in Teaching:</b> Interactive Lectures, Brain storming sessions, Power Point Presentation,  <b>Learning activities for the Students:</b> Self learning assignments, field practicals.	Quiz. PPT, Group projects, assignments, <b>CA test</b> ,_Semester End Examination.

**CONTENTS**

- Mini research on any relevant topic, Report writing, presentation and viva voice of the seminar based on contemporary issues in the Human Development and Psychology.

**COURSE OUTCOMES, SEMESTER-III**

**PAPER CODE-HHD 321  
Abnormal Psychology  
(Theory)**

**Credits– 03**  
**Max. Marks – 100**  
**Hrs./Week- 03**  
**Total Hrs.- 45**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the meaning, causes, classification and assessment of abnormal behavior.
2. Understand the Pervasive Childhood Developmental
3. Remember the various types of childhood psychopathologies
4. Understand the causes and symptoms of various other childhood disorders
5. Apply the knowledge of various methods identification, assessment and therapies

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 321	Abnormal Psychology	<p><b>Student will be able to –</b></p> <p><b>COHD78:</b> Discuss the basics of abnormal psychology and the differences between what is considered normal and abnormal behaviour and their classification and assessment</p> <p><b>COHD79:</b> Demonstrate understanding of causes, symptoms and treatment of maladaptive behaviours</p> <p><b>COHD80:</b> Demonstrate understanding of causes, symptoms and treatment of somatoform, personality and psychotic disorders</p> <p><b>COHD 81:</b> Differentiate of causes and symptoms of various childhood disorders</p> <p><b>COHD82:</b> Develop knowledge about various psychological therapies</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Brain storming sessions, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> , Semester End Examination.

**CONTENTS**

**Unit I: Abnormal Psychology**

**9 hrs**

- Meaning & Concept of abnormal psychology
- Psychological disturbances- Causes & different viewpoints.

- Classification of childhood disorders: internalizing and externalizing disorder, DSM IV
- Assessment of Abnormal Behaviors – Case history taking – Mental status examination, Psychometric and Computer in assessments.

**Unit II: Pervasive Childhood Developmental Disorders**

**9hrs**

- Autism
- Asperger's Syndrome
- Rett's Disorder
- Childhood Disintegrative Disorder (CDD)

**Unit III: Childhood psychopathologies**

**9hrs**

- Conduct disorder, oppositional defiance disorder
- Anxiety disorders of childhood (Separation Anxiety)
- Phobia: School phobia, fear of school, social phobia
- Childhood depression
- Symptom disorders, (Enuresis, encopresis, sleep walking and tics)

**Unit IV: Other childhood disorders**

**9hrs**

- Learning disorder, Motor Skills Disorder, and Communication Disorders
- Feeding and Eating Disorders of Infancy or Early Childhood- Pica, rumination
- Elimination Disorders
- Mental Retardation
- ADHD
- Acute and Posttraumatic Stress Disorders (PTSD)

**Unit V: Identification, Assessment and therapies**

**9hrs**

- Identification and assessment of the Problem Behaviour
- Techniques for Conducting the Functional Behavioural Assessment
- Therapies for children: Family therapy, play therapy, behavior and cognitive therapy
- Therapeutic activities for children: Art, Music, bibliotherapy, storytelling, toys, sand & water play
- Behavior modification- Systematic desensitization, flooding and implosive, contingency management, token economy, aversion, modeling.

**BOOKS RECOMMENDED:**

- Davison, G., & Neale, J. (2003). *Abnormal Psychology* (8<sup>th</sup>ed. With Cases). New York: John Wiley & Sons, Inc
- Barlow D.H. and Durand V.M. (2005). *Abnormal Psychology: An Integrated Approach*(4<sup>th</sup>Ed.).Wadsworth: New York.
- Carson R.C., Butcher J.N., Mineka, S., & Hooley J.M. (2007). *Abnormal Psychology* (13<sup>th</sup>Ed.).ND: Pearson Education.
- Kring,A.M.,Johnson,S.L.,Davison G.C. & Neale J.M. (2010). *Abnormal Psychology* (11<sup>th</sup>Ed.).NY: John Wiley.
- Lask, B. (1985). *Overcoming behavior problems in children: A practical guide*. New York: Arco Publishing, Inc.
- Quay, H.L., &Werry, J.S. (eds.) (1986). *Psychological disorders of childhood*.

**PAPER CODE-HHD 322**  
**Family Counselling and Therapy**  
**(Theory)**

**Credits– 03**  
**Max. Marks – 100**  
**Hrs./Week- 03**  
**Total Hrs.- 45**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the foundations and historical roots of a family systems approach to counseling.
2. To remember the classic schools of family therapy.
3. Apply the professional, ethical, legal, and cross-cultural issues related to practicing family therapy in counselling
4. Understand practice on implementing various approaches to family therapy.
5. Analyze one's own theory of family therapy.
6. Evaluate family of origin to understand how it impacts on you and your work with families.
7. Remember adept a practicing assessment of families.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 332	Family Counselling and Therapy	<p><b>Student will be able to –</b></p> <p><b>COHD83:</b> Appreciate the concept, scope and essentials of counselling and family therapy.</p> <p><b>COHD84:</b> Design the session, applying limits such as time limits and action limits and understand when to introduce structure</p> <p><b>COHD85:</b> Discuss the relationship between the therapist and client and develop an understanding of professional approach and ethics in counselling.</p> <p><b>COHD86:</b> Interpret the necessary skills required to conduct mediation.</p> <p><b>COHD87:</b> Appreciate the importance of reflection in establishing the counselling relationship.</p> <p><b>COHD88:</b> Understand the various skills and therapy used in counselling.</p> <p><b>COHD89:</b> Acquire the knowledge about the phases of counselling.</p>	<p><b>Approaches in Teaching:</b></p> <p>Interactive Lectures, Brain storming sessions, Audio-visual resources, Lecture and discussion on specific areas</p> <p><b>Learning activities for the Students:</b></p> <p>Self learning assignments, field practicals.</p>	<p>Quiz. PPT, Group projects, assignments, <b>CA test</b>, Semester End Examination.</p>

**CONTENTS**

**Unit I: Concept of Counseling & Family Therapy**

**9 hrs.**

- Counseling- Meaning,Nature, Scope
- Family Therapy- Meaning , Scope and applicability.
- Essentials skills of counselor and family therapist
- Goals of Counselling
- Reasons for seeking Counselling
- Types of counselling

**Unit II: Approaches to counselling**

**9hrs**

- Therapist and client relationship-Concept, Factors and Ethical issues
- Professional approach and ethics-Rights of client , Principles of Ethics
- Creating a therapeutic climate-Factors and techniques
- Counselling skills-Communication, Listening, Acceptance, Rapport Establishment

**Unit III: Counselling Process**

**9 hrs**

- Identification of the Need for Counseling
- Preparation for Counseling
- Conduct of Counseling Sessions
- Follow Up
- Phases of Counselling Process
- Goals of Counselling

**Unit IV: Counselling Interview**

**9 hrs**

- Opening the Counseling Session
- Counselling Interview Strategies
- Counselling Interview Process-Establish Relationship, Problem Identification and Exploration , Plan for Problem Solving , Solution Application and Termination

**Unit V: Counselling Theories and Education**

**9 hrs.**

- Psychoanalytical and psychodynamic therapies
- Behavioural Therapy
- Humanistic Therapies
- Counselling practise (skills)
- Psychoeducation

**BOOKS RECOMMENDED:**

- Chibber,S,K. (1999). Guidance and Educational Counselling,Commonwealth Publications.
- Nayak, A.K. &Rao ,V.K. (2002) . Guidance and Career Counselling, APH Publishing Corporation ,New Delhi.
- Ivey,Allen E. ,Ivey,MaryBradford,Simek-Morgan, Lynn (1977). Counselling and Psychotherapy,Fourth Edition.
- Gibson,Robert C. , Mitchell ,Marianne H. (2003). Introduction to Counselling and Guidance, Sixth Edition,Prentice –Hall of India Private Ltd, New Delhi.Axline, V. M. (1947). Play therapy. New York: Ballantine Books.Brammer, L. M. (1985). The helping relationship: Process & skills. New Jersey: Prentice-Hall.
- Hackney, H. & Cormier, L. S. (1979). Counseling strategies and objectives. New Jersey: Prentice Hall.
- hornburg, H.E. (1975). Contemporary Adolescence: Readings. Belmont: Wadsworth.

- Hetherington, E. M. & Parke, R. D. (1979). Child psychology: A contemporary viewpoint. N.Y.: McGraw-Hill.

**PAPER CODE-HHD 323**  
**Women Empowerment and Child Rights**  
**(Theory)**

**Credits– 04**  
**Max. Marks – 100**  
**Hrs./Week- 04**  
**Total Hrs.- 60**

**Course Objectives:**

**This course will enable the students to :**

1. Develop awareness regarding status of women in India and sensitivity to women's issues and concerns.
2. Understand theoretical and Methodological concerns related to women's studies.
3. To understand the children problems.
4. To give information regarding welfare agencies for women & children.
5. To be aware of issues and concerns related to situation of women with specific references to the Indian context

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 323	<b>Women Empowerment and Child rights</b>	<p><b>Student will be able to –</b></p> <p><b>COHD90:</b> Understand the present situation of women in the country.</p> <p><b>COHD91:</b> Develop competencies in the area of empowerment through knowledge of various programmes and policies and legislations for women.</p> <p><b>COHD92:</b> Develop an understanding of rights of children and different types of challenges faced by them.</p> <p><b>COHD93:</b> Develop competencies in the area of empowerment through knowledge of various programmes and policies and legislations for children</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, Review research studies recognizing role of women.</p>	<p>Quiz. PPT, Group projects, assignments, <b>CA test</b>, Semester End Examination.</p> <p>Case study method, documentary movies, newspaper article review, objective questions and written test will be conducted to execute the learning outcome</p>

		<b>COHD94:</b> Comprehend various national and international organisations working for children		
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## CONTENTS

### **Unit I: Status of Women in contemporary society of India** **12 hrs**

- Social construction of Gender, Gender Socialization, Gender discrimination, gender stereotyping, Androgyny, Gender Role
- Demographic indicators related to women-Sex Ratio, Literacy, Life Expectancy, Maternal Mortality Rate, Infant Mortality Rate, Work Participation Rate
- Issues related to women in India (with special reference to Rajasthan) Female foeticide, Female Infanticide, child marriage. Dowry, Widowhood, Female commercial sex workers, Domestic violence, problems of Elderly and single women

### **Unit II: Legislations and specific Institutions for women in India** **12 Hrs**

- Legal rights of women
- CEDAW, ERA-1976, MTP Act-1971, Maternity benefit Act-1961,
- National Policy for women empowerment-2001, Domestic Violence Act-2005, Dowry Prohibition Act-1961, Rajasthan state Policy for girl child, 2013
- National and State Commission for Women. DWCD

### **Unit III: Child Rights and Challenges in India** **12 hrs**

- Concept of child rights. Models to understand child rights
- Situation of children in India, Constitutional provisions for children
- NCPDR, UNCRC
- Children in Difficult Circumstances – Child Labor, Destitute Children, Street Children, and Delinquent Children
- Child Labor and Destitute Children – Definition, Causative Factors, Health Status, Child Labor Act 1986 & recent amendments
- Street Children - Definition, Causative Factors, Health Status, Life Style, Problems and Intervention Programmes for Street children

### **Unit IV: Laws policies and programmes for children** **12 hrs**

- Juvenile delinquency and child abuse in India and Rajasthan, JJ Act, POCSO Act
- Child Marriage and Trafficking, Trafficking Act.
- National policy for children-2013,
- Rajasthan child Policy 2008,
- Integrated child protection scheme (ICPS)
- National Plan of Action

### **Unit V: Organization working for children- National & International** **12 hrs**

- Objectives, beneficiaries, coverage and funding of
  - UNICEF, WHO, CRY, FAO, CARE, World Bank
  - NIPCCD, ICDS, CSWB, NCERT

## BOOKS RECOMMENDED:

- KapurderiyaMeghraj, 2012; Women Welfare and Empowerment, Ancient Publishing House New Delhi.
- Bajpai, A. (2006). Child Rights in India: Law, Policy and Practice. Oxford University Press.
- Kishwar, M. (1999). Off the Beaten Track: Rethinking Gender Justice for Indian Women. New Delhi: Oxford University Press.
- Satyarthi, K. and Zutshi, B. (Ed) (2006). Globalization, Development and Child Rights. New Delhi: Shipra Publication.
- Saikia, N. (2008). Indian women: A socio-legal perspective. New Delhi: Serials Publication.
- Chaudhary, D. Paul: Child Welfare Development, Delhi, Atma Ram & Sons.
- Pyles, M.S. (1947):Institutions for Child Care & Treatment, New York: Child Welfare League of America.
- India (1964): Council for Child-Welfare: A National Policy for Children, New Delhi,.
- Srinivasan,K.Saxena,P.C.and Tara Kanitkar Demographic and socio-economic aspects of the child in India. Himalaya Publishing House,1979.
- Annual Reports of MWCD, India

**PAPER CODE-HHD 324**  
**Entrepreneurship in Services for Women and Children**  
**(Theory)**

**Credits– 3**

**Max. Marks – 100**

**Hrs./Week-3**

**Total Hrs.-45**

**Course Objectives:**

**This course will enable the students to :**

1. Understand of the various aspects and types of business organizations
2. Apply formation on the various sources of finance and also on the process of setting up small enterprise.
3. Understand the relevance of entrepreneurship and to develop effective entrepreneurship skills among students.
4. To understand the meaning and concept of entrepreneurship and its ecosystem
5. To sensitize and orient students towards identifying entrepreneurial opportunities and market potential
6. To impart knowledge for setting up an enterprise and its management

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 324	Entrepreneurship in services for Women & children	<p><b>Student will be able to –</b></p> <p><b>COHD95:</b> Understand the concepts of an entrepreneur, entrepreneurship and entrepreneurial ecosystem in context of India</p> <p><b>COHD96:</b> Appreciate the role of entrepreneurial motivation and creativity in innovation.</p>	<p><b>Approaches in Teaching:</b></p> <p>Detailed discussion on various entrepreneurs and their characteristics, Mock Activity, Power Point Presentation, Discussion with lectures.</p>	<p>Quiz. PPT, Group projects, assignments, <b>CA test</b>, Semester End Examination.</p>



		<p><b>COHD97:</b> Develop skills in project identification, formulation and appraisal</p> <p><b>COHD98:</b> discuss the knowledge for setting up an enterprise.</p> <p><b>COHD99:</b> Explain the role of various funding agencies.</p>	<p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	
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## CONTENTS

### Unit I: Introduction to Entrepreneurship

9 hrs

- Entrepreneurship-Definition, types, characteristics and need
- Entrepreneurship development for employment generation- importance
- Factors affecting entrepreneurial growth- economic, social, cultural and personal factors.

### Unit II: Essentials for Entrepreneurship

9 hrs

- Personal and professional characteristics of entrepreneur
- Qualities of person working with children
- Essential qualities for an entrepreneur
- Consideration in entrepreneurship: financial consideration, social consideration, ethical consideration
- Benefit for developing entrepreneurship for: country, state, society, youth, children, women etc

### Unit III: Steps in planning for an enterprise

9 hrs

- Environment scanning – information, sources, schemes of assistance, problems
- Enterprise selection, enterprise, feasibility study, SWOT analysis
- Resource mobilization – finance technology, raw material, site and man power
- Market assessment, costing and quality control
- Steps in Project Development - Proposal format , Objectives ,Funding , Meaning of feasibility, Project registration ,Legal processing, Evaluation report .

