CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

Nationally Re-Accredited (3rd Cycle) with 'A' Grade (CGPA 3.41 out of 4) by NAAC

TIRUCHIRAPPALLI – 620 018

SYLLABUS FOR

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS (2021-2022)

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

PROGRAMME EDUCATIONAL OBJECTIVES

PEO 1: The graduates will successfully serve as Dietitians, Nutritionist, Food Service Administrators, course instructors, Project officers in Nutrition and Child care.

PEO 2: The graduates will practice professional ethics and understand socio cultural issues, thereby provide solution for health problems.

PEO 3: The graduates will equip themselves for higher studies, research and entrepreneurship by applying the recent trends.

PROGRAMME OUTCOMES

PO 1: To analyze scientific concepts in the area of Food Service Management and Dietetics.

PO 2: To apply critical thinking and collaborative practice in nutritional care.

PO 3: To develop technical skills in applied nutrition science.

PO 4: To utilize local, national and global trends, emerging techniques and changes of legislation to enhance work performance.

PO 5: To establishing entrepreneurial skills in designing innovative healthy food products and facility planning.

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
PROGRAMME STRUCTURE -M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS
UNDER CHOICE BASED CREDIT SYSTEM
(For the candidates admitted from the academic year 2020-2021)

SEM	COURSE	COURSE TITLE	SUBJECT CODE	INS. HRS / WEEK	CREDIT	EXAM HRS	MARKS		TOTAL
							INT	EXT	
I	Core Course – I (CC)	Advanced Food Science	19PFS1CC1	6	5	3	25	75	100
	Core Course – II (CC)	Human Nutrition and Public Health	19PFS1CC2	6	5	3	25	75	100
	Core Course – III (CC)	Biochemical Changes in Diseases	19PFS1CC3	6	5	3	25	75	100
	Core Course – IV (CC)	Advanced Dietetics I	19PFS1CC4	6	5	3	25	75	100
	Core Practical – I (CP)	Human Nutrition and Public Health – Practical	19PFS1CC1P	6	4	3	40	60	100
		TOTAL		**30**	**24**				**500**
II	Core Course – V (CC)	Advanced Dietetics II	19PFS2CC5	6	5	3	25	75	100
	Core Course – VI (CC)	Hospital Administration	19PFS2CC6	6	5	3	25	75	100
	Core Practical II (CP)	Advanced Dietetics – I & II - Practical and Dietary Internship	19PFS2CC2P	6	4	3	40	60	100
	Elective Course – I (EC)	I.A. Functional Foods and Nutraceuticals	19PFS2EC1A	6	4	3	25	75	100
		I.B. Paediatric Nutritional Care	19PFS2EC1B						
	Elective Course – II (EC)	II. A. Applied Physiology	19PFS2EC2A	6	4	3	25	75	100
		II. B. Nutrition for fitness	19PFS2EC2B						
	Extra Credit Course	SWAYAM ONLINE COURSE	To be Fixed Later	As per UGC Recommendation					
		TOTAL		**30**	**22**				**500**

III	Core Course – VII (CC)	Principles of Home Science	19PFS3CC7	6	5	3	-	100	100
	Core Course – VIII (CC)	Research Methods and Statistical Techniques	19PFS3CC8	6	5	3	25	75	100
	Core Practical – III (CP)	Catering Internship	19PFS3CC3P	6	5	-	40	60	100
	Elective Course – III (EC)	III.A.Food Microbiology and Sanitation	19PFS3EC3A	6	4	3	25	75	100
		III.B.Nutrition in Clinical Critical Care	19PFS3EC3B						
	Elective Course – IV (EC)	IV.A. Food Product Development	19PFS3EC4A	6	4	3	25	75	100
		IV.B.Basic Food Analytical Techniques	19PFS3EC4B						
	Extra Credit Course	SWAYAM ONLINE COURSE	To be Fixed Later	As per UGC Recommendation					
		TOTAL		**30**	**23**				**500**
IV	Core Course – IX (CC)	Quantity Food production and Service	19PFS4CC9	6	5	3	25	75	100
	Core Course – X (CC)	Food Service Management	19PFS4CC10	6	5	3	25	75	100
	Core Practical – IV (CP)	Quantity Food Production and Service -Practical	19PFS4CC4P	6	4	3	40	60	100
	Elective Course – V (EC)	V.A. Management and Accounting in Hospitality Industry	19PFS4EC5A	6	4	3	25	75	100
		V.B.Counselling Skills	19PFS4EC5B						
	Project Work		19PFS4PW	6	3	-	-	100	100
		TOTAL		**30**	**21**				**500**
		GRAND TOTAL		**120**	**90**				**2000**

SEMESTER - I	ADVANCED FOOD SCIENCE	HOURS / WEEK - 6	
CORE COURSE –I		CREDIT - 5	
COURSE CODE – 19PFS1CC1		INTERNAL 25	EXTERNAL 75

Preamble

- To gain knowledge on nutritional composition and properties of food.
- To develop skills to judge the quality of food.
- To apply the principles of cooking in food preparations.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	State the importance of post harvest technology	K1
CO2.	Describe the properties of starch in food preparations	K2
CO3.	Predict the changes that take place during meat cookery	K3
CO4.	Examine effect of cooking on vegetable pigments	K4
CO5.	Evaluate components of food label	K5
CO6.	Generalize the sensory characteristics of food..	K6

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	M	M	S	S	S
CO2.	M	M	S	S	S
CO3.	M	S	S	S	S
CO4.	M	S	S	S	S
CO5.	M	M	S	S	S
CO6	M	S	S	S	S

S- Strong; M-Medium

Syllabus

UNIT I **(18 Hours)**

a. Post harvest technology

Importance, post harvest losses, priorities and strategies, post harvest industries , components of the system -transportation and distribution, marketing, grading and quality control, pest control, packaging, communication among all concerned, information, demonstration and advisory systems, manufacture and supply of essential equipment and machinery, financial control, price stabilization, and integration of the total system.

b. Colloidal systems

Types of colloidal dispersion, Properties of colloidal systems, sols, gels. Emulsions-Types, emulsifiers, stability of emulsions, Foams.

UNIT I **(20 Hours)**

a. Cereals

Structure, nutritional composition - rice, wheat and millets. Milling process. Gluten formation, factors affecting gluten formation. Gelatinization, gelation, retrogradation, syneresis, dextrinisation. Types of starches, modified starches. Role of cereals in cookery. Problems encountered during cereal cookery.

b. Pulses and Legumes:

Nutritional composition, processing of pulses- germination, decortication, fermentation, soaking, factors affecting cooking quality of pulses, toxins in pulses, quick cooking pulses

c. Nuts and oil seeds:

Classification, nutritive value, uses, toxins in nuts and oilseeds.

UNIT III **(16 Hours)**

a. Milk and milk products

Nutritional composition, effect of physical and chemical factors on milk components, milk processing methods- clarification, pasteurization and homogenization. Types of milk, types of milk products – concentrated dairy products, dried dairy products, fermented milk products.

b. Meat, Poultry and fish

Meat – structure, types and nutritional composition, post mortem changes, ageing and tenderization of meat, cuts and grades of meat, meat cookery. Poultry-classification, nutritive value, selection and storage, methods of cooking. Fish - Classification, nutritive value, selection, storage and methods of cooking.

c. Egg

Structure and composition, selection, storage, quality check, coagulation of egg protein, foam formation, factors affecting foam formation. Novel egg products.

UNIT IV **(16Hours)**

a. Fruits and Vegetables

Fruits - Classification, composition, selection, storage, changes during ripening, artificial ripening fruit cookery,# enzymatic browning and preventive measures#.

Vegetables - Classification, composition, selection, storage, changes during cooking, loss of nutrients while cooking, changes produced in pigments while cooking.

b. Fats and oils

Characteristics of fats and oils, Hydrogenation, winterization. Rancidity-types, prevention, flavor reversion, smoking point, thermal changes in fat, Acid value, Iodine value, Saponification value, unsaponifiable matter and Acetyl value. Role of fats and oils in cookery. Absorption of fat, factors affecting absorption of fat.

c. Sugars

Types of sugar, nutritive value, physical and chemical properties of sugar, role of sugar in cookery, stages of sugar cookery, crystallization, factors affecting crystallization

d. Spices and condiments

Types, role in cookery, volatile compounds in spices and condiments

UNITV **(20Hours)**

a. Evaluation of quality of foods

Sensory characteristics of food- Appearance, colour, flavour, odour, taste, mouth feel. Methods of sensory analysis-Difference tests, Rating tests, Sensitivity tests, Descriptive profile method. Requirements for conducting sensory tests. Objective methods – chemical methods, physio-chemical methods, microscopic examination, physical methods.

b. Packaging Techniques

Requirements of packaging. Packaging materials. Ventilation of Packages. Cushioning materials. Controlled and Modified Atmospheric Packaging (CAP and MAP), Vacuum packaging, Edible Packaging, Eco friendly packaging materials. Properties of packaging materials. Labeling – types, functions and importance. Intellectual Property Right (IPR) – Patent, Copyright, Industrial Design Right, Trade mark, Trade dress, Trade secret.

-# : Self Study

Textbooks

S.No.	Author name	Year Of Publication	Title of the book	Publishers name
1.	Gladys C Peckham	1996	Foundations of food preparation	Macmillan Publishing Company, New York.
2.	Norman N Potter	1998	Food Science	CBS Publications and Distributors, NewDelhi.
3.	Shakuntala Manay N	2001	Food Facts and Principles	New Age International Publishers, New Delhi.
4.	Avantina Sharma	2006	Textbooks of Food science and technology	International book distributing Co.
5.	Mohini Sethi	2011	Food science experiments and applications	CBS publishersand distributors Pvt ltd
6.	Vickie A.Vaclavik, Elizabeth W.Christian	2014	Essentials of Food Science	Springer Science and Business Media, New York
7.	Srilakshmi B	2015	Food Science	New Age International (P) Ltd, New Delhi.

ReferenceBooks

S.No	Author name	Year of publication	Title of the book	Publishers name
1.	Sumati R Mudambi	2006	Food Science	New age internationa l (P) Ltd, publishers
2.	Sunetra Roday	2012	Food science and Nutrition	Oxford University Press
3.	Umesh Kumar	2014	Food ScienceProcessing Technology	Venus Books Publishers and distributors

Journals:

- Food Science and Technology (London),Institute of Food Scienceand Technology, Unitedkingdom.
- Food Chemistry, Elsevier Sci. Ltd,England.
- Food Science and Technology, Soc Brasileira Ciencia Tecnologia Alimentos,Brazil.
- Food Research International, Elsevier Science Bv, UnitedStates.
- Journal of the Science of Food and Agriculture, Wiley-Blackwell,England.
- Journal of Food Science and Technology, Scientific Publishers,India

Web links:

https://www.nutrition.org.uk/attachments/207_Nutritional%20aspects%20of%20cereals.pdf

https://www.starch.eu/starch/

https://www.britannica.com/science/fat-processing

http://www.yourarticlelibrary.com/home-science/eggs/egg-definition-structure-and-classification/86599https://pubs.acs.org/doi/full/10.1021/jf072304bhttp://agritech.tnau.ac.in/expert_system/paddy/phtc.htmlhttps://www.sciencedirect.com/science/article/pii/S0023643810001374https://pdfs.semanticscholar.org/dcf1/9d5ff38489a3fa7517b258df603c6004e6ab.pdf

Pedagogy: E-content, Lecture, Power point presentation, Seminar, Assignment, Group discussion, Industrial visit.

Course designers

- Ms.B.Thanuja
- Ms.J.Sudharshini

ADVANCED FOOD SCIENCE -PRACTICAL (Related Experience)

Preamble

- To understand the sensory evaluation methods.
- To analyze the cooking quality of foods.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	Identify structure of starch through microscopic Examination	K1
CO2.	Describe based recipes based on stages of sugar cookery	K2
CO3.	Prepare recipes based on milk products	K3
CO4.	Determine the factors affecting cooking quality of pulses.	K4
CO5.	Evaluate the quality of eggs.	K5
CO6.	Plan requirements to conduct sensory evaluation	K6

Syllabus

- **Starch cookery:** Microscopic examination of different starches, gelatinization of starch, preparation of gluten, factors affecting gluten formation.
- **Sugar cookery:** Stages of sugar cookery, preparation of fondant, fudge, caramel,pulled toffee and brittles.
- **Pulse cookery:** Factors affecting the cooking quality of pulses.
- **Milk Cookery:** Curdling of milk, Preparation of cheese, curd and ice-cream.
- **Meat, fish and poultry Cookery**: Effect of cooking methods on meat, fish ,poultry.
- **Egg Cookery:** Testing the quality of egg. Coagulation of egg white and egg yolk. Preparation of boiled egg, poached egg, scrambled egg, custard, cake, emulsion, mayonnaise.
- **Fruits and Vegetables :** Measures for the prevention of enzymatic browning**,** Effect of acid, alkali and heat on pigments in fruits and vegetables.
- **Fats and Oils:** Smoking temperature, factors affecting absorption of fat.
- **Sensory evaluation of food :**Evaluating the acceptability of foods, Subjective and Objective methods

Textbooks

S.No.	Author name	Year of Publication	Title of the book	Publishers name
1.	Gladys C.Peckham	1987	Foundations of food Preparation	Macmillan Publishing Company, New York
2.	Avantina Sharma.	2006	Textbooks of Food science and technology	International book distributing Co
3.	Srilakshmi B	2015	Food Science	New Age International (P) Ltd, New Delhi

Referencebooks

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Krishna Arora	2011	Theory of Cookery	Frank Bros.& Co (publishers) Ltd, Noida
2.	Thangam E. Philip	2015	Modern Cookery for Teaching and the Trad Volume-I	Orient Blackswan Private Limited, New Delhi
3.	Parvinder.S.Bali	2016	Food Production Operations	Oxford University Press, New Delhi

Pedagogy: Demonstration

Course designers

Ms.B.Thanuja
Ms.S.Preethi

SEMESTER - I	HUMAN NUTRITION AND PUBLIC HEALTH	HOURS / WEEK - 6	
CORE COURSE –II		CREDIT - 5	
COURSE CODE – 19PFS1CC2		INTERNAL 25	EXTERNAL 75

Preamble

To understand the importance of meal planning

To comprehend the nutritional needs pertaining to different stages of life

To plan diet for various age groups

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	Identify the stages, complications and physiological adaptations during pregnancy and lactation.	K1
CO2.	Explain growth and development and nutrition related problems in pre-school, school-going children and adolescent.	K2
CO3.	Predict malnutrition, ecological factors and nutritional Problems	K3
CO4.	Determine the nutritional status of community and the strategies to overcome malnutrition	K4
CO5.	Assess and compare National, International and Voluntary organizations to combat malnutrition	K5
CO6.	Plan and develop nutrition education aids for dissemination of nutrition knowledge	K6

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	S	M	M
CO3.	S	S	S	M	M
CO4.	S	S	S	M	M
CO5.	S	S	S	M	M
CO6.	S	S	S	S	M

S- Strong; M-Medium

Syllabus

UNITI **(18Hours)**

a. **Nutrition and health** – Inter relationship between nutrition and health. Meaning of adequate nutrition, under nutrition, malnutrition. Basic five food groups, Balanced diet, principles of meal planning, Recommended Dietary Allowances (RDA)-Indian Council of Medical Research (ICMR-2010), Factors affecting RDA. Recommended Dietary Allowances and diet plan for pregnancy, lactation, infant, childrens, adolescents, adults and geriatrics.

b. **Nutritional Assessment -**Assessing the food and nutritional problems in the community, Methods available for individual and community, Anthropometric - Measurement of height, weight, head and chest circumferences, mid upper arm circumference, skin fold thickness, interpretation of measurements and comparison with standards (NCHS, ICMR), Biochemical parameters, Clinical examination and Dietary surveys.