### Unit IV: Setting up an Enterprise

9 hrs

- Day care centre, Education Centre for children / Non formal education
- Orphanage, Street home, Destitute home
- Vocational training centre for women, Working women hostel
- Production of teaching aids ,toys and literature
- Home for aged persons.
- Counseling clinics- testing IQ, EQ
- Center for disability
- Recreational centers

### Unit V: Agencies for Development of Entrepreneurship

9 hrs

- Government of India's policy towards promotion of entrepreneurship reservations and sanctions for small scale sector
- Role of SSI, Procedures and formalities for setting up SSI
- Role of banks and other agencies for development of entrepreneurship

## BOOKS RECOMMENDED

- Status of Women in India, A Synopsis of the Report of National Committee (1971-74) New Delhi, ICSSR 1974,2
- D'Souza , Alfred: Women in Contemporary India and South Asia, Macha publication, New Delhi, 1970
- Kapoor, Premilla: Marriage and Working Women in India, Vikas Publication, Delhi. 1970
- Mitra, Ashok: The Status of Women, Literacy and Employment, Allied Publishers Pvt. Ltd., Bombay, 1979
- International Women's year book edited by Roy Kinkier, 1975, Bashodhary Publication, Bombay
- Research Unit on Women Studies, Women in India, SNTD Women University, April, 1981
- D'SWza, Alfred: Women in contemporary India , Traditional Images and Changing Rules
- Baker. H.A. Bertheide. G.W. and Others (Eds)(1980). Women Today: A multidisciplinary approach to Women's Studies. Brooks/ Cole Publication.

**PAPER CODE-HHD- 325**  
**Counselling Family and Psychological Problems**  
**(Practical)**

**Credits– 03**  
**Max. Marks – 100**  
**Hrs./Week- 03**  
**Total Hrs.-45**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the problems in family
2. Apply the knowledge to plan activities to enhance the marital life
3. Create counselling sessions for abuse, trauma, violence, disability.
4. Remember Plan therapy and training programmes.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 325	Counseling family and psychological problems	<p><b>Student will be able to –</b></p> <p><b>COHD 100:</b> Develop skills to identify the problems/difficulties through the counselling process</p> <p><b>COHD 101.</b> Develop skills in using select approaches and techniques of counselling</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> ,_Semester End Examination.

**CONTENTS**

- Plan and prepare an interview schedule for adult unmarried person at any stage of adulthood
- Marriage enhancement/ enrichment activity
- Planning play therapy for children's problems- behavioral, conduct etc.
- Plan a programme for parents in context of adolescent's problems- tobacco chewing, substance abuse, alcoholism etc.
- To analyze the hypothetical case records of family.
- To conduct an awareness generation campaign in the community regarding aspects and issues pertaining to marital & family well being.

#### **BOOKS RECOMMENDED:**

- Axline, V. M. (1947). Play therapy. New York: Ballantine Books.
- Brammer, L. M. (1985). The helping relationship: Process & skills. New Jersey: Prentice-Hall.
- Hackney, H. & Cormier, L. S. (1979). Counseling strategies and objectives. New Jersey: Prentice Hall.
- Thornburg, H.E. (1975). Contemporary Adolescence: Readings. Belmont: Wadsworth.
- Hetherington, E. M. & Parke, R. D. (1979). Child psychology: A contemporary viewpoint. N.Y.: McGraw-Hill.

**PAPER CODE-HHD- 326**  
**Women Empowerment and Child Rights**  
**(Practical)**

**Credits– 03**  
**Max. Marks – 100**  
**Hrs./Week- 03**  
**Total Hrs.- 45**

#### **Course Objectives:**

**This course will enable the students to :**

1. Understand working of various welfare organizations.
2. Understand programs for women and children

#### **Course Outcomes (CO's):**

<b>Course</b>		<b>Learning Outcomes (at course level)</b>	<b>Learning and Teaching Strategies</b>	<b>Assignment Strategies</b>
<b>Paper Code</b>	<b>Paper Title</b>			
<b>HHD 336</b>	<b>Women Empowerment and Child Rights</b>	<b>Student will be able to –</b> <b>COHD 102:</b> Develop critical thinking in the field of gender-roles and stereotypes through data collection and understanding the coping mechanisms of a child in difficult circumstances.	<b>Approaches in Teaching:</b> Interactive Lectures, Mock Activity, Power Point Presentation,	Quiz. PPT, Group projects, assignments, <b>CA test</b> , Semester End Examination.

		<p><b>COHD 103:</b> Demonstrate the knowledge and skills to work with women and children</p> <p><b>COHD 104</b> Appreciate the organizations, institutions and services for disadvantaged children.</p>	<p>Discussion with lectures.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	
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## CONTENTS

- Understand the issues of women and children in India through secondary data sources of information.
- Evaluation of child and woman welfare programs (one each).
- Visit to various women and children welfare organizations- Report writing
- Plan and prepare program/ project for over all development, recreation, education of women/ children in community.
- Prepare the case study and suggest the procedure to deal with that situation with suitable legal provisions
- Visit to any unit of women entrepreneurs.
- Planning and execution of awareness program on any women related issue.

## BOOKS RECOMMENDED:

- Srinivasan,K.Saxena,P.C.and Tara Kanitkar Demographic and socio-economic aspects of the child in India.Himalaya Publishing House,1979.
- Approach to the perspective Plan on child development NIPCCD 1983.
- Alfred de Songs,Children in Indian.
- Critical Issues in Human Development.Indian Social Institutes,1973.

**PAPER CODE-HHD- 327**  
**Entrepreneurship in Services for Women And Children**  
**(Practical)**

**Credits– 4**

**Max. Marks – 100**

**Hrs./Week-4**

**Total Hrs.-60**

## Course Objectives:

**This course will enable the students to :**

1. Understand of the various aspects and types of business organizations
2. To apply information on the various sources of finance and also on the process of setting up small enterprise.
3. Understand the relevance of entrepreneurship and to develop effective entrepreneurship skills among students.

## Course Outcomes (CO's):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			

<b>HHD 337</b>	<b>Entrepreneurship in services for women and children</b>	<p><b>Student will be able to –</b></p> <p><b>COHD 105:</b> Construct knowledge in thinking from the perspective of a counsellor/therapist in exploring a range of case records related to family dynamics and spousal disharmony.</p> <p><b>COHD 106:</b> Understand the importance of family interviewing.</p> <p><b>COHD 107:</b> demonstrate the skills of presentation in conducting awareness generation campaign in the community regarding family.</p> <p><b>COHD 108:</b> Devise the method to plan programme for parents in context of adolescents problems.</p> <p><b>COHD 109:</b> Implement plan the marriage enrichment activity.</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	<p>Quiz. PPT, Group projects, assignments <b>CA test</b>, Semester End Examination</p>
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## CONTENTS

- Enlist entrepreneurial opportunities in human development.
- Select any enterprise and prepare a report of SWOT analysis (group work).
- Presentation on funding agencies, offices for understanding the formalities for registrations and the licenses for enterprise.
- Case profiling of successful entrepreneurs and enterprises.
- Survey of an institution facilitating entrepreneurship development for women and children in Rajasthan.
- Preparing a prospectus/guide on starting of an enterprise.
- Plan and prepare a proposal for product and execute it.

## BOOKS RECOMMENDED :

- Akhouri, M.M. P., 1990, 'Entrepreneurship for women in India' NIESBUD, New Delhi.
- Deshpande, M.V (1984) Entrepreneurship of small scale industries, concept, growth, and management Deep and Deep Publications, D-1/24, R- Garden, New Delhi( Unit1- III).
- Parekh, U. and Rao , T.V (1978). Personal efficacy in developing Entrepreneurship. Learning system, New Delhi ( Unit VIII)
- Patel V.C. 1987, Women Entrepreneurship – Developing new Entrepreneurs, EDII Ahmedabad.
- Rao, T.V and Parekh, L.U (1982). Developing Entrepreneurship. A handbook, Learning system. New Delhi.
- Rao. V.L, 'Industrial Entrepreneurship in India.' Chug Publications, Allahabad.

**PAPER CODE-HHD 328**  
**Dissertation Synopsis**

**Credits-4**  
**Max Marks-100**  
**Contact Hrs./ Week-4**  
**Total Hrs.- 60**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the skill in selection of relevant topic for research
2. Apply the knowledge in reviewing the existing literature
3. Understand the different methodology to conduct the research

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 328	DISSERTATION SYNOPSIS	<p><b>Student will be able to –</b></p> <p><b>COHD 110:</b> Know the practical aspects of, collecting data/ project work</p> <p><b>COHD 111:</b> Evaluate, select and use appropriate strategies for reduction, analysis and presentation of data collected during research process/ project work .</p> <p><b>COHD 112:</b> Suitably illustrate data/ insights using various graphical and other methods.</p> <p><b>COHD 113:</b> Prepare a dissertation document/ project report based on research process/ project work done</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> , Semester End Examination.

**CONTENTS**

- Preparation of a blue print of research outlines.
  - Theoretical Background/ Introduction
  - Review of Literature

- Objectives
- Hypothesis
- Research Methodology
- References

**PAPER CODE-HHD 329**  
**Internship**

**Credits-02**

**Max Marks-100**

**Total Hrs- 45 Days**

**Course Objectives:**

**This course will enable the students to :**

1. To provide hands on experiences by working independently as Human Development personnel in an agency / programme setting.
2. To be able to apply knowledge of human development principles and programme in the field setting. supervision

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 329	Internship	<p><b>Student will be able to –</b></p> <p><b>COHD 114:</b> Get hands on experience of real field setting.</p> <p><b>COHD 115.</b> Understanding of the issues and strategies organizations work on.</p> <p><b>COHD 116.</b> Opportunity to use communication skills for personal and professional development.</p> <p><b>COHD 117.</b> Enhanced ability to work with groups and use managerial and problem solving skills</p>	<p><b>Approaches in Teaching:</b> The students could work with NGOs, Govt. agencies, International agencies as well as selfhelp groups.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field training.</p>	Present a report of the placement in their department, <b>CA test</b> ,_Semester End Examination.

**CONTENTS**

- In the end of II Semester, students will undergo internship training of 45 days by participation in on going programmes of agencies / institutions and interaction with agency personnel at all levels- in a ECE centers/ Counseling centers/ Special schools/ / NGOs / Old age home/ Women and child welfare program or organization etc. so that they get to understand the existing working practices, conditions and acquire an in depth technical

know how. The student shall prepare a report on the visit made to the organization. She will submit the report and will be required to make the presentation of the work followed by viva-voce. The students will be required to get the certificate regarding successful training.

- **Evaluation:** Panel of examiners consisting of Head of the department, and two other examiners appointed by the Principal shall conduct a vice-voce and evaluate the reports. The students will be graded accordingly.

### COURSE OUTCOMES, SEMESTER-IV

#### PAPER CODE-HHD 421 NGO Management and CSR (Theory)

**Credits– 02**

**Max. Marks – 100**

**Hrs./Week- 02**

**Total Hrs.- 30**

#### Course Objectives:

**This course will enable the students to :**

1. To Understand the working of NGO
2. To understand the issues and challenges in opening of an NGO

#### Course Outcomes (CO's):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 421	NGO Management and CSR	<p><b>Student will be able to –</b></p> <p><b>COHD 118:</b> Understand concept of NGO, their characteristics, history, structure, function and contribution in the development.</p> <p><b>COHD 119:</b> Discuss about know-how to start a NGO.</p> <p><b>COHD 120:</b> Develop an understanding and competency of management of NGO and develop skills required for a career in this field</p> <p><b>COHD 121:</b> Demonstrate knowledge of CSR, its origin, stakeholders and designing</p> <p><b>COHD 122:</b> Develop an understanding of management of CSR and develop skills required for a career in this field</p>	<p><b>Approaches in Teaching:</b></p> <p>Interactive Lectures, Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b></p> <p>Self learning assignments, field practicals.</p>	<p>Quiz. PPT, Group projects, assignments, <b>CA test</b>, Semester End Examination.</p>



## CONTENTS

### Unit I: Concept of NGO and Status of NGO in India

6 hrs

- Comparing Government Organizations and NGO
- Characteristics & Present status of NGO
- Historical Perspective of NGO
- Structure & Function of NGO
- Advantages & contribution of NGO in the Development

### Unit II: Starting of NGO

6 hrs

- Identifying the key elements of a strategic plan (Vision, Mission, Objectives, etc.)
- Registration of NGO
- Proposal writing under NGO
- Identifying Funding agencies
- Resource Mobilization
- Planning, Implementation and Evaluation strategy under NGO

### Unit III: NGO Management

6 hrs

- Organizational types and structures
- Managing people and teams in NGOs
- NGO management competencies
- Applying NGO principles and values
- Accountability and impact assessment for NGOs

### Unit IV: Introduction to CSR

6hrs

- Corporate Social Responsibility- Meaning, definition and scope of CSR Evolution of CSR
- Carroll's Model of CSR (Pyramid of CSR)
- Globalization and CSR
- Stakeholders & tools for CSR perspectives
- Designing a CSR policy & Factors influencing CSR policy

### Unit V: Management of CSR

6hrs

- Managing CSR in an organization
- Role of HR Professionals in CSR
- ISO 14000, SA 8000, AA 1000
- CSR in the workplace & community
- CSR in India: Legal provisions and specifications on CSR

### BOOKS RECOMMENDED

- S. Chandra, Guidelines for NGO Management in India (2003), Published by Kanishka Distributors, New Delhi
- D. Lewis, Management of Non Governmental Development Organization (2001), Second Edition, Published by Routledge, Newyork.
- A. Abraham, Formation and Management of NGOs (2003), Third Edition, Published by Universal Law Publishing Co. Pvt Ltd., New Delhi.
- Sundar, P. 2013, Business and Community: The Story of Corporate Social Responsibility in India, New Delhi, Sage Publication.
- Aggarwal, S.2008, Corporate Social Responsibility in India, Sage Publication Pvt. Ltd.

**Paper Code: HHD 422**  
**Scientific Writing**  
**(Theory)**

**Credits: 3**

**Max. Marks: 100**

**Contact Hours: 45**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the nuances of scientific writing.
2. Remember the insight into ethics in scientific publication
3. Understand the process of developing a research proposal/ project proposal

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 422	Scientific Writing	<b>Student will be able to –</b> <b>COHD123:</b> Demonstrate knowledge of scientific writing and produce clear and effective scientific documents. <b>COHD124:</b> Develop skills in collation and presentation of scientific information <b>COHD125:</b> Develop a research design/project on a topic relevant to their field.	<b>Approaches in Teaching:</b> Analyze dissertations, research reports and project evaluation reports Videos on scientific writing shown, Discussion with lectures.  <b>Learning activities for the Students:</b> Self learning assignments, field practicals.	Quiz. Prepare PPT, <b>CA test</b> , Semester End Examination.