UNIT II **(18 Hours)**

Nutrition through life cycle

a. **Pregnancy and Lactation –** Stages of gestation, physiological changes, weight gain , complications, factors influencing the outcome of pregnancy. Physiology of lactation - Hormonal control and reflex action, Importance of colostrum, composition of breast milk, advantages of breast feeding, Difference between breast milk and cow's milk, Galactagogues.

b. **Infancy, Pre-School, School-Going Children and Adolescents-** Growth and development of infants, pre-school children, school- going children and adolescence Artificial feeding, Breast feeding vs. bottle feeding, Weaning and Supplementary feeding, Feeding of premature infants. Factors influencing food habits of preschoolers. Eating disorders – Bulimia nervosa, Binge eating and Anorexia nervosa in adolescence.

c. **Adult and Geriatrics -**Reference Man and Reference Woman**,** Symptoms in Menopausal and post-menopausal women. Socio-economic and psychological factors in geriatrics, Physiological changes in geriatrics, Feeding old age people. Dietary guidelines for adults and menopausal women,

UNIT III **(18Hours)**

Epidemology, Nutritional problems and malnutrition

a) Principles of Epidemology – Definition, aim, components, measurement in Epidemology - IMR, NMR, MMR and tools of measurement, approach, Relation of nutrition to national development - socio-economic, industrial and agricultural development.
b) Nutritional problems - PEM, Vitamin A Deficiency Diseases, Anaemia, Iodine Deficiency Disorders and Fluorosis, Synergism between malnutrition and infection.
c) Definition of malnutrition, Ecological factors leading to malnutrition - income, size of families, dietary pattern, occupation, customs food fads, fallacies, ignorance and other factors.Classificationaccordingtogradesofmalnutrition,Visciouscycle of malnutrition

UNIT IV **(18Hours)**

a. Nutrition Intervention programmes

Nutrition intervention programmes in India – School Lunch Programme (SLP), Chief Minister's Nutritious Noon Meal Program (CMNNMP), Integrated Child Development Services (ICDS). National Nutritional Anaemia Prophylaxis Programme, National Prophylaxis Programme against Vitamin A Deficiency Diseases, Goitre Control Programme. National Nutrition policy- National food security, National nutrition policy- thrust areas and implementation at national level, Impact of National Nutrition policy.

b. Role of National and International Agencies in promoting Health

National Agencies concerned with food and nutrition – Indian Council of Medical Research (ICMR), National Institute of Nutrition (NIN), National Nutrition Monitoring Bureau (NNMB), Central Food Technological Research Institute (CFTRI), Defence Food Research Laboratory (DFRL), and *National Institute of Public Cooperation And Child Development*(NIPCCD).

#**International Agencies** concerned with Food and Nutrition- Food and Agricultural Organization (FAO), World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF), World Bank#

UNIT V **(18Hours)**

Nutrition Education - Meaning, nature and importance of Nutrition education to the community and lessons to be taught. Methods of education- use of audio visual aids, Use of computers to impart nutrition education - power point presentation, E-learning, Organization of Nutrition education programmes: Principles of planning, executing and evaluating nutrition education programmes, problems of nutrition education programmes.

- #: Self study

TextBooks

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Judith.E.Brown	2008	Nutrition	Thomson wadsworth, USA
2.	M.Swaminathan	2012	Advanced Textbook on Food and Nutrition	Bangalore Printing and Publishing Co. Ltd., Bangalore
3.	B. Srilakshmi	2013	Dietetics	New Age International (P) Ltd., New Delhi
4.	B. Srilakshmi	2013	Nutrition Science	New Age International (P) Ltd., New Delhi
5.	Bamji M.S, PrahladRao N, Reddy V	2016	Textbook of Human Nutrition	Oxford and PBH Publishing Co. Pvt. Ltd, New Delhi

Reference Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Prakash shetty	2002	Nutrition through the life cycle	Leatherhead publishing, Leather head International Ltd,UK.
2.	Gibney, M.J., Margetts, B.M., Kearney, J.M., Arab, L.	2004	Public Health Nutrition UK	Blackwell PublishingCo.
3.	A.Park	2007	Park's Textbook of Preventive and Social Medicine	M/S Banarasidas, Bharat Publishers, Jabalpur, India
4.	M.Raheena Begum	2008	A textbook of Foods, Nutrition and Dietetics	Sterling Publishers Pvt. Ltd., NewDelhi
5.	Krause's	2008	Food and Nutrition Therapy	Sauders Elsevier, Canada.
6.	Carolyn D. Berdanice	2009	Advanced Nutrition	CRC Press
7.	M. Swaminathan	2014	Advanced Textbook of Food and Nutrition	Bangalore Printin and Publishing g Co. Ltd, Bangalore

Journals:

Community, Work and Family, Carfax Publishing Ltd publishing, United Kingdom.

Journal of Adult Development, Springer/Plenum Publishers, United States

Journal of Child and Adolescent Mental Health, Nisc publisher, South Africa

Journal of Food and Nutrition Research, Vup Food Research Inst publishing, Bratislava, Slovakia. Nutrition Reviews, Oxford University Press publishing, United States.

Journal of the Academy of Nutrition and Dietetics, Elsevier Science Inc publishing, UnitedStates.

Journal of Pregnancy, Hindawi Publishing Corporation, Egypt.

Nutrition Journal, Biomed Central Ltd publishing, England.

Nutrition Research Reviews, Cambridge Univ Press publishing, England.

Nutrition Today, Lippincott Williams & Wilkins Ltd publisher, United States.

Web links:

http://www.fao.org/3/W3733E/w3733e03.htmhttp://www.fao.org/3/x0172e/x0172e08.htmhttp://www.foodstandards.gov.au/code/Pages/default.aspxhttps://childdevelopmentinfo.com/ages-stages/#.XMpmwIkzbIU

https://www.hhs.gov/fitness/eat-healthy/importance-of-good-nutrition/index.html

https://www.nasa.gov/sites/default/files/space_nutrition_book.pdfhttps://www.ncbi.nlm.nih.gov/pmc/articles/PMC1775335/?page=8https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2682454/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5621667/https://www.ncbi.nlm.nih.gov/pubmed/12031199https://www.nichd.nih.gov/health/topics/pregnancy/conditioninfo/complications

Pedagogy : E-content, Lecture, Power point presentation, Seminar, Assignment, Demonstration.

Course Designers

Ms.S.Preethi

Ms.E.Agalya

SEMESTER - I	BIOCHEMICAL CHANGES IN DISEASES	HOURS / WEEK - 6	
CORE COURSE –III		CREDIT - 5	
COURSE CODE – 19PFS1CC3		INTERNAL 25	EXTERNAL 75

Preamble

To Gain knowledge on the metabolism of the nutrients and the associated diseases

To Understand importance of organ function tests in analysis of clinical manifestation

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	Identify biochemical parameters and interpret the results	K1
CO2	Describe the role of nutrients in genes	K2
CO3.	Classify Carbohydrate disorders	K3
CO4.	Associate relationship between body composition of Protein with disorders	K4
CO5.	Compare lipid profile with fat disorders	K5
CO6.	Plan appropriate technique to evaluate various organ Functions	K6

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	S	M	M
CO3.	S	S	S	M	M
CO4.	S	S	S	M	M
CO5.	S	S	S	M	M
CO6.	S	S	S	S	M

S- Strong; M-Medium

Syllabus

UNIT I **(18 Hours)**

Biochemical Data acquisition and Interpretation

a. Basis for biochemical estimation of basic principles – General lab information, units of measure. Uses of biochemical data in clinical medicine. Acquisition and interpretation of biochemical data.

b. Nutrigenomics

Introduction to nutrigenomics -Scope and importance to human health, interactions genes nutrients.

UNITII **(18Hours)**

a. **Disorders of carbohydrate metabolism:**-#Diabetes mellitus#, glycohemoglobins, hypo-glycemias, galactosemia and ketone bodies. Various types of glucose tolerance tests. Glycogen storage diseases. Inborn errors of carbohydrate metabolism.

b. **Disorders of Protein metabolism:**-Phenylalanemia, homocystinuria, tyrosinemia, MSUD, phenylketonuria, alkaptonuria, albinism and aminoaciduria. Disorders in purine/ pyrimidine metabolism.

c. **Disorders of Fat metabolism:–**Dyslipidemia, Atherosclerosis, Coronary Artery Disease, Disorders of Lipoproteins and Steatorhea.

UNITIII **(18Hours)**

a. **Disorders of mineral metabolism**:-Hypercalcaemia, hypocalcaemia, normocalcaemia, hypophosphataemia and hyperphosphataemia. Electrolytes, blood gases, respiration and acid-base balance. Disorders of acid-base balance and their respiratory and renal mechanisms.

b. Environmental Pollution and Heavy metal poisons.

UNITIV **(18Hours)**

a. **Hormonal disturbances**:-Protein hormones (anterior pituitary hormones, posterior pituitary hormones), Steroid hormones (Adrenocorticosteroids, Reproductive endocrinology).

b. Enzymes of clinical importance, Enzymes of pancreatic origin and biliary tract. Detoxification mechanism – Phase one reaction-Oxidation, Reduction, Hydrolysis. Phase two – Glucoronic acid, Sulfate methylation and Phase three reactions.

UNIT V **(18 Hours)**

Biochemical aspects of hematology and
Evaluation Organ Function Tests.

a. Disorders of erythrocyte metabolism, hemoglobinopathies, thalassemias, thrombosis and anemias.

b. Assessment and clinical manifestations of

- Renal - clearance test – Urea clearance, inulin clearance and creatine clearance, Dye test and Dilution test
- Hepatic - serum bilirubin, Types of Jaundice, Icteric index, Galactose tolerance test, Hippuric acid Test and Bromo Sulphthalein test,
- Pancreatic – Secretin stimulating test and Fecal Elastase test
- Gastric - Determination of free acidity, Fractional test, Examination of duodenal contents, Determination of serum amylase and lipase significance, Tests for Malabsorption – Examination of faeces, Determination of fat content to faeces , Fat balance study xylulose excretion test – Vitamin A absorption Test

#-#:Self Study

TextBooks

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Beckett Geoffrey	2006	Clinical Biochemistry	Australia, Blackwell Publishing
2.	Lajja Das	2014	Medicinal Biochemistry	New Delhi: Venus Books

ReferenceBooks

S.No	Author name	Year of publication	Title of the book	Publishers name
1.	Beckett Geoffrey	2006	Clinical Biochemistry	Australia, Blackwell Publishing
2.	Murray Robert K Harper`s	2012	Illustrated Biochemistry	McGraw Hill Irwin Companies
3.	Das Lajja	2014	Medicinal Biochemistry	New Delhi, Venus Books
4.	Ambika Shanmugam.	2016	Fundamentals of biochemistry for medical students	Lippincott Williams and wilkin
5.	Satyanarayana U	2016	Fundamentals of Biochemistry	Books and Allied (p) Ltd,

Journals:

CPD Bulletin Clinical Biochemistry, Rila Publications, Ltd, United Kingdom.

Annals of Clinical Biochemistry, Sage Publications Inc, England.

Clinical Biochemistry, Pergamon-Elsevier Science Ltd, Canada.

IndianJournal of ClinicalBiochemistry,Association of Clinical Biochemistsof India.

Journal of Clinical Biochemistry and Nutrition Japan.

Web links:

https://ncdc.gov.in/

http://aiihph.gov.in/department-of-biochemistry-and-nutrition/

Pedagogy: E-content, Lecture, Power point presentation, Seminar, Assignment, Demonstration

Course Designers

- Ms.S.Fathima
- Ms.S.Preethi

BIOCHEMICAL CHANGES IN DISEASES- PRACTICAL (Related Experience)

Preamble

- To enable practical experience in laboratory techniques
- To develop skills on analysis of blood and urine

Course Outcomes

On the successful completion of the course, students will be able to:

CO Number	CO statement	Knowledge level
CO 1	Identify various biochemical parameters	K1
CO 2	Interpret biochemical parameters	K2
CO 3	Apply different techniques in Collection and analysis of blood and urine	K3
CO4	Determine appropriate biochemical parameter in relevance to various disease conditions.	K4
CO5	Assess specificity, accuracy, sensitivity and Prognosis of diseases.	K5
CO6	Compile biochemical parameters and integrate with reference range	K6

Syllabus

1. Qualitative analysis of Urine for normal constituents.
2. Qualitative analysis of urine for abnormal constituents.
3. Estimation of blood glucose (Folin-Wu method).
4. Estimation of Hemoglobin (Drabkin's method).
5. Estimation of Triglycerides.
6. Estimation of Serum Calcium.
7. Estimation of Serum Alkaline Phosphatase.
8. Demonstration of automated Biochemical Analyzer.
9. Visit to biochemistry lab.

TextBooks

Author name	Year of publication	Title of the book	Publishers name
Pattabiraman N.T	2001	Laboratory Manual in Biochemistry	All IndiaPublishers and Distributors Regd, Chennai
Shanmugam S, Sathishkumar T, Panneer SelvamK	2010	Laboratory handbook or Biochemistry	PHI learningPrivate Ltd Chennai.

ReferenceBooks

Author name	Year of publication	Title of the book	Publishers name
Murray, Robert K	2012	Harper`s Illustrated Biochemistry	McGraw Hill Irwin Companies, New York
Das Lajja	2014	Medicinal Biochemistry,	Venus Books, New Delhi
Evangeline Jones	2016	Manual of Practical Medical Biochemistry,2nd Edition	Jaypee Brothers Medical Publishers(p) Ltd.

Pedagogy: E-content, Lecture, Power point presentation, Demonstration, visit to hospitals

Course Designers

- Ms.S.Fathima
- Ms.S.Preethi

SEMESTER – I	ADVANCED DIETETICS I	HOURS / WEEK – 6	
CORE COURSE –IV		CREDIT – 5	
COURSE CODE – 19PFS1CC4		INTERNAL 25	EXTERNAL 75

Preamble

- To plan therapeutic diets
- To analyze the underlying causes, patho physiology and complications of diseases.
- To outline the focus of nutrition and dietetics in the prevention of diseases.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO statement	Knowledge level
CO 1	Identify the role of dietitian in the hospitals.	K1
CO 2	Interpret the nutritional status through assessment modules.	K2
CO 3	Predict drug and nutrient interaction.	K3
CO 4	Diagnose symptoms and complications and apply dietary principles in the management of gastric and biliary tract diseases.	K4
CO 5	Evaluate mechanism of food allergy	K5
CO 6	Design food products to satisfy therapeutic needs.	K6

Mapping with ProgrammeOutcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	S	M
CO2.	S	S	S	S	M
CO3.	S	S	S	S	M
CO4.	S	S	S	S	M
CO5.	S	S	S	S	M
CO6.	S	S	S	S	S

S- Strong; M-Medium

Syllabus

UNITI **(18 Hours)**

a. **Dietitian -** Definition and types of dietitians, role of dietitian in the hospital and community, professional ethics and obligations.
b. **Counseling-** Definition, counsellor and Client, techniques of counseling and classification of counseling.
c. **Computers in Nutrition Practice -** General information – data input, data output, data analysis, data communication, clinical care – communication in patient care, Nutritional therapy.

UNITII **(18 Hours)**

a. **Routine hospital diets -** Clear fluid diet, full fluid diet, soft diet, Regular diet
b. **Feeding the patients -** Psychology of feeding the patient, assessment of patient needs.
c. **Special feeding methods** – Enteral nutrition and Parenteral nutrition.
d. **Drug Nutrient Interaction**– Diet effects on drug disposition, Interactions of drugs and nutrients, Effect of drugs on food intake and absorption, Effect of nutrients on drug metabolism.

UNITIII **(18 Hours)**

a. **Diet in Disease of Gastro intestinal tract -** Meaning, Pathogenesis, etiology, types, symptoms, treatment and dietary modification for gastro intestinal disorders – Gastritis, peptic ulcer, diarrhea, dysentery, constipation, malabsorption syndrome, and carcinoma of the stomach.
b. **Diet in biliary tract disorders -** Meaning, Pathogenesis, etiology, types, symptoms and clinical findings and dietary modification for Liver disorders - Fatty liver, Hepatitis and Cirrhosis, Gall bladder disorders - Cholecystitis and Cholelithiasis
c. **Diet in pancreatic disorders -** Meaning, Pathogenesis, etiology, types, symptoms and clinical findings and dietary modification for Pancreatitis

UNITIV **(18 Hours)**

a. #**Diet in Food allergy -** Food allergy and food intolerance – Definition ,mechanism, symptoms, food allergens, Diagnosis of allergy and dietary management.#

b. Nutritional care for patients having Metabolic stress

Surgery – Preoperative Nutrition care and Postoperative nutrition care Burns – Pathophysiology and Medical nutrition therapy.

UNIT-V **(18 Hours)**

Nutritional care in Inborn Errors of Metabolism, Developmental Disabilities and Palliative Care

a. **Nutritional care for the patients with inborn errors of metabolism -** Overview, diagnosis, symptoms, dietary management - Phenylketonuria, Galactosemia and Fructosuria
b. **Nutrition for Developmental Disabilities -** Down's syndrome, Cerebral Palsy, Autism and Attention Deficit Hyperactivity Disorder
c. **Basics of Palliative care** – definition, types, objectives and principles of palliative care.

#-#:Self Study

Textbooks

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Mahan, Kathleen L	2004	Krause's Food, Nutrition and Diet Therapy	Pennsylvania; Saunders (2004)
1.	Antia F P	2005	Clinical Dietetics and Nutrition	Oxford University Press, New Delhi
2.	Prakash S Lohar	2007	Endocrinology – Hormones and Human Health	MJP publishers, Chennai
3.	Srilakshmi B	2009	Dietetics	New Age International Publications, New Delhi
4.	Joshi A Shubhangini	2010	Nutrition and Dietetics	McGraw Hill Education Private Limited, New Delhi
5.	Swaminathan M	2012	Essentials of Food and Nutrition	Ganesh and Company, Madras
6.	Maity S P	2016	Pharmacology for Second Professional Students	Books & Allied Pvt. Ltd

Reference books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Robbinson,Corrine H.	1982	Normal and Therapeutic Nutrition,	Macmillan McGraw Hill School Division, New York
2.	Udai Veer	2007	Elements of Food Science	Anmol Publications Pvt Ltd, New Delhi
3.	Srilakshmi B	2008	Nutrition Science	New Age International Publications, New Delhi
4.	Indrani T.K	2008	Nursing Manual of Nutrition and Therapeutic Diet	Jaypee Brothers medical publishers (P) Ltd.
5.	Mary Marian	2008	Clinical Nutrition for surgical patients	Jones and Barletta Publishers
6.	Sangeetha Karnik	2010	Nutrition and Dietetics Therapy	Biotech Pharma Publications, Hyderabad
7.	Sari Edelstein	2015	Life Cycle Nutrition – An Evidence based Approach	Jones and Barletta Publishers, London

Journal

- Food and Nutrition Bulletin, Sage Publications Inc,Japan.
- Food and Nutrition Research, Co-Action Publishing,Weden.
- Food Digestion, Springer Verlag,Germany.
- Nutritional Therapy and Metabolism, WichtigPublishing,Italy.
- Nutrition in Clinical Practice, Sage Publications Inc, UnitedStates

Weblinks

https://www.omicsonline.org/societies/indian-dietetic-association/

https://www.frontiersin.org/journals/nutrition/sections/clinical-nutrition

https://www.ncbi.nlm.nih.gov/pubmed/14685018

Pedagogy : Lecture, assignment, PowerPoint presentation, quiz, seminar, visit to hospital dietary units

Course designers

- Ms.S.Agalya
- Ms.B.Thanuja

SEMESTER – I	HUMAN NUTRITION AND PUBLIC HEALTH– PRACTICAL	HOURS / WEEK – 6	
CORE PRACTICAL - I		CREDIT – 4	
COURSE CODE – 19PFS1CC1P		INTERNAL 40	EXTERNAL 60

Preamble

- To understand the basic principles of menu planning
- To plan menu throughout life cycle with special reference to age, sex, physical activity and physiological status

Courseoutcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1	Identify deficiency problems	K1
CO2.	Interpret the foods to be included and avoided in various stages of life cycle	K2
CO3.	Apply menu planning principles	K3
CO4.	Determine the role of modified diet for the management of nutritional problems	K4
CO5	Assess the nutritional status of differrent life stages	K5
CO6.	Develop menu, calculate nutritive value and compare with recommended dietary allowances.	K6

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	S	M	M
CO3.	S	S	S	M	M
CO4.	S	S	S	M	M
CO5.	S	S	S	M	M
CO6.	S	S	S	M	M

S- Strong; M-Medium

Syllabus

Menu planning, nutritive value calculation and preparation of meals for:

- Pregnant women.
- Lactating women.
- Infants.
- Pre-schoolchildren.
- School-going children.
- Adolescent girl.
- Adult man, Adult woman and menopausal women.
- Geriatrics.
- PEM
- Vitamin –A deficiency disease
- Anaemia
- Assessment of Nutritional Status
- Case study
- Visit to ICDS- Anganwadi centre.

TextBooks

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Emma Derbyshire	2011	Nutrition in the childbearing years	Wiley Blackwell,UK
2.	M.Swaminathan	2012	Advanced Textbook on Food and Nutrition	Bangalore Printing and Publishing Co. Ltd., Bangalore
3.	B. Srilakshmi	2013	Dietetics	New Age International (P) Ltd., New Delhi

ReferenceBooks

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	M.Raheena Begum	2008	A textbook of Foods,Ster Nutrition and Dietetics	ing Publishers Pvt. Ltd., New Delhi
2.	Mahtab S, Bamji, Kamala Krishnasamy, G.N.V Brahman	2016	Textbooks of HumanOxf Nutrition	ord And IBH Publishing Co.(P). Ltd., New Delhi

Pedagogy: Lecture, demonstration and experiment

Course Designers

- Ms.S.Preethi
- Ms.E.Agalya

SEMESTER – II	ADVANCED DIETETICS II	HOURS / WEEK – 6	
CORE COURSE– V		CREDIT – 5	
COURSE CODE – 19PFS2CC5		INTERNAL 25	EXTERNAL 75

Preamble

- To plan therapeutic diets
- To analyze the underlying causes and complications of diseases.
- To understand the patho physiology of diseases.
- To outline the focus of nutrition and dietetics in the prevention of diseases.

Courseoutcomes

On the successful completion of the course, students will be able to:

CO Number	CO statement	Knowledge level
CO 1	State the types of fever	K1
CO 2	Describe complications of Diabetes mellitus	K3
CO 3	Apply the dietary principles in the management of Cardiac and Renal diseases.	K3
CO 4	Associate symptoms of gout with clinical manifestations.	K4
CO 5	Evaluate role of diet counseling in the nutritional care.	K5
CO 6	Develop antioxidant rich recipes for Cancer Prevention.	K6

Mapping with ProgrammeOutcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	S	M	M
CO3.	S	S	S	M	M
CO4.	S	S	S	M	M
CO5.	S	S	S	S	M
CO6.	S	S	S	S	M

S- Strong; M-Medium

Syllabus

UNITI **(18 Hours)**

a. **Diet in Febrile conditions -** Meaning, Pathogenesis, etiology, types, symptoms, treatment and dietary modification for febrile condition - acute, chronic and recurrent fevers - typhoid, influenza, rheumatic fever, tuberculosis, malaria and poliomyelitis.

b. **Diet care in HIV** – Pathophysiology, aetiology, stages of HIV infection, ART, opportunistic infections, women and HIV, nutritional management

UNIT II **(18 Hours)**

Diet in metabolic disorders

a. **Diabetes Mellitus -** Meaning, types, screening and diagnostic criteria, pathogenesis, etiology, symptoms, complications, , Dietary management of Diabetes Mellitus – Food Exchange system, Glycemic Index, Glycemic Load, nutritive and non nutritive sweeteners. Lifestyle recommendations, drugs and insulin

b. #**Obesity –** Etiology, energy balance, theories, clinical manifestation, complications, dietary and lifestyle modifications and surgical management#

UNITIII **(18 Hours)**

a. **Diet in Cardio Vascular diseases -** Meaning, Pathogenesis, etiology, types, symptoms, treatment and dietary modification for cardio vascular disorders – hyperlipidaemia, hypertension, atherosclerosis, hypercholesterolemia, acute and chronic cardiac diseases, and congestive heart failure

b. **Diet in Renal diseases**- Pathogenesis, etiology, types, symptoms, treatment and dietary modification for renal disorders– glomerulonephritis, nephrosis, nephrosclerosis, uremia, nephrolithiasis.

UNITIV **(18 Hours)**

a. **Dietary Management in Nervous System Disorders**– Etiology, Clinical features and Dietary management for – Parkinson's disease and Alzheimer's disease

b. **Nutritional care in diseases of the musculoskeletal system -** Meaning, Pathogenesis, symptoms, causes, treatment and dietary management - arthritis, osteoporosis, gout and rheumatism.

UNIT-V **(18 Hours)**

a. **Diet in Hormonal diseases -** Meaning, etiology, symptoms, and dietary modification for - Cushing's syndrome, Addison's disease, hypothyroidism and hyperthyroidism.

b. **Diet in Cancer -**Development, etiology, metabolic alterations, symptoms, nutritional and dietary management of cancer patients, side effects of cancer treatment, #role of antioxidants in cancer treatment#

#-#: Self Study

Textbooks

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Mahan, Kathleen L	2004	Krause's Food, Nutrition and Diet Therapy	Pennsylvania; Saunders (2004)
1.	Antia F P	2005	Clinical Dietetics and Nutrition	Oxford University Press, New Delhi
2.	Prakash S Lohar	2007	Endocrinology – Hormones and Human Health	MJP publishers, Chennai
3.	Srilakshmi B	2009	Dietetics	New Age International Publications, New Delhi
4.	Joshi A Shubhangini	2010	Nutrition and Dietetics	McGraw Hill Education Private Limited, New Delhi
5.	Swaminathan M	2012	Essentials of Food and Nutrition	Ganesh and Company, Madras
6.	Maity S P	2016	Pharmacology for Second Professional Students	Books & Allied Pvt. Ltd

Reference books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Robbinson,Corrine H.	1982	Normal and Therapeutic Nutrition,	Macmillan McGraw Hill School Division, New York
2.	Udai Veer	2007	Elements of Food Science	Anmol Publications Pvt Ltd, New Delhi
3.	Srilakshmi B	2008	Nutrition Science	New Age International Publications, New Delhi

4.	Indrani T.K	2008	Nursing Manual of Nutrition and Therapeutic Diet	Jaypee Brothers medical publishers (P) Ltd.
5.	Mary Marian	2008	Clinical Nutrition for surgical patients	Jones and Barletta Publishers
6.	Sangeetha Karnik	2010	Nutrition and Dietetics Therapy	Biotech Pharma Publications, Hyderabad
7.	Sari Edelstein	2015	Life Cycle Nutrition – An Evidence based Approach	Jones and Barletta Publishers, London

Journal

- Food and Nutrition Bulletin, Sage Publications Inc,Japan.
- Food and Nutrition Research, Co-Action Publishing,Weden.
- Food Digestion, Springer Verlag,Germany.
- Nutrition and Cancer, Lawrence Erlbaum Associates Inc. UnitedStates
- Nutritional Therapy and Metabolism, Wichtig Publishing,Italy.
- Nutrition in Clinical Practice, Sage Publications Inc, UnitedStates

Web links

https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/heart-disease-and-foodhttp://idaindia.com/

https://www.omicsonline.org/societies/indian-dietetic-association/

https://www.frontiersin.org/journals/nutrition/sections/clinical-nutrition

https://www.cancer.gov/publications/dictionaries/cancer-terms/def/dietary-counseling

https://www.ncbi.nlm.nih.gov/pubmed/14685018

Pedagogy : Lecture, assignment, PowerPoint presentation, quiz, seminar, visit to hospital dietary units

Course designers

- Ms.S.Agalya
- Ms.B.Thanuja

SEMESTER – II	HOSPITAL ADMINISTRATION	HOURS / WEEK – 6	
CORE COURSE - VI		CREDIT – 5	
COURSE CODE – 19PFS2CC6		INTERNAL 25	EXTERNAL 75

Preamble

- To gain knowledge in hospital functions and administration.
- To acquire skills in maintaining medical records.
- To understand the management of resources in hospitals.

Courseoutcomes

On the successful completion of the course, students will be able to:

CO number	CO statement	Knowledge Level
CO 1	Identify the functions of modern hospital.	K1
CO 2	Illustrate the infrastructure and layout of modern hospital.	K2
CO 3	Classify various patient care services administered in hospitals.	K3
CO 4	Determine the managerial activities of hospital Functioning	K4
CO 5	Evaluate the significance of marketing, materia and financial management in hospitals.	K5
CO6	Integrate the importance of hospitality services for patient support.	K6

Mapping with ProgrammeOutcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	M	M	S	S
CO2.	S	M	M	S	S
CO3.	S	S	M	S	S
CO4.	S	S	M	S	S
CO5.	S	S	M	S	S
CO6.	S	S	M	S	S

S- Strong; M-Medium

Syllabus

UNITI **(18 Hours)**

Hospital based health care and its changing scenario

Effects of globalization on health care, concepts of corporate hospitals in developing countries, infrastructure and layout of an ideal corporate hospital, functioning of modern hospital and changing needs of patients, hospitality in hospital care.

UNITII **(18 Hours)**

Patient Care Services

Patient Admission – Purpose, Policy and Procedure, Discharge - Process, Discharge Protocol and Discharge Summaries, Cafeteria and Dietary services, Front Office Services, Housekeeping Services, Blood Bank, Diagnostic services, Laboratory – scope, equipment, reagents and materials, Physiotherapy, Pharmacy – Objectives, Functions and Scope , Operation theatre, Outpatient ward admission and Inpatient ward admission.

UNITIII **(18 Hours)**

Principles of Hospital management

Managerial activities for effective hospital functioning, duties and responsibilities of hospital managers**,** qualities of office managers and effective inter and intra departmental co-ordination. NABH standards**.**

UNITIV **(18 Hours)**

Marketing and Material management

Human Resource Management – Process, Performance Appraisal System, Managerial accounting and Financial Management, Material management – Objectives and Process and Inventory management – Systems and Methods, Marketing principles and methods.

Basics of Computer: Components of computer, Knowledge about computer software & programmes commonly used in healthcare sector

UNITV **(18 Hours)**

Management of Dietary Units

Management of dietary department - #diet planning for hospital diets, purchasing, storage, quantity food production, serving to patient- tray and trolley service#, plate waste management, washing and garbage disposal.

#-#: Self Study

Textbooks

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Sue Grossbauer, RD	2001	Managing Food Service Operations, A System Approach for Healthcare and Insitutions	Kendal/Hunt Publishing Company, Lowa, USA
2.	Ashok Arora, AkshayaBhatiya	2003	Management Information systems	Excel Books
3.	S.L.Goel & Dr.R.Kumar	2007	Hospital Administration and Management Theory and Practice	Deep and Deep Publication Ltd, New Delhi
4.	Dr. D.K.Sharma & Goyal R C	2017	Hospital Administration and Human Resuorce Management	Phi Learning, New Delhi
5.	Francis C M	1995	Hospital Administration	Jaypee Brothers Medical Pubs, New Delhi
6.	Llewellyn Davis R and Macaulay H M C	1995	Hospital Planning and Administration	Jaypee Brothers Publications, New Delhi

ReferenceBooks

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Savitha Sharma	1996	Hospital Management	Commonwealth Publishers, New Delhi

Journals

- Journal of Hospital and Healthcare Administration, Gavin publishers,USA
- International journal of research foundation of hospital and health careadministration, India
- JournalofHospitalManagementandHealthPolicy,AMEPublishingCompany,Hon g Kong
- Frontiers of Health Services Management, Health Administration Press, UnitedStates

Web Links

https://www.ibef.org/download/Healthcare-January-2017.pdfhttps://www.ncbi.nlm.nih.gov/pmc/articles/PMC1299207/https://www.who.int/hiv/pub/imai/om_5_infrastructure.pdfhttps://www.ncbi.nlm.nih.gov/pmc/articles/PMC1208931/https://www.researchgate.net/publication/259389319_hospital_administrationhttps://www.nabh.co/h-doc.aspx

Pedagogy: Lecture, Seminar, Assignment, visit to multispeciality hospital

Course Designers

- Ms. S.Agalya
- Ms.V.Ramya

SEMESTER – II	ADVANCED DIETETICS - I & II - PRACTICAL AND DIETARY INTERNSHIP	HOURS / WEEK – 6	
CORE PRACTICAL - II		CREDIT – 4	
COURSE CODE – 19PFS2CC2P		INTERNAL 40	EXTERNAL 60

Preamble

- To understand the modification of normal diet for therapeutic purpose.
- To acquire the skills of preparing diet for various disease conditions.
- To study the importance of dietitian in hospitals

Course Outcomes

On the successful completion of the course, students will be able to:

CO Number	CO statement	Knowledge level
CO 1	List various routine hospital diets	K1
CO 2	Describe nutrient composition of clear fluid, full fluid and soft diet.	K2
CO 3	Classify foods to be included and avoided in the treatment of diseases	K3
CO4	Determine importance of dietary principles in the management of diseases.	K4
CO5	Assess significance of dietary department at multi specialty hospitals.	K5
CO6	Design and develop tools for diet counseling	K6

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	S	M	M
CO3.	S	S	S	M	M
CO4.	S	S	S	M	M
CO5.	S	S	S	S	M
CO6.	S	S	S	S	S

S- Strong; M-Medium

Syllabus

ADVANCED DIETETICS I & II PRACTICAL

ADVANCED DIETETICS I PRACTICAL

1. Preparation of clear liquid, full liquid and soft diet.
2. Planning and preparing diets for
    - Gastrointestinal disorders – Peptic ulcer, Diarrhea and Constipation.
    - Liver disorders - Hepatitis and Cirrhosis

ADVANCED DIETETICS II PRACTICAL

- Febrile Conditions –Acute, Intermittent and Chronic
- Metabolic disorders – Diabetes mellitus and Obesity
- Musculoskeletal Disorders -Gout
- Cardio vascular disorders – Hypertension and Atherosclerosis.
- Renal disorders – Acute Renal Failure, Chronic Renal failure, Renal stones and Dialysis.