**CONTENTS**

**Unit I:**

**9 hrs**

- **Key elements of scientific writing**
  - Quality information
  - Nature of language
  - Structure
- **Characteristics of scientific writing**
  - Clear and precise use of language
  - Accessibility to the intended audience
  - Correct information
  - Logical sequencing of information
  - Use of correct grammar
  - Appropriate use of technical terms, illustrations or diagrams

**Unit II:**

**9hrs**

- **Drafting a scientific document**
  - Research the document
  - Gather information
  - Plan the format
  - Create an outline
  - Write first draft
  - Check the accuracy

- Revise and amend the document
- **Type of academic journal articles**
  - Letters/communications
  - Research notes
  - Articles
  - Supplemental articles
  - Review articles

**Unit III:**

**9hrs**

- **Writing effective scientific documents**
  - Reports (Research/Progress)
  - Scientific paper (Journal/Conference)
  - Review paper
  - Abstracts
  - Theses
  - Electronic/Web based document
- **Elements of scientific documents**
  - Sections/subsections
  - Headings/subheadings
  - Front matter (Title, Title page, Abstract, Table of contents, List of figures, List of tables, List of terms, Acknowledgements)
  - Body (Introduction, Review of literature, Methodology, Results, Discussions, Summary, Conclusion, Recommendations)
  - End Matter (References, Appendices, Indices)

**Unit IV:**

**9hrs**

- **Ethics and scientific publication**
  - Ethics in Paper writing
  - Permission
  - Data fabrication and falsification
  - Plagiarism
  - Redundant and duplicate publication
  - Conflict of interest
  - Authorship issues
  - Animal and human welfare concerns
  - Reviewer responsibility
- **Oral Presentation**
  - Format of oral presentation (Informal/formal)
  - Visual aids – LCD projector, overhead projector (OHP) and transparencies or other display media
  - Delivery – Voice projection, Body language, Spoken v. written language, Notes, Time limit

**Unit V:**

**9hrs**

- **Writing a project proposal for grants**
  - Rationale and importance of research
  - Empirical and Theoretical conceptualization
  - Presenting pilot study/ data
  - Research proposal and time frame
  - Clarity and specificity of method
  - Clear organization
  - Outcome of research and its implications
  - Budgeting
  - Available infrastructure and resources
  - Executive summary

## **ESSENTIAL READINGS:**

- Robert A. Day. How to Write and Publish a Scientific Paper, 7<sup>th</sup> edition, Greenwood, 2011.
- Martha Davis. Scientific Papers and Presentations. (2012). 3<sup>rd</sup> Edition. Academic Press.
- Michael Alley. The Craft of Scientific Writing. (2018). 4th edition Springer-Verlag New York.
- Janice R. Matthews, John M. Bowen, Robert W. Matthews. (2014). Successful Scientific Writing: A Step-By-step Guide for the Biological and Medical Sciences, 4<sup>th</sup> Edition. University Press.
- Peter J. Gosling. Scientist's Guide to Poster Presentations, Kluwer academic/Plenum publishers, 1999
- Edward Barrett, Leslie Perelman. The Mayfield Handbook of Technical and Scientific Writing, McGraw-Hill, 1997.
- Alley, M. (2018) The Craft of Scientific Writing. New York: Springer.
- Bernard, H.R. (2012). Social Research Methods: Qualitative and Quantitative Approaches. Thousand Oaks, CA: Sage Publications
- Black, J.A. and Champion, D.J. (1976). Methods and Issues in Social Research. New York: John Wiley and Sons.
- Blaxter, L., Hughes, C, and Tight, K. (2006). How to research. New Delhi: 3<sup>rd</sup> Edition. Open University Press.
- Blum, D., Knudson M., and Henig, R. M. (2005) Field Guide for Science Writers: The Official Guide of the National Association of Science Writers. USA; Oxford University Press. <http://www.nasw.org/field-guide>
- Elmes, D.G., Kanowitz, B.H. and Roediger, H.L. (1989). Research Methods in Psychology (Third Edition). New York: West Publishing Company.
- Katz, M. (2009) From Research to Manuscript: A Guide to Scientific Writing (2nd Ed). New York: Springer

## **E-CONTENT:**

- <http://www.apastyle.org/>
- <http://www.citethisforme.com/guides>

## **PAPER CODE-HHD 423**

### **Gerontology**

### **(Theory)**

**Credits – 02**

**Max. Marks – 100**

**Hrs./Week- 02**

**Total Hrs.- 30**

## **Course Objectives:**

### **This course will enable the students to :**

1. Understand , aware and sensitized to issues related to care of the elderly
2. Understand the theoretical perspectives of the aging process.
3. Execute the awareness about the needs and challenges facing the current generation of older adults,
4. Apply social/political perspectives, behavioral, and biological aspects of aging,
5. Remember the ways aging affects areas such as sexuality, family relations, personality, and creativity,
6. Understand existing and potential careers in the field of aging, and
7. Understand Factors that would contribute to successful aging.

## Course Outcomes (CO's):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 423	Gerontology	<p><b>Student will be able to –</b></p> <p><b>COHD 126:</b> Understand the meaning, stereotypes, demographic data ,and theoretical perspective of aging</p> <p><b>COHD 127:</b>Develop familiarity with the impact and health challenges and concerns of aging.</p> <p><b>COHD 128:</b>Explain the adjustment and changing life style in old age.</p> <p><b>COHD 129:</b>Identify the policies and programmes for elderly</p> <p><b>COHD 130:</b>Appreciate the ways for positive aging and identify the resources and barriers.</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> ,_Semester End Examination.

## CONTENTS

### Unit I: Introduction to Gerontology

6 hrs

- Overview of gerontology, stereotypes about the elderly
- Emergence and scope of gerontology; Demographic profile of the aged in Indian Context; Concept of aging - Social, medical, psychological, occupational changes
- Theoretical Perspectives of Aging – Disengagement theory, activity theory, Human Development theory, Continuity theory, Age Stratification theory, Labeling theory
- Growth & diversity in older population

### Unit II: Aging Process

6 hrs

- Impact of aging on Biological/Physiological aspects; Psychological, Economic, Social and Spiritual aspects,
- Health Challenges and Care – physical, psychological, social problems, Factors influencing on health status and care required for aged

### Unit III: Adjustment Patterns and changing life style in old age

6 hrs

- Family pattern, Changing roles and the aging family-conjugal, Husband-wife relations, sexual adjustment; marital adjustment; Intergenerational family relations-Grand parenthood, Widowhood/Singlehood; Alternative life styles, Remarriage in later years
- Work, Leisure and retirement patterns – Work-meaning of work, individual motivation; Leisure; Retirement – benefits, Attitude towards retirement; Poverty, poor health retirement and suicide; abandonment, liberation and diachronic solidarity

### Unit IV: Policies & Programmes for elderly

6 hrs

- Care of the Aged -- Policies and programmes, govt. and non-govt. agencies working for aged

- Categories of services Housing, health, leisure time activities; Institution for the aged- Day care Centers; Economic programmes - Re-engagement, Retirement pension, death cum gratuity, provident fund, health insurances, insurance scheme, investment and taxation and property
- Senior citizen Bill Registration
- Career opportunities in Gerontology

**Unit V: Positive Aging : Resources & Barriers**

**6 Hrs**

- Mental health and aging
- Diversity in aging : Gender, racial, & socioeconomic Disparities in health
- Recreation and the aged
- Seniors as mentors and advisors
- Key to positive aging

**BOOKS RECOMMENDED**

- Blau, Z. (1983). Old Age in Changing Society, New York: New View Prints.
- Chowdhry Paul D. (1992). Aging and the Aged, New Delhi: Inter India Pub.
- Cox, H. (1984). Later Life: The Reality of Aging, New Jersey: Prentice Hall Inc.
- Desai, K.G. (1985). Problems of the Retired People in Greater Bombay, Bombay : TISS, Series No.27.
- Kennedy, C. (1988). Human Development, New York: Macmillan.
- Sharma, M. L. & Dak, T.M. (1987). Aging in India: Challenge for the Society, Delhi: Janta Pub.

**PAPER CODE-HHD 424  
Children with Disabilities  
(Theory)**

**Credits– 02**

**Max. Marks – 100**

**Hrs./Week- 02**

**Total Hrs.- 30**

**Course Objectives:**

**This course will enable the students to :**

1. Understand the various methods of studying characteristics and behavior in various handicaps.
2. Apply knowledge of definitions, etiology, diagnosis, and assessment of childhood disabilities
3. Create an understanding of the approaches and practices for inclusion
4. To understand the empowerment of children and families

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 424	Children with Disabilities	Student will be able to –	Approaches in Teaching: Lecture on etiology and	Quiz. PPT, Group projects, Preparing

		<p><b>COHD 131:</b> Describe the basic definition, needs ,problems and classification of special children</p> <p><b>COHD 132:</b>Understand the legislation and policies and programmes for children with special needs.</p> <p><b>COHD 133:</b>Organize knowledge about the definition, causes, classification and assessment of visual , hearing and orthopaedic impairment</p> <p><b>COHD 134:</b>Develop the concept of the basics about intellectual ,autism, learning disability and communication disorder in detail.</p> <p><b>COHD135:</b>Develop familiarity with the education, intervention and collaborative approach towards inclusion.</p>	<p>diagnosis, , Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals, Examine select readings on disabilities, Invited expert speakers on select disabilities</p>	<p>teaching learning aids for CWD Documenting adaptations for CWD in inclusive set upsassignments, <b>CA test ,</b> Semester End Examination.</p>
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## CONTENTS

### Unit I: Concept of Differently Abled Children

6 hrs

- Differently Abled Children- Concept, Definition , Needs, Problems and classification Of Special Children.
- Distinction between impairments, disability, handicap.
- Significance of Early intervention and diagnosis of disabilities
- Legislations and act for disabled in india-RCI act 1992, PWD act 1995 and National Trust act (1999) and Mental Health Act (1987)
- Programs and policies for children with special needs-Ministry of SJE (Social justice and empowerment ), Ministry of rural development, Ministry of Health, MHRD, Ministry of Labour and employment, Ministry of urban development, National Institute for disabilities.

### Unit II: .

6 hrs

- Definition, Types, Causes, Characteristics, Identification and assessment, Educational approaches
  - Visual Impairment
  - Hearing Impairment
  - Orthopedic disability

### Unit III:

6 hrs

- Definitions, classification, etiology, identification and assessment, Educational Modifications related to:
  - Intellectual impairment
  - Autism spectrum disorders
  - Learning disabilities:dyslexia, dyscalculia, disgraphia etc.
  - Communication Disorder

**Unit IV:****6 hrs**

- Definitions, classification, etiology, identification and assessment, Educational Modifications related to:
  - Multiple disorders.-ADHD,
  - Emotional disturbance
  - Social deprivation
  - Giftedness

**Unit V:****6 hrs**

- Education, intervention and Prevention of disabilities
  - Education of Disabled (Moving towards integrated and inclusive education)
  - Types and Models of Inclusive Education
  - Counseling of parents.
  - Collaborative approach towards inclusion( Parents, school and community)

**BOOKS RECOMMENDED:**

- Gedkar,E.Disabled in India,somaiya,1983.
- Lilly Stephen,M. Children with Exceptional Needs,Holt,Rinehart,1979
- CroockShank,W.M. Psychology of Exceptional Children and youth, "New Jersey,Prentice Hall", 1958.
- Baker,H.J.,Introduction to exceptional children,NewYork,Macmillan Co.,1959.
- Dunn,L.M.(ed) "Exceptional children in the schools", Holt Rinehart & Winston,1963.
- Mangal, S.K. (2009) Educating Exceptional Children: An Introduction to Special Education, Phi Learning.
- What Every Special Educators Must know: Ethics, Standards, and Guidelines for Special Educators, (2009) Council for Exceptional children
- Heward, W (2009) Exceptional Children: An Introduction to Special Education (Book Alone): International Edition. Pearson Education, Limited
- Stowe Cynthia M. (2005), Understanding Special Education: A Helpful Handbook For Classroom Teachers [Paperback] Scholastic Inc
- Schwartz Diane (2005 ) Including Children With Special Needs: A Handbook For Educators And Parents, Greenwood pub, United states

**PAPER CODE-HHD 425**  
**NGO Management and CSR**  
**(Practical)**

**Credits– 02****Max. Marks – 100****Hrs./Week- 02****Total Hrs.- 30****Course Objectives:****This course will enable the students to :**

1. Understand knowledge about the role of NGOs in national development.
2. Remember information for establishing and managing a NGO.
3. Apply knowledge about preparing project proposal and fund raising for different projects



### Course Outcomes (CO's):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 425	NGO Management and CSR	<p><b>Student will be able to –</b></p> <p><b>COHD 136:</b> Understand the role and challenges of NGOs and the development concerns of the community</p> <p><b>COHD 137:</b> Understand the role and challenges of CSR and the development concerns of the community</p> <p><b>COHD 138:</b> Describe the Special challenges of NGO management</p> <p><b>COHD 139:</b> Devise a range of tools, techniques and skills for the effective management of organisational learning, strategy and change within NGOs</p> <p><b>COHD140:</b> Demonstrate the knowledge and skills to work with NGO and CSR units</p>	<p><b>Approaches in Teaching:</b> Interactive Lectures, Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b> Self learning assignments, field practicals.</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> , Semester End Examination.

### CONTENTS

- Study a NGO working for women & children and present report on the following: vision, mission, target group, different running projects, Human and physical infrastructure, funding, achievements etc.
- Enlist any 10 public or private ltd. Corporate houses and study their CSR fund allocation and CSR achievements.
- Prepare a case study of a NGO taken up an innovative experiments in the women and child development/protection sector
- Plan a proposal/guide to start a NGO: vision, mission, goal, rationale, types of projects, fund raising, staff management, budgeting.

### BOOKS RECOMMENDED:

- S. Chandra, Guidelines for NGO Management in India (2003), Published by Kanishka Distributors, New Delhi
- D. Lewis, Management of Non Governmental Development Organization (2001), Second Edition, Published by Routledge, Newyork.
- A. Abraham, Formation and Management of NGOs (2003), Third Edition, Published by Universal Law Publishing Co. Pvt Ltd., New Delhi.
- Sundar, P. 2013, Business and Community: The Story of Corporate Social Responsibility in India , New Delhi, Sage Publication.
- Aggarwal, S.2008, Corporate Social Responsibility in India, Sage Publication Pvt. Ltd.

**PAPER CODE-HHD 426**  
**Managing Children with Disabilities**  
**(Practical)**

**Credits– 02**  
**Max. Marks – 100**  
**Hrs./Week- 02**  
**Total Hrs.- 30**

**Course Objectives:**

**This course will enable the students to :**

1. Apply various tests to measure the capabilities of an individual.
2. Understand the techniques and solutions for improvement of handicap condition.
3. Understand the societal attitude towards handicap.

**Course Outcomes (CO's):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 426	<b>Managing children with disabilities</b>	<p><b>Student will be able to –</b></p> <p><b>COHD 141:</b> Construct specific teaching guidelines and aids to meet the needs of each child with physical disabilities.</p> <p><b>COHD 142:</b> Understand and plan case study to clearly identify the disability.</p> <p><b>COHD 143:</b> Gain an understanding on importance of inclusive education in schools.</p> <p><b>COHD 144:</b> Develop the skills of preparing the educational/informative material regarding various disabilities.</p> <p><b>COHD 145:</b> Describe the infrastructure, management and working of institutions dealing with disabilities.</p> <p><b>COHD 146:</b> Understand the RTE (2009) quota of special children and able to conduct the case study.</p> <p><b>COHD 147:</b> Discuss on the importance of inclusive education.</p>	<p><b>Approaches in Teaching:</b>            Interactive Lectures, Mock Activity, Power Point Presentation, Discussion with lectures.</p> <p><b>Learning activities for the Students:</b>            Self learning assignments, field practicals.</p>	Quiz. PPT, Group projects, assignments, <b>CA test</b> , Semester End Examination.