3. Diet counseling for
    - Febrile Conditions
    - Gastrointestinal disorders
    - Liver disorders
    - Metabolic disorders
    - Cardio vascular disorders
    - Renal disorders

DIETARY INTERNSHIP

The Practical work consists of internship in a teaching hospital for 30 days

- Visits to the different wards to observe patients requiring Special diets.
- Experience in calculating and planning modified diets.
- Supervising and handling the food preparation and service in the dietary department of the hospital.
- Case study- Selecting and observing patients requiring a therapeutic diet in relation to Patients dietary history - income, occupation, food habits and social factors.
- Calculating the diet according to medical prescription.
- Accompanying the dietitian while visiting the patient.
- Use of the computer in diet
- Counselling and patient education
- Education of the patient.

Preparation of the report should include

- History of the hospital
- Location
- Facilities provided
- Layout of the kitchen
- Work organization
- Organization structure
- Duties of the dietitian
- Special dietary preparation
- Menus
- Types of service
- Equipments
- Storage of food
- Handling of leftovers and shortages
- Sanitation and hygiene

Textbooks

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1	Shubhangini A Joshi	2010	Nutrition and Dietetics	McGraw Hill Education Private Limited, New Delhi
2	Gopalan C, Rama Sastri B V and BalasubramaniyanSC	2016	Nutritive value of Indian Foods	National Institute of Nutrition, Hyderabad

ReferenceBooks

S.No	Author name	Year of Publication	Title of the book	Publisher name
1.	Joshi Y K	2003	Basis of Clinical Nutrition	Jaypee Brothers, Medical Publishers, New Delhi

Pedagogy: Lecture and Demonstration

Course Designers

- Ms.S.Agalya
- Ms.E.Agaly

SEMESTER – II	FUNCTIONAL FOODS AND NUTRACEUTICALS	HOURS / WEEK – 6	
ELECTIVE COURSE I. A		CREDIT – 4	
COURSE CODE – 19PFS2EC1A		INTERNAL 25	EXTERNAL 75

Preamble

- To acquire a sound understanding of the sources and role of functional foods and nutraceuticals in health and diseases.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1	Define the functional foods and nutraceuticals	K1
CO2.	Explain mechanism of action of functional foods and Nutraceuticals	K2
CO3.	Classify functional foods based on food sources	K3
CO4.	Examine role of functional foods and nutraceuticals on health and disease	K4
CO5.	Evaluate the isolated component derived from the functional food	K5
CO6.	Design dietary supplements from functional foods and Nutraceuticals	K6

Mapping with Programme outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	S	M
CO2.	S	S	S	S	M
CO3.	S	S	S	S	M
CO4.	S	S	S	S	M
CO5.	S	S	S	S	M
CO6.	S	S	S	S	M

S- Strong; M-Medium

Syllabus

Unit-I **(18 Hours)**

Functional foods and nutraceuticals

Definition, Classification of functional foods based on Food source - Plant, animal, microbial. Mechanism of action - antioxidant, antibiotic, anti inflammatory, antitumor, antihypertensive. Chemical nature - Fatty acids and structural lipids, isoflavones, phenolic substances, terpenoids, saponins, tocotrienols and simple terpenes, Isoprene derivatives, Amino acid derivatives, Carbohydrate derivatives.

Unit-II **(18 Hours)**

a. **Role of functional foods and nutraceuticals on health from plant sources** Cereals and its Products- rice bran, wheat bran, oats, barley, corn. Pulses and its Products- grams, bean, soyabean.

Vegetables and fruits- GLV, Cruciferous vegetables, carrot, tomato, avacado, berries.

Nuts and oilseeds- flax seeds, walnut, almond.

Herbs- Oregano, thyme, Aloevera, Mint

Roots and tubers- Sweet potato, Cassava

Spices and Condiments- turmeric, red chilli, nutmeg, cloves, cardomom

b. **Role of functional foods and nutraceuticals on health from animal sources** Fish- tuna fish, mackerel, sardines and salmon

c. Role of Functional foods and nutraceuticals on health from microbial sources

#Probiotic microflora#, Prebiotics, Symbiotics

Unit III **(18 Hours)**

Role of Functional Foods and Nutraceuticals in Diseases and Disorders

Diabetes mellitus ,hypertension, hypercholesterolemia, Neurological disorders and Nephrological disorders, Liver disorders, Osteoporosis, Psoriasis, Ulcers, cancer, obesity and stress.

Unit-IV **(18 Hours)**

Isolation and Extraction functional component from plant and animal materials

Extraction methods- Extraction of phenolic compounds using solvents, Microwave- assisted Extraction, Ultrasonic – assisted Extraction. Recent developments in the isolation, purification and delivery of phytochemicals.

Unit-V **(18 Hours)**

Regulatory Aspects of Functional Foods and Nutraceuticals

Regulatory aspects- FDA, CODEX, DSHEA, FOSHU, FSSAI, AYUSH, development of biomarkers to indicate the efficacy of functional ingredients, Research frontiers in functional foods

#-#:Self Study

Textbooks

S.No.	Author name	Year of Publication	Title of the book	Publishers name
1.	Susan Sungsoo Cho , Mark L.Dreher	2001	Handbook of Dietary Fibre	CRC Press, Newyork
2	Yahwant Vishnupant Pathak	2009	Handbook of Nutraceuticals- Vol-I	CRC Press, Newyork
3	Edward.R.Farnworth	2008	Handbook of Fermented functional foods	CRC Press, Newyork
4	Yahwant Vishnupant Pathak	2011	Handbook of Nutraceuticals-Vol-II	CRC Press, Newyork

Referencebooks

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Robert E C. Wildman	2007	Handbook of Nutraceuticals and Functional Foods	CRC Press, Newyork
2.	Jim Smith and Edward Charter	2010	Functional Food Product Development	Wiley Blackwell, New Delhi
3.	Gordon W.Fuller	2011	New Food Product Development From Concept to Marketplace	CRC Press, Newyork
4.	HariNiwas Mishra, Rajesh Kapur, Navneet Singh Deora, AasthaDeswal	2016	Functional foods	New India Publishing Agency, New Delhi
5.	Nicola Graimes	1999	The practical Encyclopedia of whole foods	Anness Publishing Ltd

Journals:

- Functional foods in Health and Disease, Functional food centre, Unitedstates
- Future journal of pharmaceutical sciences, Elsevier, UnitedKingdom
- Nutrafoods, Springer, United States.
- Functional Foods in Health and Disease, Functional Food Center, Inc. UnitedStates.

Web Links

https://www.ncbi.nlm.nih.g
ovwww.nutrition.orgwww.
ncbi.nlm.nih.gov
www.foodinsight.org/foodsforhealth.axpx

Pedagogy: E-content , Lecture, Power point presentation, Seminar, Assignment, Quiz, Group Discussion**.**

Course designers

- MsM.Vinothini
- Ms..B.Thanuja

SEMESTER – II	PAEDIATRIC NUTRITIONAL CARE	HOURS / WEEK – 6	
ELECTIVE COURSE I. B		CREDIT – 4	
COURSE CODE – 19PFS2EC1B		INTERNAL 25	EXTERNAL 75

Preamble

To understand growth ,development and nutritional requirements of children.

To get an insight knowledge on pediatric critical care

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	Citethe importance of immunization	K1
CO2.	Explain the anthropometric assessment techniques in pediatric	K2
CO3.	Predict the nutritional support in critically ill children according to their metabolic changes	K3
CO4.	Diagnose the clinical assessment in pediatric	K4
CO5.	Assess metabolic changes and conclude dietary management	K5
CO6.	Plan tailor-made diets for special condition	K6

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	S	M	M
CO3.	S	S	S	M	M
CO4.	S	S	S	S	M
CO5.	S	S	S	S	M
CO6.	S	S	S	S	S

S- Strong; M-Medium

Syllabus

UNITI **(18Hours)**

Pediatric, Assessment and Management of critically ill children

Normal growth in children –milestones, weight, height and head circumference in children (Birth to 12 years), factors affecting normal growth in children, immunization schedule.

Assessment of nutritional status in pediatric, interaction of nutrition and infection in children, low birth weight and preterm babies, determination of nutritional requirements in hospitalized children, nutritional support in critically ill children – metabolic changes during critical illness, TPN, EN and management of PEM – resuscitation, restoration and rehabilitation

UNITII **(18Hours)**

Dietary management in Peadiatric gastrointestinal disorders

a. Diarrhea – Types, Pathogenesis, Adverse effects, Oral Rehydration Therapy (ORT), Fluid and Electrolyte therapy, Dietary management and nutritional support.
b. #Constipation- Pathogenesis, dietary management#
c. Irritable Bowel Syndrome (IBD),Crohn's disease, Ulcerative colitis – Pathogenesis, dietary management.

UNITIII **(18Hours)**

Dietary management in Peadiatric cardiovascular, liver and renal disorders

a. **Cardio vascular diseases -** Congenital Heart disease- etiology, dietary management. Pediatric dyslipidemias and dietary management
b. **Liver–**Jaundice, Hepatitis, Cirrhosis- Pathogenesis, dietary management.'
c. **Renal Diseases** - Nephrotic syndrome, Acute Renal failure, Chronic renal failure- Pathogenesis, dietary management

UNITIV **(18 Hours)**

Dietary management in Peadiatric diabetes, AIDS and Cancer

a. **Juvenile diabetes -** Metabolic changes , diagnosis, complications, Management – Medical Nutrition Therapy, Nutrient requirement, Insulin regime and diet plan.
b. **AIDS -** Effect of HIV infection on Nutritional status, Effect of anti- Retroviral therapy, feeding of HIV exposed child, breast feeding, replacement feeding, role of nutrition and nutritional requirements for HIV infected child
c. **Cancer –** Types, signs and symptoms, diagnosis, treatment and dietary management

UNITV **(18 Hours)**

Dietary management in special conditions

a. Allergies and intolerance

Pathogenesis and types of allergic reactions-Type I hyper sensitivity, Type II hyper sensitivity, Type III immune complex reaction, Cell mediated reaction. Common food allergens and manifestations- skin, respiratory tract, GI (milk, egg, soy, fish, shell fish, peanuts). Diagnosis, treatment and dietary management.

b. Inborn errors- diagnosis and dietary management

CHO-glycogen storage disease, galactosemia, fructosemia, Proteins-PKUMSUD, Alkaptonuria Homocysteinuria, Tyrosenemia, Minerals-Wilson's disease.

c. Nutrition for children with special needs

Ketogenic diet- Epilepsy, Neutropenic diet- marrow transplant, Autism.

#-#: Self Study

Textbooks

S.No.	Author name	Year of Publication	Title of the book	Publishers name
1.	K.E.Elizabeth	2002	Fundamentals of Pediatrics	Paras Publishers, Hyderabad
2.	Madhu Sharma	2013	Pediatric Nutrition in Health and Disease	Jaypee Brothers Medical Publishers(P) Ltd, New Delhi
3.	MeenakshiN. Mehta	2014	Nutrition and Dietfor Children	Jaypee Brothers Medical Publishers(P) Ltd, New Delhi

Referencebooks

S.No	Author name	Year of publication	Title of the book	Publishers name
1.	Suraj Gupta	2010	Recentadvances in Pediatrics- Nutrition, Growth and Development	Jaypee Brothers Medical Publishers(P) Ltd, New Delhi
2.	Anjana Agarwal	2014	Text book of Human Nutrition	Jaypee Brothers Medical Publishers(P) Ltd, New Delhi

Journals

The American Journal of Clinical Nutrition, NutritionPress
Clinical Pediatric Dermatology, iMed PubLtd
Pediatric Cardiology, Springer, UnitedStates
Pediatric Allergy and Immunology, Wiley – Blackwell,Denmark

Web Links

http://medlineplus.govhttp://www.ohsu.eduhttp://www.ncbi.nlm.govhttp://www.niddk.nih.govhttp://academic.oup.com

Pedagogy: E-content, Lecture, Power point presentation, Seminar, Assignment

Course Designer

Ms.M.Vinothini

SEMESTER – II	APPLIED PHYSIOLOGY	HOURS / WEEK – 6	
ELECTIVE COURSE – II. A		CREDIT – 4	
COURSE CODE – 19PFS2EC2A		INTERNAL 25	EXTERNAL 75

Preamble

Acquire core knowledge about structure and functions of human organs.

Learn about functioning abnormality of various human systems.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	List various system present in human body	K1
CO2.	Illustrate cell adaptation and body fluid homeostatis	K2
CO3.	Predict physiological abnormality in circulatory and respiratory system	K3
CO4.	Ascertain disease conditions associated with nervous system and sense organs	K4
CO5.	Evaluate disease prognosis in digestive and excretory system	K5
CO6.	Conceive severity of degeneration prevalent in endocrine and reproductive system	K6

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	S	M	M
CO3.	S	S	S	M	M
CO4.	S	S	S	M	M
CO5.	S	S	S	M	M
CO6.	S	S	S	M	M

S- Strong; M-Medium

Syllabus

UNITI **(20 Hours)**

General physiology of cell and body fluids

a. **Cell** -Action potential of cell, Cell adaptation -Atrophy, hypertrophy, hyperplasia, dysplasia, metaplasia, Cell junction - herditary deafness, ichthyosis, sclerosing cholangitis, hereditary hypomagnesmia, synovial sarcoma, Gap junction -Abnormality deafness, keratoderma, cataract, peripheral neuropathy, mutation of genes- colon cancer, tumor, metastasis, transport of membranes-Abnormalities of sodium potassium pump, ion channel disease, Mechanism of homeostatic system – Negative feed back, Positive feed back. Cell death -Autophagy, apoptosis, necrosis.

b. **Body fluids –** Variation in plasma protein level, Abnormal haemoglobin, Anemia, abnormal leukocytes, autoimmune disease, allergy and immunological hypersensitivity, Abnormal thrombocytes, bleeding disorders, blood volume – hypervolemia, hypovolemia**.** Tissue fluid**-** Intracellular edema, Extracellular edema, Elephantiasis.

UNIT II **(20 Hours)**

Cardiovascular and respiratory system

a. **Heart and Circulation** –Review on structure and function of Heart and blood Vessels[#;] Abnormal pulse-pulses deficit, pulsusalternans, anacrotic pulse, thready pulse, pulsusparadoxus, water hammer pulse, abnormal pulse in patient ductus arterioses, abnormal pulse in aortic regurgitation, abnormal venous pulse, coronary artery disease; Arterial Blood Pressure- Hypertension, hypotension, Stroke, varicose vein, thrombophlebitis, heart failure.

b. **Respiratory System** –Review on structure and functions of Lungs; Apnea hyperventilation, hypoventilation, hypoxia, oxygen toxicity, hypercapnia, asphyxia, dyspnea, bronchial asthma; Infectious Diseases of Lungs-tuberculosis, pneumonia.

UNIT III **(20 Hours)**

Nervous system and sense organs

a. **Nervous System** –Review on structure and functions of Brain &Spinal Cord. Diseases of spinal cord-syringomyelia, tabesdorsalis, multiple sclerosis, disk prolapse, effects of motor neuron lesion, paralysis, thalamic lesion, thalamic syndrome. Disorders of basal ganglia - parkinson disease, Wilson disease, chorea, athetosis, choreathetosis, Huntington chorea, hemiballisms, kernicterus. Frontal lobe syndrome, temporal lobe syndrome. Sleep Disorder, epilepsy.

b. **Sense Organs** – Review on structure and functions of Sense Organs. Eye- Glaucoma, cataract, Errors of refraction, colour blindness. Conduction deafness and nerve deafness Abnormalities of taste sensation- Ageusia, hypogeusia, taste blindness, dysgeusia. Abnormalities of olfactory sensation – Anosmia, hyposmia, hypersomia.