## **CONTENTS**

- Visit to local training, educational and rehabilitation institutions- Preparing a blue print.
  - Assessment of management
  - Infrastructural facilities
  - Program implementation
  - Recommendations
- Planning and Preparation of teaching aids for the child with special needs in accord with activity.
- Preparing a project proposal for children with special need
- Visit to institution dealing with children with special needs.
- Preparing educational/informational material regarding various disabilities.
- Preparation of a Case study of a child with special needs /child from disadvantaged background / admitted in private school under 25 percent quota of the RTE(2009).
- Presentation based debate on the comparative merits and demerits of Inclusive Education in India.

## **BOOKS RECOMMENDED:**

- Tilak, D. (1994). Destination unknown: A case description of a mentally handicapped daughter. Bombay: TISS.
- Leydon Sussan (1985), Helping the Child of Exceptional Abilities
- Okun, B. F. & Rappaport, L.J. (1980). Working with families: An introduction to family therapy. Belmont: Wadsworth. Man, Psychology, Houghton Mifflin Company Boston 1951. New Delhi 16 General Psychology, Eurasia Publishing House
- Lask, B. (1985). Overcoming behavior problems in children: A practical guide. New York: Arco Publishing, Inc.
- Mehe, J. Abnormal Psychology, Holt, Rinehart, 1983
- Singh, B (2005) Modern Teaching of Exceptional Children, Anmol Publishers
- What Every Special Educators Must know: Ethics, Standards, and Guidelines for Special Educators, (2009) Council for Exceptional children

## **PAPER CODE-HHD 427 Dissertation+ Research Paper**

**Credits-16**

**Max Marks-100**

**Contact Hrs./ Week-16**

**Total Hrs-240**

## **Course Objectives:**

**This course will enable the students to :**

1. To apply skills in conducting a research study/ working in a project and to learn the process of writing a dissertation/ project report.
2. Understand research in the fields of on going programmes of agencies / ECE / Counseling / Special Education / Old age , Women and child welfare / Psychology etc.

### Course Outcomes (CO's):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assignment Strategies
Paper Code	Paper Title			
HHD 427	<b>Dissertation+ research paper</b>	<p><b>Student will be able to –</b></p> <p><b>COHD 148:</b> Discuss the practical aspects of, collecting data/ project work</p> <p><b>COHD 149:</b> Select and use appropriate strategies for reduction, analysis and presentation of data collected during research process/ project work .</p> <p><b>COHD 150:</b> Conjecture data/ insights using various graphical and other methods.</p> <p><b>COHD 151:</b> Design a dissertation document/ project report based on research process/ project work done.</p>	<p><b>Approaches in Teaching:</b> Students will be given an option of doing either A) Dissertation or B) Project work in a chosen area congruent to their discipline/ field of study. The work will be an original effort.</p> <p><b>Learning activities for the Students:</b> Self learning, field Experience</p>	PPT on the topic of research, <b>CA test</b> ,_Semester End Examination.

### CONTENTS

- Conduction of innovative and fruitful research in various fields of Human Development. It shall include research in the fields of on going programmes of agencies / ECE / Counseling / Special Education / Old age ,Women and child welfare / Psychology etc.
- Development and submission of a manuscript (from Dissertation) based on the guidelines of the selected Journal , for publication .

**Programme- M.Sc. Clothing and Textiles**  
**OUTCOMES - Academic Year- 2020-21**

**PROGRAMME OUTCOMES**

<b>PO1</b>	Identify how families and communities influence the process of growth and development
<b>PO2</b>	Demonstrate skills in using tools to assess human behavior
<b>PO3</b>	Understand and appreciate the role of interdisciplinary sciences in the development and well- being of individuals, families and communities
<b>PO4</b>	Understand the sciences and technologies that enhance the quality of life of people
<b>PO5</b>	Acquire professional and entrepreneurial skills for economic empowerment of self in particular, and community in general
<b>PO6</b>	Develop professional skills in food, nutrition, textiles, housing, product making, communication technologies and human development
<b>PO7</b>	Adopted and transfer the scientific innovations from lab to the community
<b>PO8</b>	The courses focus on skill development and capacity building to empower women to initiate their own enterprise
<b>PO9</b>	Acquire necessary knowledge and skills to undertake a career in research, either in industry or in an academic set up.

<b>PO10</b>	Possess skills to effectively deliver formal and informal presentations to a variety of audiences in multiple contexts
<b>PO11</b>	Describe socio-cultural competence relative to diversity, equity and/or inclusion
<b>PO12</b>	Understood the role of interdisciplinary sciences in the development of individual, families and communities.

**PROGRAMME SPECIFIC OUTCOMES  
MSc H. Sc. (Clothing and Textiles)**

<b>PSO1</b>	Understand current processes and trends, new development and technological changes in the field of textiles & apparels
<b>PSO2</b>	Apply knowledge and appreciate histories costumes of world and draw inspiration for the present
<b>PSO3</b>	Apply concepts and skills and experimental learning of apparel production and apparel designing
<b>PSO4</b>	Understand and apply knowledge of textile & apparel sector in which products are developed, produced, marketed, sold and consumed
<b>PSO5</b>	Formulate independent research and develop innovative projects relevant to the needs of the society by using the process of conceptualization and generating original solutions of the problems

**COURSE ARTICULATION MATRIX: (MAPPING OF COS WITH POS)**

Course	Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
HCT121	COCT1			✓			✓									✓	✓		
	COCT2					✓	✓							✓		✓			
	COCT3					✓	✓									✓	✓		
HCT122	COCT4					✓	✓							✓	✓				
	COCT5			✓		✓								✓	✓				
	COCT6			✓		✓								✓	✓				

HCT1 23	COCT7						✓	✓						✓			✓		
	COCT8				✓	✓	✓	✓						✓			✓		
	COCT9				✓		✓		✓					✓			✓		
HCT1 24	COCT10				✓	✓	✓									✓	✓		
	COCT11				✓	✓	✓									✓	✓		
	COCT12				✓	✓	✓									✓	✓		
HCT1 25	COCT13				✓	✓	✓		✓							✓	✓		
	COCT14				✓	✓	✓		✓							✓	✓		
	COCT15				✓	✓	✓		✓							✓	✓		
HCT1 26	COCT16				✓	✓	✓	✓						✓			✓		
	COCT17				✓	✓	✓	✓						✓			✓		
	COCT18				✓	✓	✓	✓						✓			✓		
HCT1 27	COCT19								✓	✓				✓				✓	
	COCT20								✓	✓				✓				✓	
HCT2 21	COCT21			✓	✓	✓	✓									✓			
	COCT22			✓	✓	✓	✓									✓			
	COCT23			✓	✓	✓	✓								✓		✓		
HCT2 22	COCT24								✓	✓				✓				✓	
	COCT25								✓	✓				✓				✓	
HCT2 23	COCT26				✓	✓	✓	✓						✓		✓	✓		
	COCT27				✓	✓	✓	✓								✓	✓		
	COCT28				✓	✓	✓	✓						✓		✓	✓		
HCT2 24	COCT29	✓				✓	✓		✓				✓	✓			✓		
	COCT30	✓				✓	✓		✓				✓	✓			✓		
	COCT31	✓				✓	✓		✓				✓	✓			✓		
HCT2 25	COCT32		✓				✓	✓								✓		✓	
	COCT33		✓				✓	✓								✓		✓	
	COCT34		✓				✓	✓								✓		✓	
	COCT35		✓				✓	✓								✓		✓	
HCT2 26	COCT36		✓						✓								✓	✓	
	COCT37		✓						✓								✓	✓	
	COCT38		✓						✓								✓	✓	
HCT2 27	COCT39		✓	✓	✓									✓		✓			
	COCT40		✓	✓	✓									✓		✓			
	COCT41		✓	✓	✓									✓		✓			
HCT 228	COCT42								✓	✓							✓	✓	
	COCT43								✓	✓							✓	✓	
	COCT44								✓	✓							✓	✓	
	COCT45								✓	✓							✓	✓	
HCT3 21	COCT46		✓		✓			✓						✓			✓		
	COCT47		✓		✓			✓						✓			✓		
	COCT48		✓		✓		✓	✓						✓			✓		
HCT3 22	COCT49			✓	✓	✓	✓							✓		✓			
	COCT50			✓	✓	✓	✓							✓		✓			

	COCT51			✓	✓	✓	✓								✓	✓			
HCT3 23	COCT52			✓	✓	✓	✓									✓	✓		
	COCT53			✓	✓	✓	✓									✓	✓		
	COCT54			✓	✓	✓	✓									✓	✓		
	COCT55			✓	✓	✓	✓									✓	✓		
	COCT56		✓				✓		✓					✓		✓			
HCT3 24	COCT57		✓				✓		✓					✓		✓			
	COCT58		✓				✓		✓					✓		✓			
	COCT59			✓	✓				✓							✓	✓		
HCT3 25	COCT60			✓	✓				✓							✓	✓		
	COCT61			✓	✓				✓							✓	✓		
	COCT62								✓	✓						✓	✓		
	COCT63								✓	✓							✓	✓	
HCT3 26	COCT64								✓	✓							✓	✓	
	COCT65								✓	✓							✓	✓	
HCT3 27	COCT66								✓	✓							✓	✓	
	COCT67			✓	✓		✓		✓					✓			✓		
HCT4 21	COCT68			✓	✓		✓		✓					✓			✓		
	COCT69			✓	✓		✓		✓					✓			✓		
	COCT70									✓	✓						✓	✓	
HCT4 22	COCT71									✓	✓						✓	✓	
	COCT72																✓	✓	
	COCT73		✓					✓						✓				✓	
HCT4 23	COCT74		✓					✓						✓				✓	
	COCT75		✓					✓						✓				✓	
	COCT76		✓					✓						✓				✓	
HCT4 24	COCT77		✓					✓						✓				✓	
	COCT78		✓					✓		✓	✓			✓				✓	
HCT4 25	COCT79		✓					✓		✓	✓			✓				✓	
	COCT80		✓					✓		✓	✓			✓				✓	
	COCT81		✓					✓		✓	✓			✓				✓	

## B.Sc. (H) HOME SCIENCE (2020-2021)

### COURSE OUTCOMES - Semester I

PAPER CODE- HCT 121

#### Apparel Making (Theory)

**Credits: 3**

**Maximum marks: 100(CA-30, SEE-70)**

**Contact Hrs/Week: 23**

**Total Hrs: 45**

**Course Objectives:**



**This course will enable the students to -**

1. To create awareness of quality assurance norms and evaluating quality in apparel
2. To acquaint students with the art of handling different materials and understand the factors influencing fitting

**Course Outcomes (COs):**

Course		Learning Outcomes ( at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 121	Apparel Making  (Theory)	<p><b>The students will be able to –</b></p> <p><b>COCT1:</b> Interpret working of apparel manufacturing industry and understand various layouts for marker</p> <p><b>COCT2:</b> Understand various material handling and components of garment production</p> <p><b>COCT3:</b> Knowledge of good fit and able to find out remedy of common fitting problems</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Individual and Group Projects, Semester End Examination</p>

**CONTENTS**

**UNIT I: Body Measurements 9 hrs**

- Study of Anthropometric measurements- Procedure for taking body measurements for men, women and children
- Locating land marks
- Formation of standard size chart in relation to Asymmetrical and ideal figure types
- Evaluation of posture

**UNIT II: Design Features 9 hrs**

- Elements and principles of design related to apparel

**UNIT III: Layouts for garment construction 9 hrs**

- Difference between Drafting, Paper pattern & decoding a pattern.
- Economic & Basic layout.
- Layout for special fabrics for bold & unidirectional prints, stripes and checks

- Handling of special fabrics while cutting and stitching (Pile, lace, Sheers & Heavy weight, knits and leather)
- Calculation of cost for different garments

**UNIT IV Evaluating the Quality of Apparel 9 hrs**

- Identifying the components of apparel for – Fabric, shaping devices, underlying fabrics, pockets, neckline treatments, sleeve treatments, waistline treatments, closures, hem treatments & decorative details.
- Standards for evaluating the various components.

**UNIT V:Fitting9 hrs**

- Factors affecting good fit.
- Basic pattern alterations in length, width, waist, hipline etc.
- Common problems encountered in fitting & their remedies

**ESSENTIAL READINGS:**

- Kallal, Marry, Jo., Clothing Construction, MacMillan Press Ltd. 1985.
- Thomas, Anna. Jacob., The Art of Sewing, UBS PD Publishers Ltd., New Delhi.

**BOOKS RECOMMENDED:**

- Stamper, Sharp &Donell., Evaluating Apparel Quality, Fairchild Publications, New York.
- Graff, J.L, Concepts in Clothing (1976), Mc Graw Hill, New York.
- Readers Digest–A complete guide to sewing, The Readers Digest Association Ltd., London.

**PAPER CODE-HCT 122**

**Clothing & Textiles: Historical Development of Textiles**

**(Theory)**

**Credits: 03**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 03**

**Total Hrs: 45**

**Course Objectives:**

**This course will enable the students to-**

1. To study the textiles traditions of world
2. To study the important textiles arts in their historical perspective.
3. To create awareness and foster appreciation of textile masterpieces of the world.

**Course Outcomes (COs):**

<b>Course</b>			
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<b>Paper Code</b>	<b>Paper Title</b>	<b>Learning Outcomes (at course level)</b>	<b>Learning and Teaching Strategies</b>	<b>Assessment Strategies</b>
<b>HCT 122</b>	<b>Historical Development of Textiles (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>COCT4:</b> Understand the perspective of textile and distinguished historic costumes with reference to fabric and style</p> <p><b>COCT5:</b> Understand the woven, dyed and printed textiles art in their historical perspective</p> <p><b>COCT6:</b> Recognize and appreciate the textile masterpieces of the world textiles</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Individual and Group Projects, Semester End Examination</p>

## **CONTENTS**

### **UNIT I: Study of master pieces of world textiles: Woven**

**9 hrs**

(With respect to history, construction techniques, styles, colors, motifs and centers of production)

- Brocades (China, India, Persia, Byzantium, Spain, Italy and France)
- Shawls (India, England and France)
- Linen damasks (Ireland and Belgium)
- Carpets and floor coverings (Middle and Far East)

### **UNIT II: Study of master pieces of world textiles: Dyed and Printed**

**9 hrs**

(With respect to history, construction techniques, styles, colors, motifs and centers of production)

- Resist dyed fabrics (India, Indonesia and Japan)
- Printed textiles (India, France and England)

### **UNIT III: Study of master pieces of world textiles: Special Techniques**

**9 hrs**

(With respect to history, construction techniques, styles, colors, motifs and centers of production)

- Tapestries (Greece, Coptic, Europe and Peru )
- Laces (Europe)

### **UNIT IV: Study of master pieces of world textiles: Embroideries**

**9 hrs**

(With respect to history, construction techniques, styles, colors, motifs and centers of production)

- Embroideries (China, Persia, England)

#### **UNIT V: Textiles of**

**9 hrs**

- Pre-Hispanic, Latin and South America
- Colonial North America

#### **BOOKS RECOMMENDED:**

- The Last Two Million Years, London, Edited and Published – The Readers Digest Association Inc.(1973)
- Annemarie Seiler Baldinger (1979,) Classification of Textile Techniques Ahmedabad, India , Calico Museum of India.
- Encyclopedia of Textiles, Edition of American Fabrics Magazine, New Jersey, Prentice Hall.
- Gillow John and Sentence Bryan (1999) World Textiles London, Thames and Hudson.
- Ginsburg. Madeleine (Ed.) (1993), Illustrated History of Textiles, London, Studio Edition.
- Harris, Jennifer (Ed.), (1993),Textiles-5000 years, London, British Museum Press.
- Hecht, A. (1989), Art of the Loom, London, British Museum Publications.
- Lewis. E. (1953), Romance of Textiles, New York, The McMillan Company.
- Owen Jones (1986),Grammer of Ornament, London, Omega Books.
- Wilson Eva (2001), 8000 Years of Ornament, London, The British Museum Press.