UNIT IV **(15 Hours)**

Digestive system and excretory system

a. **Digestive system -** Review on structure and functions of Digestive system. Disorders of Upper Gastro Intestinal Tract-Hyposalivation, hypersalivation, esophageal, achalaria, gastroesophageal reflux disease(GERD), gastritis, gastric atrophy. Disorders of Lower Gastro Intestinal Tract-peptic ulcer, zollinger -Ellison syndrome, malabsorption, crohn's disease, celiac disease, diarrhea, constipation, appendicts, ulcerative colitis, dysphagia, gastric dumping syndrome, vomiting. Pancreatitis, jaundice, hepatitis, cirrohosis and gallstones.

b. **Excretory system** –[#]Review on structure and functions of Excretory System[#]; Osmotic diuresis, polyuria, hypersecretion of Anti Diuretic Hormone, Nephrogenic diabetes insipidus, Bartter's syndrome, renal failure, Abnormalities of micturition – Atonic bladder, Automatic bladder, unihbited neurogenic bladder, nocturnal micturition.

UNITV **(15 Hours)**

a. **Muscular and Skeletal System**– #Review on structure and functions of Skeletal Muscle# ;Disorders of Skeletal Mucsle- Myopathy-Sprain and strain, Muscular Dystrophy, Diseases involving muscle tone, Tetany. Osteoporosis, Arthritis, Spondylitis, Osteomalacia, Rickets, Dislocations and fractures.

b. **Reproductive system** – Review on structure and functions of Reproductive System Effects of extirpation of testis, hypergonadism in males, hypogonadism in males, enlargement of prostrate gland, azoospermia, oligozoospermia, teratozoospermia, aspermia, oligospermia, hematospermia. Abnormal menstruation – menstrual symptoms, premenstrual syndrome, anovulatory cycle, amenorrhea, hypomenorrhea, menorrheagia, oligomenorrhea, polymenorrhea, dysmenorrhea and metrorrhagia.

#-#:Self Study

Textbooks

S.No.	Author name	Year of Publication	Title of the book	Publishers name
1.	Wilson and Ross	2014	Anatomy and Physiology in Health and Illness	New Delhi Reed Elsevier India Private Limited
2.	K.Sembulingam	2016	Essentials of Medica Physiology ,	New Delhi Healt Sciences Publisher
3.	Subramanyam, Sarada	2018	Textbook of Humar Physiology	New Delhi S.Chand & Company Ltd

Referencebooks

S.No.	Author name	Year of Publication	Title of the book	Publishers name
1.	Waugh, Anne Ross and Wilson	2003	Anatomy and Physiology in Health and Illness	NewYorkChurchill Livingston (2003)
2.	N.Murugesh	2011	Basic Anatomy and Physiolog y	Madurai Sathya Publishers
3.	Indu Khurana	2013	Text book of Human Physiolog y	Elsevier
4.	Wilson and Ross	2014	Anatomy and Physiology in Health and Illness	NewDelhi: Reed Elsevier India Private Limited
5.	K.Sembulingam	2016	Essentials of Medical Physiolog y	NewDelhi Health Sciences Publisher

Journals

Applied Physiology, Nutrition and Metabolism, National ResearchCouncil Canada,Canada

Journal of Applied Physiology, Amer Physiological Soc, United States

Chinese journal of applied physiology,Zhongguo Yingyong Shenglixue Zazhi Bianjibu,China

European Journal of Applied Physiology,Springer,Germany.

Web links:

https://ncdc.gov.in/https://www.cdc.gov/globalhealth/countries/india/default.htm

Pedagogy: E-content, Lecture, Power point presentation, Seminar, Assignment, Demonstration

Course designers

- Ms. S.Fathima
- Ms. E.Agalya

SEMESTER – II	NUTRITION FOR FITNESS	HOURS / WEEK – 6	
ELECTIVE COURSE – II. B		CREDIT – 4	
COURSE CODE – 19PFS2EC2B		INTERNAL 25	EXTERNAL 75

Preamble

To impart knowledge on sports nutrition.

To enable the students to understand the various diets for sportspersons.

To help the students to understand the role of ergogenic aids to enhance sports performance.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	List different type of fitness activities	K1
CO2.	Explain the importance of nutrition fitness.	K2
CO3.	Apply the fitness and nutritional assessment techniques among individuals.	K3
CO4.	Determine the nutritional requirements of athletes.	K4
CO5.	Assess the dietary requirements for pre and post events.	K5
CO6.	Develop ergogenic foods for sports individuals.	K6

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	S	M
CO2.	S	S	S	S	M
CO3.	S	S	S	S	M
CO4.	S	S	S	S	M
CO5.	S	S	S	S	M
CO6.	S	S	S	S	S

S- Strong; M-Medium

Syllabus

UNITI **(18Hours)**

a. **Understanding Fitness**

Definition of fitness, health and related terms, Approaches for keeping fit, Alternative forms of fitness- Yoga, Pilates, Kickboxing, Boot Camps.

b. **Importance of Physical activity**

Importance and benefits of physical activity, Physical Activity – frequency, intensity, time and type with example, Physical Activity Guidelines and physical activity pyramid.

UNITII **(18 Hours)**

a. **Physiology and Biochemistry of Exercise**

Physiology and biochemistry of exercise: Muscle contraction; weight and body composition of athletes; adaptation of muscle and body physiology to exercise

b. **Effect of Physical fitness on health status**

Effects of Physical Exercises on various systems - Circulatory, Muscular, Digestive and Respiratory systems

UNIT III **(18 Hours)**

a. **Assessment of fitness**

Anthropometry, assessment of
physical and functional capacity

b. **Nutritional Assessment**

Measurement of body composition, methods of measuring energy expenditure, Somato typing, #dietary assessment, biochemical assessment, clinical assessment#, body composition and sports performance.

UNITIV **(18 Hours)**

a. **Importance of Nutrition**

Role of nutrition in fitness, Nutritional guidelines for health and fitness, Nutritional supplements organisations working for sports nutrition#, goals of optimal nutrition for athletes.

b. **Nutritional Problems**

The female athlete triad, eating disorders, amenorrhea, osteoporosis, travelling athletes, diabetic athletes, GI stress and athletes, cramps and stitches.

UNITV **(18 Hours)**

a. **Nutritional Requirements**

Role of macronutrient on exercise and sports performance, Role of micronutrient on exercise and sports performance, Hydration Assessment and recommendation

b. **Principles of diet planning**

Principles of diet planning for and different exercise/sports conditions, Pre Game meals, Post Game meals, During meals, On-season and Off-season meals, Ergogenic aids**,** Nutritional Standards – Dietary reference Intake, Probiotics, Exercise and weight management.

#-#: Self Study

TextBooks

S.No.	Author name	Year of Publication	Title of the book	Publishers name
1.	Shubhangini A Joshi	2014	Nutrition and Dietetics with Indian case studies	McGraw Hill Education (India) Private Limited.
2.	B.Srilakshmi, et.al.	2017	Exercise physiology fitness and sports nutrition	New Age International Publishers.

ReferenceBooks

S.No	Author name	Year of publication	Title of the book	Publishers name
1.	L.Kathleen Mahan	2008	Krause's Food & Nutrition Therapy	Sauders Elsevier, canada.
2.	Jose Antonio et al	2009	Essentials of Sports Nutrition and Supplements	Humana Press
3.	Wener W.K. Hoeger, Sharon A. Hoeger	2012	Lifetime Physical Fitness and Wellness: A Personalized Program,	Cengage Learning, Unites States
4.	Jerrold S. Greenberg	2013	Empowering Health Decisions	Jones & Bartlett Publishers, Burlington
5.	Asker Jeukendrup,MichaelGleson	2019	Sport Nutrition	Human Kinetics,United States

Journals:

- JournaloftheInternationalSocietyofSports,NutritionBiomedCentralLtd,United States

Web links:

http://www.sportsauthorityofindia.nic.in

Pedagogy: E-content, Lecture, Power point presentation, Seminar, Assignment, Demonstration

Course designers

- Ms.S.Fathima

SEMESTER - III	PRINCIPLES OF HOME SCIENCE	HOURS / WEEK - 6	
CORE COURSE – VII		CREDIT – 5	
COURSE CODE – 19PFS3CC7		INTERNAL -	EXTERNAL 100

Objectives

- To understand the basic concepts of home science.
- To enable the students for competitive exams.
- To enhance life skills.

Course outcomes

On the successful completion of the course, students will be able to:

CO number	CO statement	Knowledge level
CO1	Describe basic properties of food, different cooking techniques, food standard and therapeutic management.	K1
CO2	Predict malnutrition, ecological factors, nutritional problems and their management	K3
CO3	Classify various fabric and procedures in apparel designing	K3
CO4	Associate resource management with consumer issues and fundamentals of design in housing	K4
CO5	Evaluate physical and physiological human development with respect to family relationship.	K5
CO6	Plan appropriate communication tools for extension education.	K6

Mapping with programme outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	S	S
CO2.	S	S	S	M	M
CO3.	M	M	M	M	S
CO4.	M	M	M	M	M
CO5.	M	S	S	M	M
CO6.	M	M	M	M	M

S- Strong; M-Medium

SEMESTER - III	PRINCIPLES OF HOME SCIENCE	HOURS / WEEK - 6	
CORE COURSE – VII		CREDIT - 5	
COURSE CODE – 19PFS3CC7		INTERNAL -	EXTERNAL 100

Syllabus

UNIT-I **(18 Hours)**

a. Review and Concepts of Food Science and Food Service Management

- Food science and nutrition.
- Properties of food – physical and chemical properties
- Quality evaluation of foods- objectives and subjective.
- Effects of cooking and processing techniques on nutritional components and other physical parameters, food preservation and application.
- Food pigments and additives.
- Food standards, microbiological safety of food, HACCP, food packaging.
- Perspectives of food service-menu planning, food cost analysis.
- New product development - nanotechnology
- Food service management of institutional level-hospital, educational institutions, social and special institutions

b. Review and Concepts of Nutrition and Dietetics

- Food groups – balanced diet, food pyramid, macro and micro nutrition.
- Nutrients-role of nutrients in the body, nutrient deficiencies and requirements for Indians.
- Public health nutrition
- Nutrition through life span-physiological changes, growth and development from conception to adolescence, nutritional needs and dietary guidelines for adequate nutrition through life cycle, nutrition concerns.
- Community nutrition, sports nutrition, nutrition in emergencies and disasters.
- Nutritional assessment-methods and techniques.
- Nutritional intervention-national nutrition policies and programmes, food and nutrition security.
- Clinical and therapeutic nutrition.
- Diet counseling and management.

UNIT-II **(18 Hours)**

a. Textiles

- Textile terminologies- fibre, yarn, weave, fabric etc., classification of fibers, yarns and weaves, Identification of fibres and weaves.
- Manufacturing process of major natural and manmade fibres, properties and their uses.
- Different methods of fabric construction-woven, knitted and non woven fabrics, their properties and uses.

- Textiles finishes-classification, processing and purposes of finishes.
- Dyeing and printing-classification, method of block printing, tie and dye, batik, roller printing, screen printing, discharge, heat transfer printing and digitized printing.
- Traditional textiles of India-embroidered textiles, printed textiles, woven textiles, dyed textiles of various regions in India. Identification on the basis of fibre content, technique, motif, colour and designed.
- Textile Testing and quality control-need of testing, sampling method, techniques of testing fibres, yarn, fabrics and garments. Testing of colour-fastness, shrinkage, pilling and GSM of fabrics.
- Textile and environment-banned dyes, eco-friendly textiles, contamination and effluent treatment, Eco-label and ecomarks.
- Recent developments in textiles and apparels- nano textiles, technical textiles, occupational clothing, zero waste designing, up cycling and recycling.

b. Apparel designing

- Body measurements-procedure, need, figure types and anthropometry.
- Equipments and tools used for manufacturing garments-advancements and attachments used for sewing machine. Types of machines used and their parts.
- Elements and principles of design and its application to apparel. Illustrations and parts of garments.
- Fashion-Terminologies, fashion cycle, fashion theories, fashion adoption, fashion forecasting and factors affecting fashion.
- Pattern making-drafting, draping and flat pattern making techniques, pattern alteration and dart manipulation techniques.
- Apparel manufacturing-terminology used, seams, techniques and machines used, process of fabric to apparel manufacture.
- Apparel Quality testing-Quality standards and specification, Quality parameters and defects of fabrics and garments.
- Care and maintenance of clothing-principles of washing, laundry agents, storage techniques case labels and symbols.
- Selection of clothing for different age groups. Selection of fabrics for different and uses.

UNIT- III **(18 Hours)**

a. Resource Management and Consumer Issues

- Management-concept, approaches, management of time, energy, money, space, motivating factors, motivation theories, decision making.
- Functions of management-planning, supervision, controlling, organizing, evaluation, family life cycle-stages, availability and use of resources.
- Resources-classification, characteristics, factors affecting use, resource conservation, time management, work simplification techniques, classes of change, fatigue and its management.
- Management of natural resources-land, forest, water, air, water harvesting, municipal solid waste management, concept of sustainable development, SDGs.
- Money management-family income, types, supplementation, budgeting, household accounts, family savings and investment, tax implications.
- Human resource management- functions, need, human resource development-challenges, functions, manpower planning, training need assessment, training methodologies, training evaluation.
- Consumer-definition, role, rights and responsibilities, consumer behavior, consumer problems, education and empowerment.
- Consumer protection- consumer organization, cooperatives, alternative redressal, standardization, standard marks, quality control, buying aids, consumer legislation.
- Entrepreneurship-concept, process, barriers, entrepreneurial motivation, challenges, enterprise setting, project planning and appraisal, enterprise management.

b. Housing and Interior Design

- Design fundamentals – elements of art, principles of design, principles of composition.
- Colour - dimensions of colour, psychological effects of colour, colour schemes, factors affecting use of colour.
- Space planning and design-housing need and important, principles of planning spaces, types of house plans, economy in construction, planning for different income groups.
- Building regulations-norms and standards, zoning, housing for special groups and areas, housing finance.
- Housing and environment- building materials- impact on environment, green rating systems, energy efficiency in buildings, energy auditing, indices of indoor comfort.
- Energy as a resource- conventional and non- conventional sources, renewable /non- renewable energy, energy management, national efforts on energy conservation.
- Product design - design thinking process ,diffusion and innovation, design communication, ergonomic considerations.
- Ergonomics - significance, scope, anthropometry, man, machine, environment relationship, factors affecting physiological cost of work, body mechanics, functional design of work place, time and motion study, energy studies.
- Furniture and furnishing - historical perspectives, architectural styles, contemporary tends, wall finishes, window and window treatments.

UNIT-IV **(18 Hours)**

a. Child/Human Development

- Principles of growth and development, care during pregnancy and pre-natal and neonatal development.
- Theories of human development and behavior.
- Early childhood care and education – activities to promote holistic development.
- Influence of family, peers, school, community and culture on personality development.
- Children and persons with special needs, care and support, special education, prevention of disabilities, rehabilitation.
- Children at risk-child labour, street children, children of destitute, orphans, child abuse and trafficking.
- Adolescence and youth: changes, challenges and programs to promote optimal development.
- Adulthood, characteristics, changing roles and responsibilities in early and middle adulthood.
- Aging-physical and psychological changes and care needs.

b. Family Studies

- Dynamics of marriage and family relationships.
- Family welfare-approaches, programmes and challenges, role in national development.
- Domestic violence, marital disharmony, conflict, resolution of conflict.
- Parent education, positive parenting, community education.
- Family disorganization, single parent families.
- Family studies-family in crisis, family therapy, initiatives for child development.
- Human rights, rights of children, rights of women, status of women, gender roles.
- Guidance and counseling- across life span and for caregivers.
- Health and well being across life span development.

UNIT V **(18 Hours)**

a. Communication for Development

- Basics of communication- nature, characteristics, functions, process, models, elements, principles, barriers, perception, persuasion and empathy, types of communication, levels (settings) of communication transactions, process of listening.
- Communication systems and communication theories- human interaction theories, mass communication theories, message design theories, communication systems, culture and communication.
- Concept of development- theories, models, measurement and indicators of development.
- Concept of development- communication models and approaches, diffusion and innovation, mass media, social marketing.

- Role of communication in development- need and importance, development journalism, writing for development-print, radio, television and internet.
- Concerns of development communication- gender, health, environment, sustainability, human rights, population, literacy, rural and tribal development.
- Advocacy and behavior change communication- concept, theories, models, approaches, application and challenges.
- Traditional, modern and new media for development - folk forms of songs, art, dance, theatre, puppetry, advertisement, cinema, ICTs for development-community radio, participatory video, social media and mobile phones.
- Organisation/agencies/institutes working for development communication-international/national/state and local.

b. Extension Management and Community Development

- Historical perspectives of extension–genesis of extension education and extension systems in India and other countries, objectives of extension education and extension service, philosophy and principles of extension programme development.
- Programme management- need assessment, situation analysis, planning, organization, implementation, monitoring and evaluation.
- Extension methods and materials- interpersonal, small and large group methods, audiovisual aids-need, importance, planning, classification, preparation and field testing, use and evaluation of audio-visual materials.
- Curriculum development and planning for extension education and development activities, Bloom's taxonomy of educational objectives and learning.
- Non-Formal, adult and lifelong education-historical perspectives, concept, theories, approaches, scope, methods and materials used, challenges of implementation and evaluation, issues to be addressed.
- Training, skill development and capacity building for human resource development-methods of training, entrepreneurship development.
- Community development- perspectives, approaches, community organization, leadership, support structures for community development, Panchyat raj institutions, NGOs and community based organisations.
- People's participation and stakeholders' perspectives, Participatory Learning and Action-methods and techniques.
- Development programmes in India for urban, rural and tribal population groups-programmes for nutrition, health, education, wage and self employment, women's development, skill development, sanitation and infrastructure.