#### **PAPER CODE-HCT 123**

#### **Clothing & Textiles: Textile Chemistry**

**(Theory)**

**Credits: 03**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 03**

**Total Hrs: 45**

#### **Course Objectives:**

**This course will enable the students to-**

1. To acquaint the students about the polymers of the textile fibers.
2. To understand the chemical composition of fiber and production and fundamental properties of natural and synthetic fibers.
3. To familiarize with the chemical processing from desizing to finishing of textiles and their principles.

#### **Course Outcomes (COs):**

Course		Learning Outcomes ( at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			

<b>HCT 123</b>	<b>Textile Chemistry (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>COCT7:</b> Understand the chemical composition of fiber and properties of all fibers</p> <p><b>COCT8:</b> Describe the chemistry and mechanism of application of finishes for various fabrics</p> <p><b>COCT9:</b> Interpret the area of polymer chemistry and textile finishing</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Individual and Group Projects, Semester End Examination</p>
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## CONTENTS

### UNIT I: Polymer Chemistry

9 hrs

- Polymers and methods of polymerization.
- Classification of Polymers.
- Degree of polymerization, Molecular weight of polymer and its determination.
- Orientation and Crystallinity of polymer and their influence on fiber properties.

### UNIT II: Chemistry of Cellulosic Fibers 9 hrs

- Chemical composition, molecular structure, physical and chemical properties of cotton fiber.
- Viscose, Bamboo, Lyocell, Tencel - their manufacture, properties and uses.

### UNIT III: Chemistry of Protein Fibers – Wool and Silk

9 hrs

- Chemical composition, Molecular structure, Physical and chemical properties.
- Felting in wool, Degumming and Weighting of silk.

### UNIT IV: Chemistry of Synthetic Fiber - Polyester, Polyamides, Acrylonirile 9 hrs

- Chemistry of fibers–raw material and manufacturing process.
- Physical and chemical properties of all the fibers and their uses.

### UNIT V: Textile Finishing

9 hrs

- Definition and importance of finishing
- Classification of Finishes
- Mechanical Finishes
- Chemical Finishes – Mercerization, Parchmentisation, Durable Press, Wash and Wear, Wrinkle Recovery.
- Functional Finishes – Flame retardant, Water Repellent, Antistatic, Moth Proofing.
- Aesthetic Finishes- Anti microbial, Moisture Management, Self Cleaning, Nano technology.

## ESSENTIAL READINGS:

- Trotman, E.R., (1975), Dyeing and Chemical Technology of Textile Fibers, Charles Griffino Company Ltd., London.
- Shenai, V.A., (1991), An Introduction to the Chemistry of Dyestuffs, SevakPrakashan.

**BOOKS RECOMMENDED:**

- Shenai, V.A., (1984) Technology of Textile Processing, Vol.-IX, Sevak Publication.
- Cook, J. Gordon, Hand Book of Textile Fibers: Man-Made Fibers, Merrow Publishing Co. Ltd., England.
- Moncrief, R.W., Manmade Fibers, John Willey & Sons, New York.
- Marsh, J.T.,(1979) An Introduction to Textile Finishing, B.I., Publications.

**PAPER CODE-HCT 124**  
**Clothing & Textiles: Pattern Making**  
**(Practical)**

**Credits: 06**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 06**

**Total Hrs: 90**

**Course Objectives:**

**This course will enable the students to-**

1. To help students in developing skills in pattern making
2. To acquaint students to advanced techniques of designing patterns

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 124	Pattern Making (Practical)	<p><b>The students will be able to –</b></p> <p><b>COCT10:</b> Students read a given design and develop skills of pattern making</p> <p><b>COCT11:</b> Create basic blocks like, bodice, skirt and torso using drafting and flat pattern method</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation, Demonstration, Video's</p> <p><b>Learning Activities for the Students:</b></p>	Portfolio Development, Individual and Group Projects, Semester End Examination

		<b>COCT12:</b> Create paper pattern and construction for various garment components	Self Learning Assignments/Projects	
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## CONTENTS

### 1. Development of Basic Blocks

**10 hrs**

- Bodice and Sleeve (Child & Adult)
- Basic slim skirt
- Ladies trousers

### 2. Introduction to flat pattern making

**40 hrs**

- Principles & Rules of Pattern development:
- Dart Manipulation Methods: Slash & Spread, Pivot method- Adaptation of basic block sloper to Single dart series , two dart series, Cluster of darts & dart equivalents, Graduating & Radiating darts, Parallel darts, Asymmetrical darts & Style line variation.
- Added fullness
- Contouring

### 3. Preparing paper drafts and muslin mocks to be tested on dress forms for:40 hrs

- Set in sleeves
- Sleeve bodice combination
- Collars
- Necklines
- Yokes
- Placket openings
- Skirts
- Pockets
- Cuffs (All dart manipulation to be tested on dress form)

## ESSENTIAL READINGS:

- Armstrong, Helen. Joseph, Draping for Apparel Design, Fairchild Publications, New York.
- Jindal, Ritu., Handbook of Fashion Designing, Mittal Publications, New Delhi.

## BOOKS RECOMMENDED:

- Pamela, C. Stringer., (1995), Pattern Drafting for Dressmaking, Augustan Publishers & Distributors, Delhi.
- M.S. and Mansfield, E.A., Dress Design- Draping & Flat Pattern, London.
- Pepin, Harriet., Modern Pattern Design, New York.
- Winfred, Aldrich., Fabric Form and Flat Pattern Cutting, Om Books Service, New Delhi.
- Bane, A., (1972) Flat Pattern Design, McGraw Hill, New York.

**PAPER CODE-HCT 125**  
**Clothing & Textiles: Applied Textile Design**

**(Practical)**

**Credits: 06**  
**Max Marks: 100 (CA-30, SEE-70)**  
**Contact Hrs/week: 06**  
**Total Hrs: 90**

**Course Objectives:**

**This course will enable the students to-**

1. To impart understanding of different media of application-printing (stencil, block) and special finishes.
2. To equip the students with technical skills of designing competency for different media of application.
3. To develop a professional approach towards the thematic designing for textiles.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 125	Applied Textile Design  (Practical)	<p><b>The students will be able to –</b></p> <p><b>COCT13:</b> Identify the process of design development</p> <p><b>COCT14:</b> Apply various colour mediums on fabrics</p> <p><b>COCT15:</b> Print textile fabrics using different style of printings</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation, Demonstrations, Video</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments/ Projects</p>	Portfolio Development, Individual Projects, Semester End Examination

**CONTENTS**

**Develop of prints using motifs with different repeats & colour schemes.**

- Design development conceptualizing theme board/ mood board, interpreting theme board in line with elements of design **10 hrs**
- Rendering: various textures- yarn fabric finishes & other textures. **10 hrs**
  - Fabric simulation- sheer , medium weight, heavy, pile etc.
  - Colour mixing and colour ways
  - Enlargement & reduction of motifs
- Creating design ornaments **12 hrs**
  - Development of motif



- Concept of design repeat
- Prepare a portfolio for an article using block/ Stencil printing through theme board & Colour story **12hrs**
- Thematic approach to design: Preparation of theme chart/board –depicting colour story and texture indication for fabric yardage for apparel & household textiles. **18 hrs**
- Developing prints using motifs in different repeats & colour schemes for textiles through Corel Draw. **28 hrs**

#### **ESSENTIAL READINGS:**

- Yates, M., Textiles: A Handbook of Designers, WW Norton Publishing Company.
- Prakash., Traditional Indian Motifs, The Design Point, Bombay.

#### **BOOKS RECOMMENDED:**

- Rubin, L.G., (1976) The World of Fashion, Publication Canfield Press, San Francisco.
- Davis, M.L., (1996) Visual Design in Dress, Prentice Hall Inc.
- Prayag, R.S., Technology and Textile Printing, Noyes Data Corporation.
- Shenai V.A., (1977) Technology of Printing – Technology of Textile Processing, Vol. IV, Sevak Publication, Mumbai.
- Meller, Textile Designs, Thames and Hunson Ltd., London.

#### **PAPER CODE-HCT 126**

#### **Clothing & Textiles: Textile Chemistry**

**(Practical)**

**Credits: 06**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 06**

**Total Hrs: 90**

#### **Course Objectives:**

#### **This course will enable the students to-**

1. To acquaint the students about the polymers of the textile fibers
2. To understand the chemistry, production and fundamental properties of natural and synthetic fibers
3. To familiarize with the chemical processing from desizing to finishing of textiles

#### **Course Outcomes (COs):**

Course			

Paper Code	Paper Title	Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
HCT 126	Textile Chemistry (Practical)	<p><b>The students will be able to –</b></p> <p><b>COCT16:</b> Describe the process of identification of various fibers</p> <p><b>COCT17:</b> Understand the mechanism of dyeing of various fibers with different dyes</p> <p><b>COCT18:</b> Understand the functions and uses of different textile equipments of testing</p>	<p><b>Approach in Teaching:</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation, Demonstrations</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments/Projects</p>	Portfolio Development, Individual and Group Projects, Open Book Test, Semester End Examination

## CONTENTS

- Identification of fibers – visual, microscopic, burning and chemical tests. **14hrs**
- Quantitative Analysis of Blends – P/C, P/V, P/W, C/W **10hrs**
- Desizing, scouring, bleaching, mercerization of cotton fabric. **10hrs**
- Swelling characteristics of cotton fiber. **12hrs**
- Identification of dyes, direct, reactive, azoic, vat, sulphur, acid and disperse dyes on fabrics. **28 hrs**
- Use of Colorimeter / Spectrophotometer for determination of dye content through optical density measurement calibration curve **16 hrs**

## ESSENTIAL READINGS:

- Kallal, Marry, Jo., Clothing Construction, MacMillan Press Ltd. 1985.
- Thomas, Anna. Jacob., The Art of Sewing, UBS PD Publishers Ltd., New Delhi.

## ESSENTIAL READINGS:

- Shenai, V.A., (1991) An Introduction to the Chemistry of Dyestuffs, Sevak, Prakashan, Mumbai.

- Trotman, E.R. (1975) Dyeing and Chemical Technology of Textile Fibers, Charles Griffino Company Ltd., London.

**BOOKS RECOMMENDED:**

- Shenai, V.A., (1984) Technology of Textile Processing, Vol.-IX, Sevak Publication, Mumbai
- Cook, J.Gordon., Hand Book of Textile Fibers: Man-Made Fibers, Merrow Publishing Co. Ltd., England.
- Moncrief, R.W., Manmade Fibers, John Willey & Sons, New York.
- Marsh, J.T, (1979) An Introduction to Textile Finishing, B.I., Publications.

**PAPER CODE-HCT 127**  
**Clothing & Textiles: Textile Chemistry**

**(Seminar)**

**Credits: 03****Max Marks: 100 (CA-30, SEE-70)****Contact Hrs/week: 03****Total Hrs: 45****Course Objectives:****This course will enable the students to-**

1. The paper will focus on the current and emerging relevant issues and trends in the discipline.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 127	Seminar	<b>The students will be able to –</b>  <b>COCT19:</b> Gain knowledge of current issues and trends in different areas of apparel designing, apparel construction and apparel production  <b>COCT20:</b> Present a seminar of the emerging issues in the field of textiles	<b>Approach in Teaching :</b>  Discussion, Power Point Presentation  <b>Learning Activities for the Students:</b>  Self Learning , Field Trips	Report Writing, Power Point Presentations, Semester End Examination

**CONTENTS**

Students will present seminar on topics related to current and emerging issues in different areas of apparel designing, construction, production, fashion, textiles, dyeing, printing, fabric manufacturing etc.

Students will give a power point presentation on the given topic and shall be evaluated by the panel of examiners consisting of Head of the Department, external examiner and one appointed by the Principal.

**PAPER CODE-HCT 221**  
**Clothing & Textiles: Home Textiles**

**(Theory)**

**Credits: 03**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 03**

**Total Hrs: 45**

**Course Objectives:**

**This course will enable the students to-**

- To acquire knowledge of history and contemporary concepts of textiles in home sector.
- To understand the nature and potential of the Indian textiles in the global scenario

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 221	<b>HOME TEXTILES</b> <b>(Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>COCT21:</b> Acquire knowledge of innovations in home textiles</p> <p><b>COCT22:</b> Understand the use of finishes in home textiles</p> <p><b>COCT23:</b> Evaluation of home textiles on various parameters</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Individual Projects, , Semester End Examination</p>

## **CONTENTS**

### **UNIT I: Home Textiles**

**9 hrs**

- Classification of home textiles \_ Bedding and bed furnishings, kitchen and table linen, bathroom furnishings, floor coverings, window treatments and upholstery fabrics
- Cultural and historical perspectives
- Period styles in home furnishings
- Innovations in home textiles including high performance materials and use of finishes to enhance functionality.

### **UNIT II: Selection, use, care, storage and maintenance**

**8 hrs**

- Various parameters of selecting textiles for home
- Quality testing of materials
- Care labels
- Maintenance at domestic and commercial levels.

### **Unit III: Finishes used in Home Textiles**

**10 hrs**

- Thermal Draperies
- Protection against unpleasant odour
- Temperature regulated beddings
- Endure Textile Finish
- Antimicrobial Finish
- Moisture Management Finish
- Flame-retardant Finish
- Water and Oil Repellant and Soil Release Finish
- Towel Finishing
- Moisture Cross-Linking of Bed Linen

### **Unit IV: Evaluation of Home Textiles**

**10 hrs**

- Flammability Test for:
  - Towel
  - Mattress
  - Bed Clothing
  - Blankets
  - Upholstered Seating
  - Curtains
- Test for Carpets- Rubber backed carpet skid resistance
- Test for Rugs- Rug back staining on vinyl tile
- Miscellaneous Test for Home Textiles- Oil Repellency- Hydrocarbon Resistance Test, Soil Release- Oil Stain Release Method, Motif/Print durability, Phenolic Yellowing

### **Unit V: Eco-Friendly aspect in home Textiles**

**8 hrs**

- Introduction
- Trademarks and labels used in eco-friendly Home Textiles
- Different Eco-Friendly standards in Home Textiles
- Importance of Eco-labelling

## **ESSENTAIL READINGS:**

- Subrata Das, Performance of Home Textiles, Woodhead Publishing India Pvt. Ltd., Cambridge, 2010
- Howes, Karen (1997) Making the Most of Bedrooms, London, Conran Octopus
- Lebeau, Caroline (2004) Fabrics- the Decorative Art of Textiles, London, Thames and Hudson
- Nieswand, Nonie (1998) Bedrooms and Bathrooms, London, Conran Octopus
- Ranall, Charles T. (2002) Encyclopedia of Window Fashions, California.
- Wingate, Isabel B. (1949) Textile Fabrics and Their Selection, New York, Prentice Hall

**PAPER CODE-HCT 222**  
**Clothing & Textiles: Research Methodology**

**(Theory)**

**Credits: 02**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 02**

**Total Hrs: 30**

**Course Objectives:**

**This course will enable the students to-**

1. To understand the role of statistics and computer applications in research.
2. To apply statistical techniques to research data for analyzing and interpreting data carefully.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 222	Research Methodology (Theory)	<p><b>The students will be able to –</b></p> <p><b>COCT24:</b> Demonstrate knowledge of the scientific method, purpose and approaches to applied statistics</p> <p><b>COCT25:</b> Apply statistical research techniques for data interpretation</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments, Field Trips</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Individual and Group Projects, Semester End Examination</p>

## CONTENTS

### Unit I: Introduction to Statistics

10 hrs

- Statistics- Meaning, Importance, Limitations, Classifications and Tabulation of data, discrete and continuous variables. Frequency Distributions and Cumulative frequency distribution, Diagrammatic (one- dimensional and two- dimensional) and Graphical presentation of data (Histogram, Frequency Polygon, Frequency curve and ogives)
- Measure of Central Tendency- Mean, Median and Mode, their properties, merits and demerits.
- Measure of Dispersion- Range, Quartile Deviation, Mean Deviation and standard deviation, coefficient of variation. Moments, Skew ness and Kurtosis (their absolute and relative measures)

### Unit II: Probability Distributions, Correlation & Regression Analysis 08hrs

- The formal and empirical concept of Probability. Idea of Binomial distribution, Poisson Distribution. Properties of Normal Probability Curve and its applications.
- Correlation Analysis- Definition and concept, types and measures of studying correlation (Karl Pearson's coefficient of correlation, its assumptions, properties, merits and demerits, Spearman's Rank correlation coefficient)
- Regression Analysis- Definition, concept, uses and properties. Least Square Methods, Regression Coefficients, Fitting of Regression lines.