Text Books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Trueman Team	2019	NTA –UGC NET Home Science	Danika Publishing Company
2.	Upkar Prakasan	2015	Upkar's UGC NET/JRF Exam Solved Papers HomeScience	Pratiyogita Darpan
3.	Premalatha Mullick	2012	Textbook of HomeScience	Kalyani Publishers

Reference Books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Trueman Team	2019	NTA –UGC NET Home Science	Danika Publishing Company
2.	Atlantic Research Division	2014	Home Science for UGC-NET/SLET/JRF	Atlantic Publishers & Distributors Pvt.Ltd
3.	Nandini Sharma	2019	NTA UGC NET/JRF/SET Home Science	Arihant
4.	Editorial Board	2019	NTA UGC-NET/ JRF Solved Papers Home Science	Sahitya Bhawan
5.	Upkar Prakasan	2015	Upkar's UGC NET/JRF Exam Solved Papers HomeScience	Pratiyogita Darpan
6.	Prof.Sunita Mishra	2013	UGC NET Study Manual Home Science	Selective and Scientific Books

Web links:
https://www.examrace.com/NTA-UGC-NET/NTA-UGC-NET-Previous-Years-Papers/Home-Science/
http://www.deepugcnet.com/home-science.html
http://www.ugcnetjrf.com/ugc-net-home-science-study-materials.html
https://iasexamportal.com/Download/UGC-NET-Previous-Year-Exam-Question-Paper-Home-Science

Pedagogy: Lecture, Seminar, Assignment, Power point presentation ,E-Content.

Course Designers

- Ms.B.Thanuja
- Ms.S.Fathima

SEMESTER – III	RESEARCH METHODS AND STATISTICAL TECHNIQUES	HOURS / WEEK - 6	
CORE COURSE – VIII		CREDIT - 5	
COURSE CODE – 19PFS3CC8		INTERNAL 25	EXTERNAL 75

Objectives

- To comprehend diverse categories of researches.
- To ascertain and accomplish different research.
- To apply computer techniques in various researches.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	List different types of research	K1
CO2.	Compile various types of data	K2
CO3.	Compute and evaluate the data processing using diagram and graphical representation	K3
CO4.	Ascertain sampling techniques and apply the same for thesis and report writing	K4
CO5.	Assess central tendency variation and relate the results	K5
CO6.	Conceive probability distributions and apply it for tests of significance using SPSS	K6

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	M	S	M
CO2.	S	S	M	S	M
CO3.	S	S	M	S	M
CO4.	S	S	M	S	M
CO5.	S	S	M	S	M
CO6.	S	S	M	S	M

S- Strong; M-Medium

Syllabus

UNIT I **(15 Hours)**

a. **Introduction to Research and Research design**

Definition, Objectives, characteristics of research and criteria of good research. Different types of Research- Descriptive & Analytical, Applied & fundamental, quantitative & qualitative, Conceptual and Emprical

b. **Types of Nutrition Research & Experimental Design**

Principles of Research Design, longitudinal, cross sectional, epidemiological, surveillance, retrospective, in-vivo, in- vitro and experimental. Experimental Design – Single group, pre and post design, case study, expost facto, time series, experiments and factorial design

UNIT II **(15 Hours)**

a. **Collection of data**

Methods of data Collection – Primary and secondary data. Primary data collection methods - preparation of schedules and questionnaires. Interview method of enquiry, training of interviews. Secondary data collection method- Reliability of data, suitability of data, adequacy of data. Scaling Techniques – Different types – Nominal, Ordinal, Interval and ratio – attitude Scales – Rating scales, check list.

b. **Processing of data**

Questionnaire checking, Editing, coding, Classification- Geographical chronological, qualitative, quantitative, frequency distribution, discrete and continuous. Tabulation of data parts of a table, rules of tabulation, types of tables-simple and complex.

c. **Diagrammatic and Graphical Representation of data**

Diagrammatic–One dimensional diagrams- Bardiagrams – simple, multiple, subdivided, deviation. Two dimensional diagrams- pie, circles, rectangles and squares-pictogram and cartographs. Graphical, frequency graphs- Line , polygon, curve Histogram- cumulative frequency graphs-ogives.

d. **Sampling Techniques**

Sample design- Different sampling Methods-Probability and non probability, sampling methods, simple, stratified, systematic. Cluster, multistage, purposive judgment, convenience, quota, snowball, accidental. Sampling and non sampling errors, sample size, sampling fundamentals and theory of sampling.

UNIT III **(20 Hours)**

a. **Measures of central tendency and variation**

Mean, median, mode, their relative advantages and disadvantages. Measures of dispersion, mean deviation, standard deviation, coefficient of variation, percentiles and percentile ranks

b. **Correlation and regression**

Correlation, co efficient of correlation and its interpretation, rank correlation. Regression equations and predictions.(Include problems)

UNIT IV **(20 Hours)**

a. **Probability and distributions**

Rules of probability and its applications, importance of these distributions in research studies

b. **Tests of Significance**

Large and small samples, „t" and F tests , tests for independence using chi square, analysis of variance (ANOVA), analysis of covariance (ANOCOVA) and applications, Parametric and Non – Parametric Test.

c. **Computer Applications**

Spreadsheet tool: Introduction to spread – sheet applications, features and functions, using formulae and functions, data storing, features for statistical data analysis, generating charts/graphs and other features. tool – Introduction to presentation tool, features and function, creating presentation, customizing presentation. Use of SPSS Package for consolidation and statistical analysis .

UNIT V **(20 Hours)**

a. **Research Report**:

Components or layout of a thesis - Introduction, review of literature, methodology, results and discussion, summary and conclusion, bibliography, footnotes and Appendix. Difference between Dissertation and thesis. Technical reports, popular reports, manuscript writing – original, review article, abstract, research article. Plagiarism, research ethics – Animal and Human Studies.

b. **Vital Statistics**

Mortality Rate – Crude Death Rate, Specific Death Rate, Case Fertility Rate, Infant Mortality Rate, Neonatal Mortality Rate, Maternal Mortality Rate, Morbidity – Incidence, Prevalence,

c. Population test, Socio economic indices, KAP Surveys

Text Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Dr.Rajamohan.S and Thilagaraj. A	2010	Introduction to Statistics, 2nd Edition	Learntech press
2.	G.R.Kothari.,	2004	Research Methodology, Methods and Techniques	Wiley Eastern Limited, New Delhi
3.	G.R.Kothari	2004	Research Methodology,	New Age International (P) Ltd
4.	P.Saravanavel	2013	Research Methodology	KitabMahal Allahabad

Reference Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	VijayalakshmiG and C.Sivapragasam.,	2008	Research Methodology	MJP Publishers
2.	M.N. Borse	2004	Hand Book of Research Methodology	Shree Niwas publications, Jaipur(India)
3.	N. Grumani.,	2014	Research Methodology for Biological Sciences,	MJP Publishers
4.	P. Ramadas and A.Wilson	2014	Research and writing	MJP publishers
5.	S.P. Gupta	2002	Statistical Methods,	Sultan Chand & Sons, New Delhi

Journals:

BMC Medical Research Methodology, Biomed Central Ltd, England.

Health Services and Outcomes Research Methodology, Kluwer Academic Publishers, Netherlands.

International Journal of Social Research Methodology: Theory and Practice, Taylor &Francis United Kingdom.

Research Methodology in Strategy and Management, Elsevier Bv, Netherlands.

Web links:

http://mospi.nic.in/419-market-research-surveys

http://shodhganga.inflibnet.ac.in/bitstream/10603/2019/8/08_chapter-1.pdf

https://swayam.gov.in/courses/5143-research-methodology

http://icssr.org/

Pedagogy: E-content , Lecture, Power point presentation, Seminar, Assignment, Demonstration

Course designers

Ms. S.Fathima

Ms. S.Preethi

SEMESTER - III	CATERING INTERNSHIP	HOURS / WEEK - 6	
CORE PRACTICAL – III		CREDIT - 5	
COURSE CODE – 19PFS3CC3P		INTERNAL 40	EXTERNAL 60

Objectives

To study the operational aspects of commercial and non- commercial food service institutions.

To understand the principles in preparing layout

To acquire knowledge on the standardisation of recipes.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO statement	Knowledge level
CO 1	Define Commercial and Non Commercial food service institutions.	K1
CO 2	Explain tpes of record maintained in different working areas.	K2
CO 3	Classify different types of menu	K3
CO 4	Determine the hierarchy of the establishment	K4
CO 5	Assess and calculate food cost	K5
CO 6	Design and develop check sheets	K6

Mapping with programme outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	M	S	S
CO2.	S	S	M	S	S
CO3.	S	S	M	S	S
CO4.	S	S	M	S	S
CO5.	S	S	M	S	S
CO6.	S	M	M	S	M

S- Strong; M-Medium

Syllabus

1. Internship for a period of FOUR Weeks in well established catering centre, to develop professional competence.

   Commercial Food Service Establishment – (15 Days)

   Non Commercial Food Service Establishment – (15 Days)

   - Hands on training in front office, housekeeping, food production, food and beverage service, waste disposal.
   - Detailed observation on layout, storage, meal planning, food costing and accounting procedures and food standards.
   - Observation of records in different unit.

2. Development of check sheets for:
   - Menu
   - Employee performance
   - Kitchen safety
   - Sanitation

Text Books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Negi J	2000	Professional Hotel Management	S.Chand and Company Limited, New Delhi (2000)
2.	J.P.Palacio., V.Harger.,G.Shugari., M.Thesis.	2001	West and Woods Introduction to Food Service.	Mac Millan Pub Co., New York
3.	Krishna Arora.,	2005	Theory of cookery,	Fronk Bros and co.Publishers, New Delhi
4.	R.Singaravelavan	2006	Food & Beverage Service	Oxford University press (2006)

Reference Books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	V.Cessarani. and R.Kinton	2002	Practical Cookery,	Hodder and Stoughton publishers
2.	KhanMA	2003	Food Service Operations	AVI Publications Co., Connecticut
3.	MohiniSethi and Malhan S M	2007	Catering Management – An Integrated Approach,	Wiley Eastern Limited, Mumbai
4.	Thangam Philip	2005	Modern Cookery,	Orient Longmam Limited, Bangalore
5.	Vijay Dhawan	2007	Food & Beverage Service,	Frank Bros&co, New Delhi

Pedagogy: Lecture, Internship

Course Designers

- Ms.M.Vinothini

SEMESTER – III	FOOD MICROBIOLOGY AND SANITATION	HOURS / WEEK - 6	
ELECTIVE COURSE – III.A		CREDIT - 4	
COURSE CODE – 19PFS3EC3A		INTERNAL 25	EXTERNAL 75

Objectives

- To understand the microorganisms related to food
- To identify the beneficial effects of the microorganisms
- To evaluate the principles of sanitation
- To apply the laws related to food safety

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	Identify the types of microorganisms.	K1
CO2.	Explain the morphology of microorganisms.	K2
CO3.	Classify beneficial effects of microbes in food products.	K3
CO4.	Determine the risk factors of microorganisms in food products.	K4
CO5.	Evaluate the hygiene and sanitary practices	K5
CO6.	Compile the various food standards to maintain the quality of foods.	K6

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	S	M	M
CO3.	S	S	S	M	M
CO4.	S	S	S	M	M
CO5.	S	S	S	M	M
CO6.	S	M	S	M	M

S- Strong; M-Medium

Syllabus

UNIT I **(18 Hours)**

Introduction to microbiology

Definition and history of microbiology, Different types of microscopy, #General morphology of microorganisms- Bacteria, fungi- moulds and yeasts, viruses, protozoa and algae.#

Factors affecting the growth of microorganisms – Intrinsic factors and extrinsic factors.

UNIT II **(18 Hours)**

Microbiology of food products

Contamination, spoilage and preservation of cereal and cereal products, pulse and pulse products, vegetables and fruits, milk and milk products, meat and meat products, egg, poultry, fish and canned foods, fermented food products –yoghurt, cheese, soy products and sauerkraut, bread

UNIT III **(18 Hours)**

Food borne diseases

Food hazards, significance of food borne diseases, risk factors associated with food borne illness.

a. Bacterial agents of food borne illness – *Clostridium botulinum, clostridium perfringens, Escherichia coli, salmonella, shigella, vibrio and staphylococcus aureus.*

b. Non-bacterial agents of food borne illness – Toxigenic fungi – Mycotoxins, ergotism and aflatoxins. Food borne viruses – Polio, Hepatitis and Gastroenteritis viruses.

UNIT IV **(18 Hours)**

Hygiene and sanitation

a. Importance of personal hygiene of food handlers
   General principles of hygiene- Personal and environmental hygiene. Hygienic practices in handling and serving foods. Planning and implementation of training programmes for health personnels.
b. Control of infestation and cleaning methods.
   Importance of pest control, cleaning and sanitizing, cleaning agents, methods to rinse and sanitize food contact surfaces.
c. Environment Sanitation – Dengue, Swine Flu and Nipha Virus

UNIT V **(18 Hours)**

Food Quality

Controlling the microbiological quality of foods- quality criteria, quality control using microbiological criteria. HACCP, steps in HACCP, application stages and benefits of HACCP,

#-# : Self Study

Text Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Bohra and Parihar	2012	Food Microbiology	SarswatiPurohit for Student edition
2.	Frazier	2012	Food Microbiology	Mcgraw Hill Irwin companies
3.	M.R.Adams	2008	Food Microbiology	New age International (P) Ltd, Publishers
4.	Pelczar.Jr	2014	Microbiology	Mcgraw Hill Education(India) Private Ltd
5.	SunetraRoday	2012	Food Hygiene and Sanitation with Case studies	Tata McGraw Hill companies

Reference Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Anathanaraya	2013	Textbook of Microbiology	Hyderabad: University Press(india) Pvt. Ltd
2.	K.Vijaya Ramesh	2009	Food Microbiology	New Delhi: New Age International Publishers
3.	KavitaMarwaha	2007	Food Hygiene	Gene-Tech Books
4.	R.P.SugandharBabu	2008	Food Microbiology	Daryaganj, Newdelhi-2: Adhyayan Publishers &distributors
5.	Rajender Singh	2009	Food Microbiology and Food Processing	Arpit printer, New Delhi

Journals:

- Journal of Microbiology, Biotechnology and Food Sciences, Slovak University of Agriculture in Nitra, Slovakia
- Journal of Applied Microbiology, Wiley-Blackwell, England
- Indian Journal of Microbiology Research, IP Innovative Publication Private Limited, New Delhi
- Journal of Basic Microbiology, Wiley-Blackwell, Germany
- Journal of Microbiology, Microbiological Society Korea, South Korea

Web links:

http://airccse.org/journal/ijscai/papers/3214ijscai01.pdf
https://nptel.ac.in/courses/102103015/pdf/mod5.pdf
https://www.fda.gov/files/food/published/Evaluation-and-Definition-of Potentially-Hazardous-Foods.pdf
https://www.ncbi.nlm.nih.gov/books/NBK216688/

Pedagogy: Lecture, Power point presentation, Seminar, Assignment, Demonstration

Course Designers

- Ms.S.Agalya
- Ms.U.Rasikha

SEMESTER - III	NUTRITION IN CLINICAL CRITICAL CARE	HOURS / WEEK - 6	
ELECTIVE COURSE – III.B		CREDIT - 4	
COURSE CODE – 19PFS3EC3B		INTERNAL 25	EXTERNAL 75

Objectives

- To understand the special nutritional requirements in critically ill.
- To know the nutritional support system for critically ill.
- To ensure the nutritional needs of the critically ill patient

Course outcomes

On the successful completion of the course, students will be able to:

CO number	CO statement	Knowledge level
CO 1	List the types of infection.	K1
CO 2	Explain nutritional assessment methods for critically ill patients.	K2
CO 3	Predict complications of enteral and parenteral nutrition.	K3
CO 4	Diagnose nutritional status of critically ill patients.	K4
CO 5	Evaluate role of nutrients in critical care	K5
CO 6	Design the nutritional requirements for natural calamities.	K6

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	S	M	M
CO3.	S	S	S	M	M
CO4.	S	S	S	M	M
CO5.	S	S	S	M	M
CO6.	S	S	S	M	M

S- Strong; M-Medium

UNIT I **(18 Hours)**

Nutritional care of hospitalized patients

Metabolic response and adaptation to stress, starvation, infection, trauma, sepsis and surgery

UNIT II **(18 Hours)**

Screening and Nutritional assessment of critically ill patients

Anthropometry, Biochemical parameters, Clinical and Dietary. Subjective Global assessment

UNIT III **(18 Hours)**

Nutritional Support system

a. Enteral nutrition – types, routes, composition of feeds, precautions while feeding and complications.
b. Parenteral nutrition – types, composition, precautions while feeding and complications. Refeeding syndrome.
c. Immune suppressants
d. Special diets in critical care

UNIT IV **(18 Hours)**

Nutrient requirements in critically ill patients

Understanding of special nutritional requirements, nutritional management in critical illness – Stress, sepsis, trauma, burns, surgery and cancer

UNIT V **(18 Hours)**

Nutritional support for natural calamities

Nutritional support for flood, cyclone, earthquake and drought.