### Unit III

09 hrs

- Sampling Distribution and Standard Error. Element of Testing a Statistical Hypothesis- Formulation of the problem, Types of errors. Level of significance, large sample test for proportions, single mean and difference in two means.

### Unit IV

10 hrs

- Small sample test- Application of Student's t- test for small sample for single mean, difference in two means (independent and paired-t). Chi-square test for testing normal population variance.
- Test for goodness of fit independence of attributes using 2x2 and rxc contingency tables.

### Unit V

08 hrs

- Definition of F-test, application of F-test for testing of equality of two variances.
- Analysis of Variance-Concept, assumptions, Basic ideas of one-way and two-way classification with simple questions.

### ESSENTIAL READINGS:

- Marry Show Ryan, A study in human Behavior by New York, Holt Rinehart & Winston, 1966.
- J.G. Flugel, Psychology of Clothes.
- Rose & Cranz, Concepts of Clothing.



**BOOKS RECOMMENDED:**

- Simpson and Kafka, Basic Statistics, Oxford and IBH Publishers.
- Goon, Gupta and Das, Fundamentals of Statistics Vol. I and II.
- Snedecor and Cochran, Statistical Methods, Oxford and IBH Publishers.

**PAPER CODE-HCT 223**  
**Clothing & Textiles: Dyeing and Printing**  
**(Theory)**

**Credits: 03****Max Marks: 100 (CA-30, SEE-70)****Contact Hrs/week: 03****Total Hrs: 45****Course Objectives:****This course will enable the students to-**

1. To impart the knowledge on concept of color
2. To impart the knowledge about preparation of fabric for dyeing & printing.
3. To understand the theory of dyeing in relation to various classes of dyes.
4. To study application of various dyes and properties related to it.
5. To inculcate awareness of the different methods of printing and appreciate the technical advantages of each.
6. To develop technical competency in printing with different dyes on different fabrics.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 223	Dyeing and Printing (Theory)	<p><b>The students will be able to –</b></p> <p><b>COCT26:</b> Understand the concept of colour</p> <p><b>COCT27:</b> Describe the process of dyeing of various fibers with different dyes</p> <p><b>COCT28:</b> Understand the mechanism of various printing techniques with different dye medium</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation, Demonstrations</p> <p><b>Learning Activities for the Students:</b></p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Individual and Group Projects, Semester End Examination</p>

			Self Learning Assignments	
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## CONTENTS

### UNIT I: Dyeing

#### Preparation of Fabric: 9 hrs

- Pre-treatment's of fabric for Dyeing and Printing – scouring, bleaching, singeing, desizing.
- Specific preparatory steps for cotton, wool, silk and man-made fibers.

#### UNIT II: Dyeing Mechanism

12 hrs

- Dye, classification of dyes, Chemical constitution of dyes
- Theory of Dyeing
- Dyeing with synthetic dyes.
  - Direct, vat, reactive sulphur, Azoic (for cellulosic)
  - Acid, basic (for proteins)
- Stages of dyeing – fiber dyeing, yarn dyeing, fabric dyeing, garment dyeing, their advantages and disadvantages.
- Union dyeing and cross dyeing.
- Dyeing defects and remedies.

#### UNIT III: Color

8 hrs

- Introduction of color – Color&Color mixing
- Color Perception
- Instruments for measurements of color
- Defective colour vision

#### UNIT IV: Printing

8 hrs

- Introduction to Printing, difference between dyeing and printing.
- Historical development of printing methods – block, screen, stencil, roller and rotary.
- Preparation of printing paste – Thickening agents and their suitability for various classes of dyes and fibers.

#### UNIT V: Printing Procedure

8 hrs

- Styles of Printing – Direct, resist, discharge.
- Special Printing Procedures – Transfer Printing, Flock Printing, Foam Printing, Damask Printing.

### ESSENTIAL READINGS:

- Shenai, V.A ., (1987) Chemistry of Dyes and Principles of Dyeing, SevakPrakashan, Mumbai.
- Prayag, R.S., Technology Textile Printing, Noyes Data Corporation.

### BOOKS RECOMMENDED:

- Lubs, H.A. & E. Robert., The Chemistry of Synthetic Dyes and Pigments, Kreiger Publishing Company, New York.

- Shenai, V.A., (1999) Azo Dyes- Facts & Figures, SevakPrakashan, Mumbai.
- Shenai, V.A., (1977) Technology of Printing, Technology of Textile Processing, Vol. IV, Sevak Publications.
- Gulrajani, M.L. and Gupta Deepti., (1990) Natural Dyes and their Application to Textiles, ed., I.T Delhi Publication.
- John & Margarot, Cannon., (1994) Dye Plants & Dyeing, The Herbert Press, UK.
- Venkatraman, K., (1970) Chemistry of Synthetic Dyes, Part I and Part II.

**PAPER CODE-HCT 224**  
**Clothing & Textiles: Business of Fashion**

(Theory)

**Credits: 03**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 03**

**Total Hrs: 45**

**Course Objectives:**

**This course will enable the students to-**

- To understand the concept and factors involved in fashion.
- To learn about the centres of international fame & their contribution in fashion.
- To develop understanding of merchandising & retailing and its importance in today's consumer market.
- To gain knowledge about the management aspect of retailing.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 224	<b>Business of Fashion (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>COCT29:</b> Knowledge of international fashion centres and their role in fashion industry</p> <p><b>COCT30:</b> Knowledge of merchandising activities in a retail setup</p> <p><b>COCT31:</b> Manage stakeholders involved in retailing</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments, Field Trips</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Individual and Group Projects, Semester End Examination</p>

## **CONTENTS**

### **UNIT I: Fashion Concepts**

**12hrs**

- Fashion Terminology, Principles of Fashion.
- Theories of Fashion Adoption:
  - Traditional Fashion Adoption (Trickle Down Theory)
  - Reverse Adoption (Trickle Up or Bottom Up Theory)
  - Mass Dissemination (Trickle Across Theory)
- Components of Fashion – Silhouette, Detail, Colour, Fabric, Texture.
- Psychology of Fashion, Factors affecting fashion and its change.

### **UNIT II: Fashion Evolution & Centers**

**8hrs**

- Fashion Evolution – Fashion Cycle, Length of cycle, Fashion Leaders & Followers.
- Fashion forecasting.
- Sources of advanced fashion information
- Fashion Centers: France, Italy, England & United States, Milan, Japan

### **UNIT III: Marketing Management**

**7hrs**

- Introduction to Management and its Basic functions.
- Fashion Marketing and Marketing Environment
- Level of Market Segmentation
- Segmenting Consumer Markets

**UNIT IV: Merchandising****10hrs**

- Introduction & elementary knowledge of Merchandising.
- Merchandise Planning- Planning, controlling and executing merchandise budget, costing & pricing strategies.
- Visual Merchandising- Types of displays-Window display and interior display, careers in merchandising and the future of merchandising.

**UNIT V: Retailing****8hrs**

- Meaning & importance of retailing.
- Modern retail stores and future trends (Franchise retailing, Departmental stores, specialty stores, chain retailers, mail order houses, shopping malls).
- Designer label v/s Brands.
- E- Retailing

**ESSENTIAL READINGS:**

- Gini, Stephens. Frings., Fashion from Concept to Consumer, Prentice Hall, New Jersey.
- Stone, Elaine. & Samples, J.A., Fashion Merchandising: An Introduction, McGraw Hill Book Company, New York.

**BOOKS RECOMMENDED:**

- Harold, Carr& Barbara, Latham., Fashion Design and Product Development, (1992), Blackwell Science Ltd.
- Carter, E., The Changing World of Fashion, (1977), G.P.Putnam's Sons, New York.
- Rubin, L.G., The World of Fashion, (1976), Canfield Publication, San Fransisco.
- Brackman, Helen. L., Theory of Fashion Design, John Wiley and Sons, New York.
- Sharon, Lee. Tate., Inside Fashion Design, Harper and Row Publishers, New York.
- Cahan, L., A practical guide to Visual Merchandising, (1984), John Wiley and Sons, New York.
- Packard, S., Fashion Buying & Merchandising (2<sup>nd</sup> Edition), (1983), Fairchild, New York.

**PAPER CODE-HCT 225**  
**Clothing & Textiles: Fashion Illustration**

**(Practical)**

**Credits: 06****Max Marks: 100 (CA-30, SEE-70)****Contact Hrs/week: 06****Total Hrs: 90****Course Objectives:****This course will enable the students to-**

1. To focus on design details, creation of styles and rendering techniques using different
2. colour mediums.

- To enhance the creative skills of drawing, sketching and rendering colours for designing garments and accessories based on themes.

### Course Outcomes (COs):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 225	<b>FASHION ILLUSTRATION (Practical)</b>	<p><b>The students will be able to –</b></p> <p><b>COCT32:</b> Understand the fundamentals of fashion illustration and rendering techniques.</p> <p><b>COCT33:</b> Acquire skills in drawing, editing and transformation through Corel Draw/Illustrator</p> <p><b>COCT34:</b> Acquire skills in creating textile design through Adobe Photoshop</p> <p><b>COCT35:</b> Use software to undertake design projects</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation, Video, Demonstrations</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments, Portfolio Development</p>	Portfolio Development, Power Point Presentations, , Individual and Group Projects, Semester End Examination

### CONTENTS

#### Prepare a portfolio through manual and CAD (Photoshop & Corel Draw) sketching for fashion illustration.

- Sketching garment & garment details – Pockets, waist bands, cuffs, sleeves, collars, necklines, skirts, trousers & coats/ jackets **14 hrs**
- Studying Anatomy. Stick figure, Fleshing and Skin rendering of 10 ½ head female croqui with different poses (Front, Back & Side view) Theme Rendering – Developing a line of garment & accessories based on theme and fabrics selected for: **46 hrs**
  - Casual wear.
  - Sportswear.
  - Bridal wear.
  - Evening wear.
  - Executive (Business wear)
  - Night wear.
  - Beach wear.
  - Winter wear.
  - Traditional wear.

- Different figure size/types – Sketching designs for various textures and prints to suit the figures and sizes. **20 Hrs**

- Sketch the various fashion accessories Belts, Footwear's, Bags and Jewellery. **10 Hrs**

**ESSENTIAL READINGS:**

- Abling, Bina., Fashion Sketchbook, Fairchild Publishers, New York.
- Ireland, Patrick. John.,s Fashion Illustration, B.T. Batsford Ltd. London.

**BOOKS RECOMMENDED:**

- Mckelvey, Kathryn., Illustrating Fashion, Blackwell Science, Janine
- Seaman, Julian., Professional Fashion Illustration, B.T.Batsford Ltd., London.
- Allen, Anne. & Seaman, Julian., Fashion Drawing-The Basic Principles, B.T. Batsford Ltd. London.
- Casteino, M., Fashion Kaleidoscope, Rupa and Co, Calcutta.
- Tate, S.L., The Complete Book of Fashion Illustration (1987), Harper R.Row, New York
- Turnpenny, J.M., (1986) Fashion Design and Illustration I- Basic Guidelines, Century Hutchison, London.

**PAPER CODE-HCT 226  
Clothing & Textiles: Applied Statistics**

**(Practical)**

**Credits: 04**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 03**

**Total Hrs: 45**

**Course Objectives:**

**This course will enable the students to-**

- To understand the role of statistics and computer applications in research.
- To apply statistical techniques to research data for analyzing and interpreting data carefully.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 226	Applied Statistics (Practical)	<p><b>The students will be able to –</b></p> <p><b>COCT36:</b> Identification of various types of data measurement tools/tests/procedures and understanding the concept of standardization and reliability and validity</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Power Point Presentation</p>	<p>Report Writing, Power Point Presentations, Semester End Examination</p>

		<p><b>COCT37:</b> Develop skill to organize the data and effectively use appropriate quantitative and qualitative statistical software for analysis of data</p> <p><b>COCT38:</b> Draw conclusions and interpretations from the analyzed data and write reports</p>	<p><b>Learning Activities for the Students:</b></p> <p>Self Learning Projects</p>	
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## CONTENTS

**Note:** Students should be given hand-on experiences to use appropriate software packages for selected statistical analysis.

- Frequency distribution, histogram, frequency polygons, ogive. **2hrs**
- Measures of Central Tendency, Measures of Variation. **5hrs**
- Coefficient of correlation, Regression and prediction. **5hrs**
- Chi-square tests- Goodness of fit, Independence of Attributes 2x2 and rxcontingency tables. **7hrs**
- Application of Student's t-test for small samples- test of significance of single mean, difference in means. **4hrs**
- F-test for two sample variances. **3hrs**
- Analysis of Variance- one-way classification, two-way classification with and without replication. **4hrs**

## ESSENTIAL READINGS:

- Gupta, S.P., Statistical Methods, Sultan Chand and Company, New Delhi.

## BOOKS RECOMMENDED:

- Simpson and Kafka: Basic Statistics, Oxford and IBH Publishers.
- Goon, Gupta and Das: Fundamentals of Statistics Vol. I and II.
- Snedecor and Cochran: Statistical Methods, Oxford and IBH Publishers.
- Shukla, M.C. and Gulshan S.S.: Statistics Theory and Practice, Sultan Chand and Company, New Delhi.
- Gupta, S.C. and Kapoor V.K.: Fundamental of Mathematical Statistics, Sultan Chand and Company, New Delhi.



**PAPER CODE-HCT 227**  
**Clothing & Textiles: Dyeing and Printing**  
**(Practical)**

**Credits: 06**  
**Max Marks: 100 (CA-30, SEE-70)**  
**Contact Hrs/week: 06**  
**Total Hrs: 90**

**Course Objectives:**

**This course will enable the students to-**

1. To impart the knowledge about preparation of fabric for dyeing & printing.
2. To study the application of various dyes on different textile substrates.
3. To inculcate awareness of the different methods of printing and appreciate the technical advantages of each.
4. To develop technical competency in printing with different dyes on different fabrics.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 227	Dyeing and Printing (Practical)	<p><b>The students will be able to –</b></p> <p><b>COCT39:</b> Apply various class of dyes on yarns/ fabrics of different fibers and fiber blends</p> <p><b>COCT40:</b> Print textile fabrics in different styles using suitable dyes</p> <p><b>COCT41:</b> Develop sample using different dyeing and printing methods with various fabrics</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation, Demonstrations</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments, Field Trips/Industry Visits</p>	Power Point Presentations, Individual and Group Projects, Semester End Examination

**CONTENTS**

- Dyeing of yarns and fabric with different classes of dyes **30 hrs**
  - Direct, Reactive, Vat, Sulphur, Azoic.
  - Acid, Basic

- Preparation of screens for printing and its application. **30 hrs**
- Printing with blocks and screens on cotton and silk in different styles with different dye class. **30 hrs**
  - Direct style
  - Resist style
  - Discharge style

**ESSENTIAL READINGS:**

- Shenai, V.A., (1987) Chemistry of Dyes and Principles of Dyeing, SevakPrakashan, Mumbai.
- Prayag, R.S., Technology Textile Printing, Noyes Data Corporation.

**BOOKS RECOMMENDED:**

- Lubs, H.A.& Robert, E., The Chemistry of Synthetic Dyes and Pigments, Kreiger Publishing Company, New York.
- Shenai, V.A., (1999) Azo Dyes- Facts & Figures, SevakPrakashan, Mumbai.
- Shenai, V.A., (1977) Technology of Printing, Technology of Textile Processing, Vol. IV, Sevak Publications.
- Gulrajani, M. L. and Gupta, Deepti., (1990) Natural Dyes and their Application to Textiles. Ed., I.I.T Delhi Publication.
- John & Margarot, Cannon, (1994) Dye Plants & Dyeing, The Herbert Press (UK).
- Venkatraman, K., (1970) Chemistry of Synthetic Dyes, Part I and Part II.

**PAPER CODE-HCT 228  
Clothing & Textiles: Seminar**

**(Seminar)**

**Credits: 03**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 03**

**Total Hrs: 45**

**Course Objectives:**

**This course will enable the students to-**

1. The paper will focus on the current and emerging relevant issues and trends in the discipline.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			

<b>HCT 228</b>	<b>Seminar</b>	<p><b>The students will be able to –</b></p> <p><b>COCT42:</b> Demonstrate knowledge of scientific writing method and styles</p> <p><b>COCT43:</b> Develop a research proposal on a topic relevant to their field</p> <p><b>COCT44:</b> Prepare a scientific report</p> <p><b>COCT45:</b> Develop skill for presentation on a selected topic</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Projects</p>	<p>Report Writing, Power Point Presentations, Semester End Examination</p>
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### CONTENTS

Students will present seminar based on research findings on topics related to current and emerging issues in different areas of apparel designing, construction, production, fashion, textiles, dyeing, printing, fabric manufacturing etc.

Students will give a power point presentation on the given topic and shall be evaluated by the panel of examiners consisting of Head of the Department, external examiner and one appointed by the Principal.

### PAPER CODE-HCT 321

#### Clothing & Textiles: Apparel Production Technology

(Theory)

**Credits: 04**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 04**

**Total Hrs: 60**

#### Course Objectives:

#### This course will enable the students to-

1. To understand various processes and technical parameters of garment production.
2. To enhance awareness of several product machinery & equipment.
3. To study various production systems and their management.

#### Course Outcomes (COs):

<b>Course</b>			
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Paper Code	Paper Title	Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
HCT 321	<b>Apparel Production Technology (Theory)</b>	<p><b>The students will be able to –</b></p> <p><b>COCT46:</b> Knowledge of garment industry, structure and functioning</p> <p><b>COCT47:</b> Familiarity with various machines, tools and equipment used in garment industry</p> <p><b>COCT48:</b> Understand various materials and components of garment production</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments, Field Trips/Industry Visits</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Group Projects, Semester End Examination</p>

## CONTENTS

### UNIT I: RMGI

**12 hrs**

- Importance of Readymade Garment Industry in Indian economy and global market.
- Growth & development of RMGI.
- SWOT analysis of RMGI.
- Type of garments manufactured & marketed
- Introduction to mass production-process flow chart

### UNIT II: Pre-production in Apparel Industry

**12 hrs**

- Principles of Management.
- Design Department- Forecasting, Designing, Production of sample garments.
- Cutting & Spreading:
  - Marker types & calculations,
  - Spreading process & equipments
  - Types of cutting machines
  - Ticketing & Bundling-Purpose & types
- Pre-production- Fusing & pre folding machines

### UNIT III: Production Planning & Control

**12 hrs**

- Production system-Types, Salient features & specific uses
- Specification sheet- Parts, types and preparation
- Production planning & Control- Scheduling, capacity plans, planning process, supply chain management, enterprise resource planning, plant layout

### UNIT IV: Production

**12 hrs**

- Types of sewing threads, needles
- Sewing machinery-Parts, types & work aids
- Sewing defects
- Classification of seams & stitches - suitability & usage
- Alternate methods of joining material (fusing, welding & adhesives) equipment & techniques
- Attachment of labels

#### **UNIT V: Post production Machinery & Processes**

**12 hrs**

- Production finishing- bar tack, button, buttonhole
- Garment finishing – Stain removal, cleaning, dry cleaning & pressing
- Specialized finishing – Moulding form finishing
- Packaging & dispatch-Types of packages & materials, machines used for packaging
- Application of computers in the garment industry.

#### **ESSENTIAL READINGS:**

- Gerry, Cooklin., Introduction to Clothing Manufacture, Black Well Science, London.
- Darlie, Koshy., Effective Export Marketing of Apparel, Global Business Press.
- Mehta, Pradip V and Bhardwaj S.K., Managing Quality in Apparel Industry, New Age International Publishers, New Delhi.
- Glock & Kuntz (1995) Apparel Manufacturing- Seven product analysis

#### **BOOKS RECOMMENDED:**

- Harold, Carr& Barbara, Latham, The Technology of Clothing Manufacture, Blackwell Science, London.
- Chuter, A.J., Introduction to Clothing Production Management, Blackwell Science, London.
- Tyles, D.J., Materials Management in Clothing Production, Blackwell Science, London.
- Stylios, G., (1991): Textiles objective Measurement and Automation in Garment Manufacture, Ellis Howard Ltd., New York.
- Bheda R (2003) Managing productivity in Apparel Industry, New Delhi, CBS Publishers
- Carr. H. & Latham B. (1984), The technology of clothing manufacture, Blackwell Scientific Publication.

### **PAPER CODE-HCT 322 Clothing & Textiles: Historic Costumes**

**(Theory)**

**Credits: 04**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 04**

**Total Hrs: 60**

#### **Course Objectives:**

#### **This course will enable the students to-**

- To gain knowledge of the significant development in production of textiles in the world.
- To assess similarities and dissimilarities in different civilizations in terms of production, Ornamentation and usage.

- To acquaint students with the prevailing designs of costumes worn by people of different countries during different periods.

### Course Outcomes (COs):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 322	Historic Costumes (Theory)	<p><b>The students will be able to –</b></p> <p><b>COCT49:</b> Understand key techniques in the textile history and apply these to the identification of textiles</p> <p><b>COCT50:</b> Familiar with the beginnings of the textile industry in ancient civilizations</p> <p><b>COCT51:</b> Recognize and appreciate the design effects in textile masterpieces of the world</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation, Video, Demonstrations</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments, Field Trips</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Individual and Group Projects, Semester End Examination</p>

### CONTENTS

#### UNIT I: Beginning of Costumes

12 hrs

- Source of evidence for the study of historic costumes
- The origin of dress
- Clothing as an art form
- Relationship between textile production and its use in dress

#### UNIT II:The Ancient World

12 hrs

- Mesopotamia
- Egypt
- Greece
- Rome
- India

#### UNIT III: English Costumes

12 hrs

- English costumes during middle ages
- Early middle ages

- Late middle ages

**UNIT IV: French Costumes 12 hrs**

- Renaissance in France (1500 A.D)
- Renaissance in France (1600 A.D)
- Renaissance in France (1700 A.D)

**UNIT V: The French Revolution and thereafter (1790 A.D - 1900 A.D.) 12 hrs**

- The Directoire and empire period (1790 A.D.-1820 A.D.)
- The Romantic period (1820A.D. -1850 A.D.)
- The Crinoline period (1850A.D.-1869A.D.)
- The Bustle period (1870A.D.-1900A.D.)

**ESSENTIAL READINGS:**

- Gillow, John and Sentence, Bryan., (1999) World Textiles, Thames and Hudson, London.
- Jamila, Brij ,Bhushan., Costumes & Textiles of India, Taraporevala Sons & Co. Pvt. Ltd. Mumbai.
- Akazi, Roshan., Ancient Indian Costumes, Art heritage, New Delhi,.

**Books Recommended:**

- Dupont, Auberville., M. (1989) Classic Textiles, Bracken Books, London.
- Harris, Jennifer., (1993) Textiles 5000 years, Henry and Brans Inc. New York.
- Houston, G.M., (1954) Ancient Egyptian, Mesopotamian and Russian costume and decoration, Adam and Charles Black, London.
- Philips, Cunnington., (1966) English Costume, A C. Black Ltd. London.
- Racinet, Albert., Historical Encyclopedia of Costumes, Studio Editions, England.
- Ghurye, G.S., Indian Costumes, Popular Prakashan, Mumbai.

**PAPER CODE-HCT 323**

**Clothing & Textiles: Draping**

**(Practical)**

**Credits: 04**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 04**

**Total Hrs: 60**

**Course Objectives:**

**This course will enable the students to-**

1. To enable the students to obtain perfect fit and harmony between the fabric & design of the garment.

### Course Outcomes (COs):

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 323	Draping (Practical)	<p><b>The students will be able to –</b></p> <p><b>COCT52:</b> Style read a given design</p> <p><b>COCT53:</b> Create basic blocks like, bodice, skirt and torso using draping method</p> <p><b>COCT54:</b> Develop various styles in bodice and skirts with adaptation techniques</p> <p><b>COCT55:</b> To design a garment with draping method</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation, Demonstrations</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	Portfolio Development, Individual and Group Projects, Semester End Examination

### CONTENTS

#### Pattern development through draping: (Woven and Knitted)

##### Design variation:

- **Basic Bodice & its adaptation to tops for the following 20 hrs**
  - Manipulating dart excess at different locations
  - Dividing dart excess- Waist & side seam, waist & shoulder
  - Dart equivalents – Gathers, pleats and tuck darts
  - Asymmetrical darts
- **Skirt & its adaptation 20 hrs**
  - A-Line
  - Flared
  - Panel
  - Gathered
  - Pleated
  - Stylized yoke with flare, gathers & pleats
  - Peplums & Godets
- **Garment Designing 20 hrs**
  - Top
  - Skirts
  - One Piece Dress



**ESESENTIAL READINGS:**

- Jaffe., Draping for Fashion Design, Prentice Hall Ltd., London.
- Armstrong, H Joseph., (2000). Draping for Apparel Design, Fairchild, New York

**BOOKS RECOMMNEDED:**

- Crawform, C.A., The Art of Fashion Draping, Fairchild Publications, New York.
- Hillhouse, M.S. and Mansfield, E.A., Dress Design- Draping and Flat Pattern, London.
- Sheldon, Maratha Gene., Design through draping, USA Burgers Publishing Company.

**PAPER CODE-HCT 324**  
**Clothing & Textiles: Apparel Construction**  
**(Practical)**

**Credits: 06****Max Marks: 100 (CA-30, SEE-70)****Contact Hrs/week: 06****Total Hrs: 90****Course Objectives:****This course will enable the students to-**

1. To impart an in-depth knowledge of garment construction techniques.
2. To enable the students to obtain harmony of fabric and design of the garment.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 324	Apparel Construction (Practical)	<p><b>The students will be able to –</b></p> <p><b>COCT56:</b> Style read of a given design</p> <p><b>COCT57:</b> Create basic blocks for bodice, skirt and torso using draping method</p> <p><b>COCT58:</b> Understand handling of different fabrics for garment construction</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation, Demonstrations</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	Portfolio development, Individual and Group Projects, Semester End Examination

## CONTENTS

- **Grading Techniques:** Importance, introduction to different methods: Nested/Stacked and Track method. Procedure for grading adult bodice, sleeve, trouser, skirt to various sizes.

**10 hrs**

- **Paper pattern 8hrs**

- Parts of a paper pattern
- Decoding a pattern, symbols used, layout on different width of fabrics

- **Stitching the muslin mock-ups for**

**30hrs**

- Necklines (Scooped & Raised)
- Collars (Flat, Raised, Stand & Grown on)
- Sleeves (Set in & Sleeve bodice combination)
- Pockets (In seam, Slashed, Patch)
- Plackets
- Yoke (Bodice & Skirt)
- Skirts (Layered, Gored, Panel)

- **Handling of different fabrics:** stripes, checks, plaids, slippery fabric, Shear and uni-directional fabrics. Constructing the following garments on above fabric using appropriate seams, seam finishing, plackets, pockets, fasteners, trimming & decoration **42 hrs**

- Children: Bu-Shirt/Shorts  
Different styles of frocks

- Adult: One piece dress  
Skirt & Top

Ladies Kurta & Salwar Kameez

## ESSENTIAL READINGS:

- Jindal, Ritu., Handbook for Fashion Designing, Mittal Publications, New Delhi
- Thomas, Anna, Jacob., The Art of Sewing, UBSPD, Publishers Distributors, Ltd., New Delhi.

## BOOKS RECOMMENDED:

- Claire, Shaeffer., Fabric Sewing Guide, Chitton Book Company, Radnot Pennsylvania.
- Grate and Storm., Concepts in Clothing, Mc Graw Hill Book Co., New York.
- Doongaji, S & Deshpande, R., Basic processes & clothing construction, RaajPrakashan, New Delhi.

**PAPER CODE-HCT 325**  
**Clothing & Textiles: Fabric Manufacturing**

**(Practical)**

**Credits: 06**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 06**

**Total Hrs: 90**

**Course Objectives:**

**This course will enable the students to-**

- To enable students to understand and learn methods of developing fabrics, using different fibers, yarn and fabric making techniques.
- To gain knowledge and understanding of fundamentals of weaving machinery and processes.
- To analyse different weave patterns and learn principles of creating designs through weaving.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 325	Fabric Manufacturing (Practical)	<p><b>The students will be able to –</b></p> <p><b>COCT59:</b> Understand the components of a textile fabric</p> <p><b>COCT60:</b> Knowledge of appropriately selected fabrics based on their properties, cost and recommended end uses</p> <p><b>COCT61:</b> Knowledge of weaving machinery and their process for woven fabric construction</p> <p><b>COCT62:</b> Learn principles of creating designs through weaving</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	Portfolio development, Individual and Group Projects, Semester End Examination

**CONTENTS**

- Collection of woven fabrics and their identification **10hrs**
- Fabric analysis for design, repeat, draft, peg plan. **10hrs**
- Weaving: Setting up of a simple loom – winding, warping, drafting, and drawing in. **10 hrs**
- Sample preparation of various weaves on looms **24 hrs**
- In terms of number specification and patterns **8hrs**
- Creating samples for stripes, checks, towels etc **10 hrs**
- Preparation of knitting samples (hand & flat bed knits) **8 hrs**
- Visit to weaving, knitting and non-woven industry **10 hrs**

**ESSENTIAL READINGS:**

- Grociki, Z.J., Watsons Textiles Design and Colour, London, Newness Butter Worths.
- Sengupta, R., Weaving Calculations, Taraporewale Sons and Co., Bombay.