Text books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Luc A. Cynober, Frederick A. Moore	2003	Nutrition and critical care	Karger Medical and Scientific Publishers
2.	Peter Faber, Mario Siervo	2014	Nutrition in critical care	Cambridge University Press
3.	RajkumarRajendram, Victor R. Preedy, Vinood B. Patel	2015	Diet and nutrition in critical care	Springer New York,

Reference books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Pierre Singer	2013	Nutrition in Intensive Care Medicine: Beyond Physiology	Karger Medical and Scientific Publishers
2.	Gail A. Cresc	2016	Nutrition support for critically ill patient	CRC Press

Journals

- Journal, Indian Academy of Clinical Medicine, MedIND, India.
- Journal of the American Academy of PAs, Wolters Kluwer, United States

Weblinks

http://medind.nic.in/jac/t14/i3/jact14i3p205.pdf

https://www.aarc.org/wp-content/uploads/2014/11/nutrition_guide.pdf

http://www.ccmpitt.com/ebm/nutrition/0105.pdf

https://www.slhd.nsw.gov.au/rpa/neonatal%5Ccontent/pdf/guidelines/tpn.pdf

Pedagogy: E-content, Lecture, Power point presentation, Seminar, Assignment

Course Designers

- Ms.S.Agalya

SEMESTER - III	FOOD PRODUCT DEVELOPMENT	HOURS / WEEK - 6	
ELECTIVE COURSE – IV.A		CREDIT - 4	
COURSE CODE – 19PFS3EC4A		INTERNAL 25	EXTERNAL 75

Objectives

- To understand the trends of food product development
- To understand the phases of food processing and food product development
- To apply techniques of financial management, marketing and entrepreneurship in food industries.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	Define the principles of food product development	K1
CO2.	Explain the factors influencing food product development.	K2
CO3.	Prepare ready to serve food items.	K3
CO4.	Examine the trends in modern food processing industries.	K4
CO5.	Evaluate the sensory aspects of the food.	K5
CO6.	Plan financial sources for entrepreneurial ventures	K6

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	S
CO2.	S	S	S	M	S
CO3.	S	S	S	S	S
CO4.	S	S	S	M	M
CO5.	S	S	M	S	S
CO6.	S	M	M	S	S

S- Strong; M-Medium

Syllabus

UNIT I **(18 Hours)**

Food product development

Definition, principles, factors influencing food product development- social concerns, health concerns, impact of technology and market place influence.

Market research, consumer dynamics, preferences, steps in food product development

UNIT II **(18 Hours)**

Recipe development

Types – Fresh and processed foods. Traditional foods, weaning foods, convenience foods (RTE, RTS), extruded foods, fabricated foods, value added foods, designer foods, sports foods, space foods, functional foods. Standardization methods, portion size and portion control.

UNIT III **(18 Hours)**

Food processing

Principle, methods of food processing. Trends in modern food processing. Types and uses of food additives

UNIT IV **(18 Hours)**

Evaluation , packaging and food standards

Sensory evaluation, nutrient analysis, shelf life and storage stability evaluation procedure of developed food products, SWOT analysis.

Introduction, types of containers, food packaging materials and forms, package testing, packages with special features, safety of food packaging, environmental considerations. Food labelling and nutrition labelling.

#Food Standards – Food Standards – ISO 9000 quality management systems, FSSAI, AGMARK, FAO, WHO, ISO 2200 series.#

UNIT-V **(18 Hours)**

Financial management, marketing and entrepreneurship

Financial accounting procedures, food product cost calculation, profit Margin. Role of advertisement in promotion of new products, marketing strategies.

Entrepreneurship: Introduction, concept, characteristics, entrepreneurial process, importance of entrepreneurship, factors affecting entrepreneurship. Entrepreneur – types, functions of an entrepreneur. Financial sources for entrepreneurial ventures. Support from institutions – Bank/Funding agencies. Legal environment and entrepreneurship- patents, copyrights, trademarks.

#-# - Self Study

Text Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Avantina Sharma.,	2006	Textbooks of Food science and technology	International book distributing Co
2.	N.Shakunthala Manay M.Shadakshara swamy	2008	Food Facts and Principles	New Age International Publishers, New Delhi

Reference Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	VikasAhlluwallia	2007	Food Processing	Paragon International Publishers, New Delhi
2.	Ernest R.Vieira	2010	Elementary Food Science	International Thomson Publishing, Newyork
3.	Gordon W.Fuller	2011	New Food product Development From Concept to Market place	CRC Press
4.	SunetraRoday	2012	Food Hygiene and Sanitation	Tata McGraw Hill Education Private Limited, New Delhi
5.	D.G.Rao	2016	Fundamentals of Food Engineering	PHI Learning Private Limited, New Delhi

Web Links

https://cwsimons.com/steps-in-food-product-development/

https://www.eufic.org/en/food-production/article/processed-food

https://books.google.co.in/books?id=MnGtY1PwrIoC&pg=PA161&lpg=PA161&dq=recipe+development+process+RTE+%26+RTS&source

Pedagogy: Lecture, Power point presentation, Seminar, Assignment

Course Designers*:*

- Ms.M.Vinothini
- Ms.B.Thanuja

SEMESTER - III	BASIC FOOD ANALYTICAL TECHNIQUES	HOURS / WEEK - 6	
ELECTIVE COURSE – IV.B		CREDIT - 4	
COURSE CODE – 19PFS3EC4B		INTERNAL 25	EXTERNAL 75

Objectives

- To understand the types of instruments available for food analysis
- To acquire knowledge on the methods used for food analysis
- To understand the functioning of instruments

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	List the objectives of food analysis	K1
CO2.	Explain instrumental methods used for food analysis	K2
CO3.	Illustrate types of chromatographic techniques	K3
CO4.	Determine components and application of Hyphenated techniques	K4
CO5.	Evaluate the application of spectroscopic techniques	K5
CO6.	Integrate Differential techniques used in food analysis	K6

Mappingwith Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	M	M	S	S	M
CO2.	M	M	S	S	M
CO3.	M	M	S	S	M
CO4.	M	M	S	S	M
CO5.	M	M	S	S	M
CO6.	M	M	S	S	M

S- Strong; M-Medium

Syllabus

UNIT – I **(18 Hours)**

Introduction to food analysis

#Objectives of food analysis, Need for food analysis# Food analysis - Laboratory rules, Criteria for selection of samples, Classification of Instruments – Based on chemical and physical properties, Instrumental methods – Separation methods – Introduction to Chromotography, Qualitative methods and Quantitative methods – Calorimetry,Moisture analyzer,Hot air oven, Ph meter,Particle size analyzer,Dryers.

UNIT – II **(18 Hours)**

Chromatographic Technique

a. **Gas chromatography** – components, Schematic diagram, detectors of Gas chromatography, sampling techniques, Application of Gas chromatography.
b. **Liquid chromatography** - components, Classification of Liquid chromatography – High Performance Liquid Chromatography (HPLC), Thin Layer Chromatography (TLC), Schematic diagram, detectors of Gas chromatography, sampling techniques, Application of Gas chromatography.

Hyphenated Technique

a. **Gas Chromatography–Mass Spectrometry (GC-MS) –** Components, Schematic Diagram of GC-MS, Application of GC-MS.
b. **Liquid Chromatography-Mass Spectrometry (LC-MS) –** Components, Types of Mass Analyzer, Schematic Diagram of LC-MS, Application of LC-MS.

UNIT – III **(18 Hours)**

Spectroscopic Technique

a. **UV-Visible Spectroscopy –** Components, Functioning of UV-Visible Spectroscopy, Schematic Diagram, Application.
b. **Atomic-Absorption Spectroscopy (AAS) -** Components, Functioning of UV-Visible Spectroscopy, Schematic Diagram, Application.
c. **Nuclear Magnetic Resonance Spectroscopy (NMR) -** Components, Functioning of UV-Visible Spectroscopy, Schematic Diagram, Application.
d. **Fourier Transform Infrared Spectroscopy (FT-IR) -** Components, Functioning of UV-Visible Spectroscopy, Schematic Diagram, Application.

UNIT – IV **(18 Hours)**

Advance Method of Analysis

a. **Differential Thermal Analysis (DTA) –** Components and Application.
b. **Differential Scanning Calorimetry (DSC) –** Components and Application.
c. X- Ray Diffraction (XRD) – Components and Application**.**

UNIT – V **(18 Hours)**

Application in Quantitative Food Analysis – Vitamins, Sugars,Food Additives and Toxic Substances.

#-# : Self Study

Text Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	SemihOtles	2016	Handbook of Food Analysis Instruments	CRC Press, Bangalore.
2.	Suzanne Nielsen	2014	Food Analysis	Fourth Edition, Springer Science & Business Media.
3.	Kaur. N	2006	Instrumental methods of chemical analysis	Third Edition, PragatiPrakashan Educational Publishing.

Reference Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Dr R.S. Khandpur	2007	Handbook of Analytical Instruments	Second Edition, Tata McGraw-Hill Education
2.	SemihOtles	2011	Methods of Analysis of Food Components and Additives	Second Edition, CRC Press, Bangalore

Journals

1. Journal of Food Analytical Methods – Schimago, USA
2. Journal of Food Composition and Analysis – Elsevier, UK
3. Journal of Food Analytical Chemistry – Omics Library, UK
4. Journal of Current Protocols in Food Analytical Chemistry - Wiley Press, USA
5. Journal of Food Composition Analysis –A Section of Foods – MDPI, Switzerland
6. Journal of Food Analytical Chemistry – Royal Society Chemistry, USA

Web Links

https://www.omicsonline.org/scholarly/food-analytical-chemistry-journals-articles-ppts-list.php

https://currentprotocols.onlinelibrary.wiley.com/journal/25725602

https://www.journals.elsevier.com/journal-of-food-composition-and-analysis

https://publons.com/journal/5637/food-analytical-methods

https://www.mdpi.com/journal/molecules/sections/Analytical_Chemistry

https://www.rsc.org/journals-books-databases/about-journals/analytical-methods/

Pedagogy: Lecture, Power point presentation, Seminar, Assignment, Quiz, Group Discussion.

Course Designer

- Ms.U.Rasikha
- Ms.S.Preethi

SEMESTER - IV	QUANTITY FOOD PRODUCTION AND SERVICE	HOURS / WEEK - 6	
CORE COURSE - IX		CREDIT - 5	
COURSE CODE – 19PFS4CC9		INTERNAL 25	EXTERNAL 75

Objectives

- To gain knowledge in menu planning and product standards to maintain quality.
- To learn aspects on quantity production and quality control.
- To understand the importance of styles of services and courses of menu.

Course outcomes

On the successful completion of the course, students will be able to:

CO number	CO statement	Knowledge level
CO1	List the various types of food service institutions	K1
CO2	Classify menu and courses of menu in a food service institutions	K3
CO3	Apply principles of purchasing and storage techniques in pre-preparations	K3
CO4	Determine standardization of recipes and portioning.	K4
CO5	Appraise hygiene and sanitation and safety procedures in food production	K5
CO6	Design kitchen layout with effective work simplifications	K6

Mapping with programme outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	M	S	S
CO2.	S	S	M	S	S
CO3.	S	S	M	S	S
CO4.	S	S	M	S	S
CO5.	S	S	M	S	S
CO6.	S	S	M	S	S

S- Strong; M-Medium

Syllabus

UNIT I

Menu planning, food and beverage services (15 Hours)

a) Menu Planning - Definition, types of menu, techniques of writing a menu, menu display, study of menus for different types of quantity food outlets, Courses of menu – French classical menu, uses of menu cards, important cookery terms used in menus, common terms in French and English Menu, role of computers in menu planning.

b) Styles of services **(English Service, American Service, French Service, Gueridon Service, Russian Service).Ty**pes of services (Waiter service, Banquet service, Buffet service, Self- service), rules for laying a table, rules for waiting at a table. Equipment for service - (silver, crockery, glassware, stainless steel, plastics and melamine ware).

c) Food service systems-Types- Conventional, Commissary, Ready prepared (cook-chill, cook- freeze) and Assembly service system.

UNIT II

Purchase and storage (20 Hours)

a) Indenting, Methods of buying (Informal, formal, bid, negotiation, future contracts), purchasing procedures, standard purchase specifications, methods of purchasing (contract purchasing, purchasing through quotations, cash purchases, purchasing through tenders, centralized purchases, periodical purchases), receiving of purchased items. Procedures for evaluating food quality.

b) Storage – Perishable, Non-perishable, principles of storage (FIFO, LIFO, Bin cards), recommended temperatures for storage and inventory control .

UNIT III

Equipment, Production and standardization of recipes (20 Hours)

a) Equipment – Classification, Traditional Vs Modern equipment. Equipment required for quantity food production – major and minor with reference to receiving, storage, preparation, service, dish washing and garbage disposal area. Use, care and maintenance of equipment. Points to be considered while selecting equipment.

b) Production-Methods of cooking, preparation of salads, soups, sauces, sandwiches, vegetable carving, garnishing.

c) Standardization of Recipe and portioning- methods and benefits. Left over utilisation of foods.

UNIT IV

Kitchen organisation and work simplification (20 Hours)

a) Kitchen Organisation - kitchen layout – Island layout, zonal layout, assembly layout. Points to be considered while designing kitchen layout.

b) #Fuel- Types of fuel, management and effective utilisation of fuel#.

c) Work Simplification –Aspects and classification of work simplification. Mise-en –scene, Mise- en-place.

UNIT V

Hygiene and Sanitation and Safety (15 Hours)

a) Hygiene and Sanitation – Environmental hygiene and sanitation, hygiene in food handling, personnel hygiene.

b) Safety- Causes of accidents in food industry, Three Es of safety,Safety procedures, First aid, Fire accident - types, prevention and control, pest control,Work environment safety, safety management programmes.

#-# : Self study

Text Books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Negi J	2000	Professional Hotel Management	S.Chand and Company Limited, New Delhi (2000)
2.	J.P.Palacio., V.Harger.,G.Shugari., M.Thesis	2001	West and Woods Introduction to Food Service.	Mac Millan Pub Co., New York
3.	Krishna Arora	2005	Theory of cookery	Fronk Bros and co.Publishers, New Delhi
4.	R.Singaravelavan	2006	Food & Beverage Service	Oxford University press (2006)

Reference Books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	V.Cessarani. and R.Kinton	2002	Practical Cookery	Hodder and Stoughton publishers
2.	KhanM.A	2003	Food Service Operations	AVI Publications Co., Connecticut
3.	Thangam Philip	2005	Modern Cookery	Orient Longmam Limited, Bangalore
4.	Vijay Dhawan	2007	Food & Beverage Service	Frank Bros&co, New Delhi
5.	MohiniSethi and Malhan S M	2007	Catering Management – An Integrated Approach	Wiley Eastern Limited, Mumbai
6.	TharunBansal	2015	Hotel Facility Planning	Oxford University Press

Journals

- Journal of Foodservice Business Research, Haworth Press Inc. publishing, United States
- Food Hygiene and Safety Science, Food Hygiene & Safety publishing, Japan.
- Food, Culture & Society, Association for The Study of Food and Society publishing, United States.
- Manufacturing and Service Operations Management, Institute for Operations Research and The Management Sciences publisher, United States.