**BOOKS RECOMMENDED:**

- Corbman, B., Fiber to Fabric, 6<sup>th</sup>, McGraw Hill Book Company, USA
- William, Watson. Advanced Textiles Design, Longmans Green and Co. Ltd., London.
- Nisbet, H., Grammar of Textile Design, Taraporewale Sons and Co., Bombay.
- Aswani, K.T., Weaving Mechanisms, Mahajan Book Distributors, Ahmedabad.
- Robinson and Mark., Woven Cloth Construction, Butter Worth and Co. Ltd., London.
- Kulkarni, M.M., Weaving Technology, Mahajan Book Distributors, Ahmedabad.
- Ajgaonkar, D.B., Knitting Technology, Universal Publishing Corporation, Mumbai.

**PAPER CODE-HCT 326**  
**Clothing & Textiles: Dissertation Synopsis**

**Credits: 06****Max Marks: 100 (CA-30, SEE-70)****Contact Hrs/week: 06****Total Hrs: 60****Course Objectives:****This course will enable the students to-**

- To prepare synopsis for the research in textile & apparel industry
- To be able to appreciate importance of research.
- To able to write chapters for dissertation.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
<b>HCT 326</b>	<b>DISSERTATION SYNOPSIS</b>	<b>The students will be able to –</b>  <b>COCT63:</b> Describe and prepare the research synopsis in textile & apparel industry	<b>Approach in Teaching :</b>  Discussion, Power Point Presentation	Report Writing, Power Point Presentations, Semester End Examination

		<b>COCT64:</b> Development of research approach in the field of textile apparel industry	<b>Learning Activities for the Students:</b>  Self Learning projects	
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The students shall prepare synopsis and will give its presentation. The Head of the department, Supervisor and other senior member appointed by the Principal shall conduct a viva-voce and evaluate the synopsis and the presentation.

**PAPER CODE-HCT 327**  
**Clothing & Textiles: Internship**

**Credits: 02**

**Max Marks: 100 (CA-30, SEE-70)**

**Course Objectives:**

**This course will enable the students to-**

- To create awareness regarding current trends, issues and researches related to various aspects of Clothing & Textiles.
- To gain practical experience in different units of clothing and textile industry

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
<b>HCT 327</b>	<b>Internship</b>	<p><b>The students will be able to –</b></p> <p><b>COCT65:</b> Gain knowledge and awareness about industrial manufacturing process in the field of apparel and textiles</p> <p><b>COCT66:</b> Gain practical experience in different units of clothing and textile industry</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Projects, Industry Visits</p>	Report Writing, Power Point Presentations, Semester End Examination

In the end of II Semester, students will undergo internship training of 45 days in a textile designing unit/ apparel manufacturing unit/ textile dyeing and printing unit/ apparel export unit/ boutiques/ fashion houses etc. so that they get to understand the existing working practices, conditions and acquire an in-depth technical knowledge. The student shall prepare a report on the visit made by the organization. She will submit the report and will be required to make the presentation of the work followed by viva-voce. The students will be required to get the certificate regarding successful training.

**Evaluation:** Panel of examiners consisting of Head of the department, and two other examiners appointed by the Principal shall conduct a vice-voce and evaluate the reports. The students will be given marks out of 100, which will be converted to credits as per the programme.

**PAPER CODE-HCT 421**  
**Clothing & Textiles: Textile Testing and Quality Control**  
**(Theory)**

**Credits: 03**  
**Max Marks: 100 (CA-30, SEE-70)**  
**Contact Hrs/week: 03**  
**Total Hrs: 45**

**Course Objectives:**

**This course will enable the students to-**

1. To develop an understanding of methods and techniques used to analyze textile fiber, yarns and fabrics for end-use performance.
2. To acquire knowledge and understanding of various structural properties of textiles and relate to end use fabric performance and product.
3. To be able to analyze and interpret the results and predict textile testing.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 421	Textile Testing and Quality Control (Theory)	<p><b>The students will be able to –</b></p> <p><b>COCT67:</b> Understand the structure and production techniques of various natural and manmade fibers and their physical properties</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Individual and Group Projects, Semester End Examination</p>

		<p><b>COCT68:</b> Gain understanding of quality parameters for fiber, yarn and fabrics</p> <p><b>COCT69:</b> Acquire skills to inspect, manage and control quality in the textile industry</p>	<p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	
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## CONTENT

### UNIT I: Introduction to Textile Testing

9 hrs

- Objectives of textile testing.
- Selection of samples for testing – Random sampling procedures for determination of properties of fibers, yarn and fabrics.

### UNIT II: Textiles and Moistures

9 hrs

- Standards atmospheric test condition, various methods to measure relative humidity, moisture content and moisture regain of textiles.
- Factors affecting regain of textile materials and their effects on fiber properties.

### UNIT III: Fiber and Yarn Dimensions

9 hrs

- Fiber testing – length fineness and evenness, its implication on quality
- Yarn testing – fineness, twist, crimp, elongation and strength.

### UNIT IV Fabric Dimensions and Properties

9 hrs

- Fabric Testing – Strength, elongation, shrinkage, thickness, cover, air permeability, crease recovery, stiffness, weight, repellency drape.
- Fabric inspection procedure its defects and their analysis.

### UNIT V Standardization

9 hrs

- Standards for fabric performance.
- Organizations for standardization (National & International)
- Quality control of textile products BIS, ASTM, ISO, BS, AATCC, India, atmi, ginetex& others
- Quality standards as applicable to various types of textiles (garments, knits, woven, carpets)
- Eco labels, silk mark, wool mark & international labels.

## ESSENTIAL READINGS:

- Booth, J.E., Principles of Textile Testing, Newness Butter Worth, London.
- John, H. Skinkle., Textile Testing, Brooklyn, New York.

## BOOKS RECOMMENDED:

- Billie, J. Collier and Helen, H. Epps., Textile Testing and Analysis, Prentice Hall, New Jersey.
- Grover and Hamby., Hand Book of Textile Testing and Quality Control, Wiles

**PAPER CODE-HCT 422**  
**Clothing & Textiles: Scientific Writing**  
**(Theory)**

**Credits: 04**  
**Max Marks: 100 (CA-30, SEE-70)**  
**Contact Hrs/week: 04**  
**Total Hrs: 60**

**Course Objectives:**

**This course will enable the students to-**

1. To develop and improve the scientific and technical writing skills.
2. To enable to produce clear and effective scientific documents.
3. To enhance the level of technical communication and practices

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 422	Scientific Writing (Theory)	<p><b>The students will be able to –</b></p> <p><b>COCT70:</b> Demonstrate knowledge of scientific writing method and styles</p> <p><b>COCT71:</b> Understand the process of writing effective scientific documents</p> <p><b>COCT72:</b> Knowledge of writing project proposal for grants</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentations</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Semester End Examination</p>

**CONTENTS**

**Unit I**

**12hrs**

- **Key elements of scientific writing**
  - Quality information



- Nature of language
- Structure
- **Characteristics of scientific writing**
  - Clear and precise use of language
  - Accessibility to the intended audience
  - Correct information
  - Logical sequencing of information
  - Use of correct grammar
  - Appropriate use of technical terms, illustrations or diagrams

## Unit II

12hrs

- **Drafting a scientific document**
  - Research the document
  - Gather information
  - Plan the format
  - Create an outline
  - Write first draft
  - Check the accuracy
  - Revise and amend the document
- **Type of academic journal articles**
  - Letters/communications
  - Research notes
  - Articles
  - Supplemental articles
  - Review articles

## Unit III

12hrs

- **Writing effective scientific documents**
  - Reports (Research/Progress)
  - Scientific paper (Journal/Conference)
  - Review paper
  - Abstracts
  - Theses
  - Electronic/Web based document
- **Elements of scientific documents**
  - Sections/subsections
  - Headings/subheadings
  - Front matter (Title, Title page, Abstract, Table of contents, List of figures, List of tables, List of terms, Acknowledgements)
  - Body (Introduction, Review of literature, Methodology, Results, Discussions, Summary, Conclusion, Recommendations)
  - End Matter (References, Appendices, Indices)

## Unit IV

12hrs

- **Ethics and scientific publication**
  - Permission
  - Data fabrication and falsification
  - Plagiarism
  - Redundant and duplicate publication
  - Conflict of interest
  - Authorship issues

- Animal and human welfare concerns
- Reviewer responsibility
- **Oral Presentation**
  - Format of oral presentation (Informal/formal)
  - Visual aids – LCD projector, overhead projector (OHP) and transparencies or other display media
  - Delivery – Voice projection, Body language, Spoken v. written language, Notes, Time limit

#### **Unit V**

**12hrs**

- **Writing a project proposal for grants**
  - Rationale and importance of research
  - Empirical and Theoretical conceptualization
  - Presenting pilot study/ data
  - Research proposal and time frame
  - Clarity and specificity of method
  - Clear organization
  - Outcome of research and its implications
  - Budgeting
  - Available infrastructure and resources
  - Executive summary

#### **ESSENTIAL READINGS:**

- Kallal, Marry, Jo., Clothing Construction, MacMillan Press Ltd. 1985.
- Thomas, Anna. Jacob., The Art of Sewing, UBS PD Publishers Ltd., New Delhi.

#### **ESSENTIAL READINGS:**

- Robert A. Day. How to Write and Publish a Scientific Paper, 5<sup>th</sup> edition, Oryx Press, Phoenix, 1998.
- Martha Davis. Scientific Papers and Presentations. Academic Press. 1997
- Michael Alley. The Craft of Scientific Writing, 3<sup>rd</sup> edition, Prentice Hall, Inc., 1996.
- Janice R. Matthews, John M. Bowen, Robert W. Matthews. Successful Scientific Writing: A Step-By-step Guide for the Biological and Medical Sciences, University Press, 2000.
- Peter J. Gosling. Scientist's Guide to Poster Presentations, Kluwer academic/Plenum publishers, 1999
- Edward Barrett, Leslie Perelman. The Mayfield Handbook of Technical and Scientific Writing, McGraw-Hill, 1997

**PAPER CODE-HCT 423**  
**Clothing & Textiles: Textile Conservation**  
**(Theory)**

**Credits: 03**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 03**

**Total Hrs: 45**

**Course Objectives:****This course will enable the students to-**

1. To provide theoretical knowledge and understanding of preservation of cultural significant textile artifacts.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT 423	Textile Conservation (Theory)	<p><b>The students will be able to –</b></p> <p><b>COCT73:</b> Understand the importance of textile artifacts</p> <p><b>COCT74:</b> Recognize agents of deterioration of textiles on analysis</p> <p><b>COCT75:</b>Analyze and suggest correct collection maintenance practices and undertake curative conservation</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentations</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Assignments</p>	<p>Quiz, Power Point Presentations, Chart/Poster Presentation, Semester End Examination</p>

**CONTENTS****Unit I: Introduction to Textile Collection Management****9 hrs**

- Textiles: Definition, Description and purpose
- Terminology
- Museums and Collection
- Ethics in Conservation

**Unit II: Name of Materials and Agents of Deterioration****9 hrs**

- Nature of material and techniques
- Agents of deterioration: Natural and Man-made
- Preventive and Curative Conservation

**Unit III: Collection Maintenance****9 hrs**

- Workspace, Equipments and Safety
- Materials and Supplies
- Basic Handling
- Cleaning
- Dealing special problems

**Unit IV: Storage 9 Hrs**

- General requirements for storage
- Factors influencing storage facility
- Storage Conditions
- Types of Storage

**Unit V: Display 9 hrs**

- General requirements for display
- Exhibition planning
- Factors influencing object display
- Display Methods

**ESSENTIAL READINGS:**

- King, Rosalie, Textile Identification, Conservation and Preservation, New Jersey, Noye Publication.
- Landi, Sheila, The Textile Conservator's Manual, London, Butterworths and Co.
- Science for Conservators, Crafts Council/Conserva.

**BOOKS RECOMMENDED:**

- Schweppes Helmut, Practical information for identification of early synthetic dyes, Washington DC, Conservation Analytic Laboratory, Smithsonian Institute, 1987.

**PAPER CODE-HCT 423  
Clothing & Textiles: Textile Testing and Quality Control  
(Practical)**

**Credits: 04**

**Max Marks: 100 (CA-30, SEE-70)**

**Contact Hrs/week: 04**

**Total Hrs: 60**

**Course Objectives:**

**This course will enable the students to-**

1. To develop an understanding of methods and techniques used to analyze textile fiber, yarns and fabrics for end-use performance.
2. To acquire knowledge and understanding of various structural properties of textiles and relate to end use fabric performance and product.
3. To be able to analyze and interpret the results and predict the general textile testing.

**Course Outcomes (COs):**

<b>Course</b>			
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Paper Code	Paper Title	Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
HCT 424	Textile Testing and Quality Control (Theory)	<p><b>The students will be able to –</b></p> <p><b>COCT76:</b> Execute various testing procedures at yarn stage and its relation to fabric performance properties</p> <p><b>COCT77:</b> Relate the principles of fabric testing procedures with the functional, performance, aesthetic and comfort properties of textiles and fabrics</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Interactive Lectures, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Projects</p>	Portfolio development, Individual and Group Projects, Semester End Examination

## CONTENTS

- Moisture Relation testing – use of oven and hygrometer, determination of oven dry weight.

**8 hrs**

- Physical testing of yarn – Count, Twist, Crimp, Strength. **12 hrs**
- Physical testing of fabric- Thread count, Thickness, Abrasion, Stiffness, Drapability, Crease Recovery, Pilling, Tensile strength, Air permeability and Water Percolation.

**20hrs**

- Colour fastness to wash, light, rub and perspiration **12 hrs**
- Determine the bursting strength of the knitted fabric **8 hrs**

## ESSENTIAL READINGS:

- Booth, J.E ., Principles of Textile Testing, Newness Butter Worth, London.
- Saville, B.P., Physical Testing of Textiles, Workload Publishing Ltd.

## BOOKS RECOMMENDED:

- Billie, J.Collier and Helen H., Textile Testing and Analysis, Prentice Hall, New Jersey.
- Skinkle, John, H., Textile Testing, Brooklyn, New York.
- Grover and Hamby, Hand Book of Textile Testing and Quality Control, Wiles.

**PAPER CODE-HCT 425+426**  
**Clothing & Textiles:(DISSERTATION + RESEARCH PAPER)**

**Credits: 12**  
**Max Marks: 100 (CA-30, SEE-70)**  
**Contact Hrs/week: 12**  
**Total Hrs: 210**

**Course Objectives:**

**This course will enable the students to-**

1. To provide students with an opportunity to conduct independent research and find out the innovations.
2. To get right solution of a right problem.
3. To encourage students to work for apparel and textile industries for advancements and new developments.

**Course Outcomes (COs):**

Course		Learning Outcomes (at course level)	Learning and Teaching Strategies	Assessment Strategies
Paper Code	Paper Title			
HCT-425+426	DISSERTATION + RESEARCH PAPER	<p><b>The students will be able to –</b></p> <p><b>COCT78:</b> Understand the practical aspects of collecting data/ project work</p> <p><b>COCT79:</b> Evaluate, select and use appropriate strategies for analysis and presentation of data collected during research process</p> <p><b>COCT80:</b> Suitably illustrate or present data using various graphical and other methods</p> <p><b>COCT81:</b> Prepare a dissertation document and research paper based on research process or research work done</p>	<p><b>Approach in Teaching :</b></p> <p>Discussion, Power Point Presentation</p> <p><b>Learning Activities for the Students:</b></p> <p>Self Learning Projects, Field Trips/Industry Visits</p>	<p>Report Writing, Power Point Presentations, Semester End Examination</p>

The dissertation will involve in depth practical work on the synopsis approved. The students shall submit four copies of Dissertation and will be required to make presentation of the work.

**Evaluation:** The dissertation submitted will be evaluated by a panel of examiners consisting of Head of the department, external examiner and one appointed by the Principal shall conduct a vice-voce and evaluate the dissertations.