Web links

https://blog.cvent.com/events/food-service-styles/
https://www.nidirect.gov.uk/articles/storing-food-safely
http://www.breakingtravelnews.com/focus/article/different-types-of-cuisines-around-the-world-come-with-us-and-enjoy-the-exp/
https://opentextbc.ca/foodsafety/chapter/storage-temperatures-and-procedures/
http://www.searo.who.int/entity/world_health_day/2015/whd-what-you-should-know/en/

Pedagogy: Lecture, Seminar, Assignment, Power point presentation , Industrial visits.

Course Designers

- Ms.E.Agalya
- Ms.S.Fathima

SEMESTER - IV	FOOD SERVICE MANAGEMENT	HOURS / WEEK - 6	
CORE COURSE - X		CREDIT - 5	
COURSE CODE – 19PFS4CC10		INTERNAL 25	EXTERNAL 75

Objectives

- To understand the organization and management of Food Service Institutions.
- To gain knowledge on principles and functions of management.
- To study the importance of tools of management.

Course outcomes

On the successful completion of the course, students will be able to:

CO number	CO statement	Knowledge level
CO 1	Identify commercial and non – commercial food service institutions	K1
CO 2	Explain the principles, functions and tools of management	K2
CO 3	Predict the significance of planning and organization in the managerial process	K3
CO 4	Determine the importance of tools of management	K4
CO 5	Evaluate the role of motivation in management	K5
CO 6	Generalize the significance of controlling in managerial process	K6

Mapping with programme outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	M	S	S
CO2.	S	S	M	S	S
CO3.	S	S	M	S	S
CO4.	S	S	M	S	S
CO5.	S	S	M	S	S
CO6.	S	S	M	S	S

S- Strong; M-Medium

Syllabus

UNIT I **(18 Hours)**

a) **Food Service Institutions -** #Classification of food service institutions: Commercial and Non Commercial food service institutions. Objectives and workflow#.

b) **Functional Areas in Food Service Institutions-**Front office, Housekeeping, Receiving area, Storage area, Production area, Serving area and Garbage disposal –Layout, role and activities. **c)Event management -**Types of events, role of staff, event administration, event organization- weddings, and outdoor catering (off premises catering).

UNIT II **(18 Hours)**

a)**Introduction to Management-**Principles, Functions and Theories of Management .

b) **Tools of management-**Organization Chart, job description, job specification, work schedule, job analysis, production and staff analysis statement and budget.

UNIT III **(18 Hours)**

a) **Planning -** Definition, Nature, importance and steps in planning. Steps and kinds of forecasting.

b) **Organization** -Definition, Process of organization, Types– Formal and Informal Organization and importance of organization.

c) **Human Resource Management –**Staffing, man power planning, recruitment, selection and training. Directing **-** Definition, characteristics and principles of directing**,** delegation, decentralization, centralization, supervision, authority and responsibility.

UNIT IV **(18 Hours)**

a) **Motivation -** Definition, importance, types, theories -Traditional (Fear and Punishment theory, Efforts and Rewards Theory, Carrot and Stick Theory), Modern Theories (Maslow's hierarchy of needs theory, Herzberg's Motivation – Hygiene theory, McClelland's Three –Need theory, Vroom's Expectancy theory). Approaches and techniques to enhance motivation - wages, salaries, incentives, promotion, demotion, transfer and dismissal.

b) **Leadership –** Definition, Characteristics, Theories of Leadership – Trait Leadership Theory, Behavioural Theories of Leadership, Tannenbaum and Schmidt's leadership continuum. Types of Leadership styles – Authoritarian, Paternalistic, Democratic, Laissez-faire, Expert or Functional

Leader and Institutional Leader.

UNIT V **(18 Hours)**

a) **Communication –** Meaning, Characteristics, Significance, Channels of Communication – formal and informal channel. Communication media – Oral, Written, Nonverbal and Barriers of Communication

b) **Controlling -** Definition, characteristics and importance of controlling, techniques of control – Break Even Analysis, PERT (Programme Evaluation and Review Technique), MIS (Management Information System) and Budgetary control.

c) **Performance appraisal –** Importance, methods – Traditional trait approach – Rating Scales, Ranking methods, Critical incident, Check-list methods. Appraisal by results or objects – Management by Objectives

#-# : Self study

Text books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Ahmed Ismail	2004	Front office operations and Management	Delmar Publications, Singapore.
2.	Vijay R. Thakur	2007	Food and Beverage Service	Denetis Co
3.	Premavathy N	2008	Principles of Management (Business Management)	Sri Vishnu Publication
4.	Raghubalan G and Smritee Raghubalan	2009	Hotel housekeeping - Operations and Management	Oxford University Press, New Delhi
5.	Mohini Sethi	2011	Catering management – An Integrated approach	New Age International Pvt. Ltd. New Delhi

Reference books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	West and B.B.Wood	1996	Food service in institutions	Jonewiley and sons
2.	Malhotra R K	1998	Fundamentals of hotel Management	Anmol Publications, New Delhi
3.	Sharma Jyothi S	2006	Catering Management Practices	Akansha Publishing house, New Delhi
4.	Chakravarthi B K	2011	Hotel and Hospitality Management	A.P.H. Publishing corporation
5.	Anil Bhat	2016	Principles of Management competencies, Practices, Processes	Oxford University Press, New Delhi
6.	Peter jones	2016	Food service operations	Library cataloguing in publishing data, London
7.	Singaravelan R	2016	Food and Beverage Service	Oxford university Press, New Delhi

Journals

- Journal of Industrial Engineering and Management, Omnia Science.
- Journal of Food Service Business Research, Taylor and Francis, United Kingdom.
- Journal of Hotel and Business Management, Longdom Publishing, Belgium.

Web Links

http://ncert.nic.in/textbook/pdf/lehe104.pdf
https://pdfs.semanticscholar.org/18b8/eb1b94af18401e4610673e3f8bd6120f38fc.pdf
https://nptel.ac.in/courses/122106031/slides/1_1s.pdf
http://shodhganga.inflibnet.ac.in/bitstream/10603/197548/5/05_chapter%202.pdf
https://www.manage.gov.in/studymaterial/EC.pdf

Pedagogy: Lecture, Assignment, Seminar, Quiz, Power point Presentation, Visit to Commercial and Non Commercial Food Service Establishments.

Course Designers

- Ms. S.Agalya
- Ms. B.Thanuja

SEMESTER - IV	QUANTITY FOOD PRODUCTION AND SERVICE - PRACTICAL	HOURS / WEEK - 6	
CORE PRACTICAL – IV		CREDIT - 4	
COURSE CODE – 19PFS4CC4P		INTERNAL 40	EXTERNAL 60

Objectives

- To plan various regional cuisines.
- To understand the principles of table setting and napkin folding.
- To study the operational aspects of commercial and non- commercial food service institutions.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO statement	Knowledge level
CO 1	List types of menu	K1
CO 2	Explain standardization of recipes	K2
CO 3	Classify different courses of menu	K3
CO 4	Determine role of ingredients in various regional cuisines	K4
CO 5	Assess recipe standardisation techniques	K5
CO 6	Design table setting techniques	K6

Mapping with programme outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	M	S	S
CO2.	S	S	M	S	S
CO3.	S	S	M	S	S
CO4.	S	S	M	S	S
CO5.	S	S	M	S	S
CO6.	S	S	M	S	S

S- Strong; M-Medium

Syllabus

- Standardization of recipes, Portion control and Pricing.
- Planning and Preparation of South Indian cuisine
- Planning and Preparation of North Indian cuisine
- Planning and Preparation of Western cuisine
- Planning and Preparation of Chinese cuisine
- Planning and Preparation of Thai cuisine and
- Planning and Preparation of Continental cuisines
- Table Setting and Napkin folding.

Text Books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	Krishna Arora.,	2005	Theory of cookery	Fronk Bros and co.Publishers, New Delhi
2.	R.Singaravelavan	2006	Food & Beverage Service	Oxford University press (2006)

Reference Books

S.No.	Author name	Year of Publication	Title of the book	Publisher name
1.	V.Cessarani. and R.Kinton	2002	Practical Cookery	Hodder and Stoughton publishers
2.	KhanMA	2003	Food Service Operations	AVI Publications Co., Connecticut
3.	MohiniSethi and Malhan S M	2007	Catering Management – An Integrated Approach,	Wiley Eastern Limited, Mumbai
4.	Thangam Philip	2005	Modern Cookery	Orient Longmam Limited, Bangalore
5.	Vijay Dhawan	2007	Food & Beverage Service	Frank Bros&co, New Delhi

Pedagogy: Lecture, Demonstration, Practical ,Power point presentation ,Industrial visits.

Course Designers

- Ms.E.Agalya
- Ms.S.Fathima

SEMESTER - IV	MANAGEMENT AND ACCOUNTING IN HOSPITALITY INDUSTRY	HOURS / WEEK - 6	
ELECTIVE COURSE – V.A		CREDIT - 4	
COURSE CODE – 19PFS4EC5A		INTERNAL 25	EXTERNAL 75

Objectives

- To understand the forms and practices adopted in hospitality industry
- To gain knowledge on the various sources of finance and marketing procedures.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	Define the management and importance of hospitality management	K1
CO2.	Explain the scope of hospitality industry	K2
CO3.	Apply the basic strategies involved in marketing	K3
CO4.	Analyze financial statements by using basic accounting techniques	K4
CO5.	Assess the types of various records used in front office area	K5
CO6.	Devise food and beverage cost control techniques	K6

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	M	M
CO2.	S	S	M	S	S
CO3.	S	S	M	S	S
CO4.	S	S	M	S	S
CO5.	S	S	M	S	S
CO6.	S	M	M	S	M

S- Strong; M-Medium

Syllabus

UNIT I **(18 Hours)**

Introduction to Management Accounting

Definition, need and importance of management accounting, difference between management accounting and cost accounting, importance of working capital management ,Total Quality Management in hospitality industry.

UNIT II **(18 Hours)**

Hospitality marketing and marketing communication

Definition of marketing, marketing activities, relationship between sales and marketing, elements of marketing, role of sales department. Marketing communication, media analysis, public relations, press releases, market research and planning, supply and demand.

UNIT III **(18 Hours)**

Basic Accounting

Sources of Finance- classification, need for accounting, cash flow analysis, book-keeping and accounting, double- entry system, journal- sub divisions of journal, ledger, trial balance, balance sheet, cashbook – petty cash book, profit and loss account, budgetary control.

UNIT IV **(18 Hours)**

Front office accounting and Automation in Hospitality Industry

Guest accounting, main function of accounts and its system, types of accounts maintained by the front office cashier, front office accounting cycle, types of postings, methods of handling guest accounts, methods of account settlements. #Automation in Hospitality Industry-Advantages of using computers in food service institutions. Point of sale (POS) and Property Management Systems (PMS)#.

UNIT V **(18 Hours)**

Food and Beverage Cost control

Food and Beverage cost, cost control methods, market reports, inventory control, food and beverage cost reconciliation – ingredient control, preparation control, beverage control techniques.

#-# : Self study

Text Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	L.Dennis Foster	1993	Food and Beverage: Methods and Cost controls	McGraw – Hill International Editions
2.	Paul R. Dittmer	2002	Dimensions of the hospitality industry	John Wiley and Sons Inc

Reference Books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	A.Murthy and S. Gurusamy	2008	Essentials of Management Accounting	Vijay Nicole Imprints Pvt.Ltd
2.	RajniSofat and PreetiHird.	2008	Basic Accounting	Prentice – Hall of India Pvt.Ltd
3.	S.K.Bhatnagar	2005	Front Office Management	Frank Bros and Co

Journals

- Journal of Management Accounting Research, Chapel Hill, USA
- Journal of Accounting Research, Accounting Research Centre, University of Chicago
- Journal of Business Finance and Accounting

Web links

https://www.investopedia.com
https://link.springer.com/chapter/10.1057/9780230353275_19
https://www.toppr.com/guides/business-environment/business-functions/financial-management

Pedagogy: Lecture, Power point presentation, Seminar, Assignment.

Course Designers

- Ms.M.Vinothini
- Ms.S.Agalya

SEMESTER - IV	COUNSELLING SKILLS	HOURS / WEEK - 6	
ELECTIVE COURSE – V.B		CREDIT - 4	
COURSE CODE – 19PFS4EC5B		INTERNAL 25	EXTERNAL 75

Objectives

- To acquire knowledge on basic etiquette of a counsellor.
- To handle different areas of counselling.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1	List various avenues for counselling	K1
CO2.	Explain counselling techniques	K2
CO3.	Apply counselling techniques to various groups	K3
CO4.	Determine the nature of clients	K4
CO5.	Evaluate the impact of counselling	K5
CO6.	Design counselling pattern according to client's demand	K6

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1.	M	S	M	S	M
CO2.	M	S	M	S	M
CO3.	M	S	M	S	M
CO4.	M	S	M	S	M
CO5.	M	S	M	S	M
CO6.	M	S	M	S	M

S- Strong; M-Medium;

Syllabus

UNIT I **(18 Hours)**

Basics in Counselling

Counselling in India, Definition, Goals, Ethics, Scope, Characteristics of counsellor, types of counselling, objectives of counselling in health care, tools of counselling, sources of counselling, e - resources in counselling

UNIT II **(18 Hours)**

Techniques in Counselling

Strategies and communication skills, Rapport building and opening techniques, Questioning, listening, reflecting, acceptance, silence, leading reassurance, non-verbal behavior, terminating skills

UNIT III **(18 Hours)**

Process of Counselling

Techniques for obtaining relevant information, Clinical Information, Medical History and General Profile, Dietary Diagnosis -Assessing food and nutrient intakes, #Lifestyles, physical activity, stress, Nutritional Status#, Correlating relevant information and identifying areas of need: Problem exploration and clarification, Developing new perspectives and setting goals, implementation, follow up and evaluation.

UNIT IV

Working with different groups **(18 Hours)**

Hospitalised patients (adults, pediatric, elderly, special needs,), adjusting and adapting to individual needs. Outpatients (adults, pediatric, elderly and special needs), patient's and care takers education, techniques and modes, follow up, Monitoring and Evaluation of outcome.

UNIT V **(18 Hours)**

Various Therapeutic Techniques

Psychoanalytic therapy, group therapy, psychodrama, behavior therapy, Gestalt therapy Cognitive therapy. Nutrition counselling protocols- Involving phase, Exploration and education, resolving, closing. Exploring the expressions, use of art in therapy.

#-# : Self study

Text books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Sujata Sriram	2016	Counselling in India Reflection on the process	Springer
2.	Susan Davison, Christopher Rance, Peter Thomas	2013	Clinical Counselling in Medical Settings	Taylor and Francis

Reference books

S.No.	Author name	Year of publication	Title of the book	Publishers name
1.	Kathleen D. Bauer, Doreen Liou, Carol A. Sokolik	2016	Nutrition Counseling and Education Skill Development	Cengage L Earning
2.	Judy Gable, Tamara Herrmann	2016	Counselling Skills for Dietitians III edition	Blackwell Publishing

Journals

- Journal of Counselling Psychology, American Psycological Association, America.
- British Journal of Guidance and Counselling, Taylor and Francis, United Kingdom
- British Journal of Occupational Therapy, Sage Publication, United States.
- Counselling and Psycotherapy research, Wiley online Library, United Kingdom.

Web links

https://www.mhinnovation.net/PMHP-Basic-Counselling-Skills.pdf

Pedagogy: E-content, Lecture, Power point presentation, Seminar, Assignment.

Course Designers

- Ms.S.Fathima
- Ms.E.Agalya

SEMESTER - IV	PROJECT WORK	HOURS / WEEK - 6	
PROJECT WORK		CREDIT - 3	
COURSE CODE – 19PFS4PW		INTERNAL -	EXTERNAL 100

Objectives

- To Design the framework to collect data.
- To develop the ability to solve a specific research problem.
- To understand the importance of experimental analysis.

Course outcomes

On the successful completion of the course, students will be able to:

CO Number	CO Statement	Knowledge Level
CO1.	Define the research design	K1
CO2.	Describe research problem	K2
CO3.	Classify collected data	K3
CO4.	Examine collected data and associate with statistical tool	K4
CO5.	Assess and publish papers in reputed research journals	K5
CO6.	Develop Proposals to apply for minor research projects	K6

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	M	M	M
CO2.	S	S	M	M	M
CO3.	S	S	M	M	M
CO4.	S	S	S	S	M
CO5.	S	S	S	S	M
CO6.	S	S	S	S	S

S- Strong; M-Medium;

Syllabus

- Principles of research ethics
- Selection of research problem
- Formulation of research design and methodology
- Collection of review of literature
- Processing of data – editing, coding, classification and tabulation
- Deriving solution and conclusion
- Preparation of bibliography
- Publication in journals
- Checking of plagiarism
- Preparation of proposals for research projects

Course Designer

Ms. M. Vinothini