

# **CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)**

**NATIONALLY ACCREDITED (III CYCLE) WITH “A” GRADE BY NAAC  
ISO 9001:2015 Certified**

**TIRUCHIRAPPALLI**

**DEPARTMENT OF FOOD SERVICE MANAGEMENT  
AND DIETETICS**



**M.Sc., FOOD SERVICE MANAGEMENT  
AND DIETETICS**

**Syllabus**

**2022-2023 and Onwards**

**CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)**  
**DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS**

**VISION**

To strengthen and integrate academic excellence, ethical values and social responsibility to develop a healthy nation by imparting skill based knowledge, professional competency and entrepreneurial skills.

**MISSION**

- To have a breadth of knowledge across the subject areas of Nutrition and Dietetics.
- To professionally enrich the students for successful career in Academia, Industry and Research.
- To promote and inculcate self-reliance, social relevance, sound value system and code of professional practice among students.

## PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs	Statements
<b>PEO1</b>	<b>LEARNING ENVIRONMENT</b>  To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
<b>PEO2</b>	<b>ACADEMIC EXCELLENCE</b>  To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
<b>PEO3</b>	<b>EMPLOYABILITY</b>  To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
<b>PEO4</b>	<b>PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY</b>  To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strong attitude towards the development of the nation.
<b>PEO5</b>	<b>GREEN SUSTAINABILITY</b>  To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overall sustainable development.

**PROGRAMME OUTCOMES FOR M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS**  
**PROGRAMME**

PO NO	On completion of M .Sc., Programme, the students will be able to
PO1	<b>SCIENTIFIC MANAGEMENT AND CAREER OPPORTUNITIES</b> Master the scientific and applied aspects of the subject for employment opportunities.
PO2	<b>EXPLORE CREATIVITY AND INTELLIGENCE</b> Employ novel ideas with conceptual thinking to secure self-discipline and independence to foster scientific attitude by exploration of Science.
PO3	<b>TEAM BUILDING AND SCIENTIFIC TEMPERAMENT</b> Inculcate training, internships and team spirit with leadership skills through academic projects and transmit complex scientific and technical information and contribute to the scientific community.
PO4	<b>INNOVATIVE LEARNING AND TECHNOLOGICAL ADVANCEMENT</b> Perceive research in the specialized areas and to engage in life-long learning to keep pace with emerging trends in academics, research and technology.
PO5	<b>PERSONALITY DEVELOPMENT WITH SOCIAL RESPONSIBILITY</b> Achieve ethical, social and holistic values with social responsibility to develop a healthy life.

**PROGRAMME SPECIFIC OUTCOMES FOR M.Sc FOOD SERVICE MANAGEMENT AND DIETETICS**

<b>PSO NO</b>	<b>The Students of M.Sc., Food Service Management &amp; Dietetics will be able to</b>	<b>POs Addressed</b>
PSO1	Analyze scientific concepts in the area of Nutrition, Food Service Management and Dietetics.	PO1
PSO2	Apply critical thinking, technical skills and collaborative approach in food and nutrition, dietetics and managerial practices.	PO2, PO3
PSO3	Develop core competency skills through experimental work, internship and projects to support actions that promote social development	PO3, PO5
PSO4	Utilize local, national and global trends, emerging techniques and changes of legislation to enhance work performance.	PO4
PSO5	Establish entrepreneurial skills in designing innovative healthy food products and facility planning.	PO2, PO5



**Cauvery College for Women (Autonomous), Trichy-18**  
**M.Sc Food Service Management and Dietetics**  
 (For the candidates admitted from the Academic year 2022-2023 and onwards)

SEM	COURSE	COURSE TITLE	COURSE CODE	INS. HRS / WEEK	CREDIT	EXAM HRS	MARKS		TOTAL
							INT	EXT	
<b>I</b>	Core Course – I (CC)	Advanced Food Science	22PFS1CC1	6	5	3	25	75	100
	Core Course – II (CC)	Human Nutrition and Public Health	22PFS1CC2	6	5	3	25	75	100
	Core Course – III (CC)	Advanced Dietetics I	22PFS1CC3	6	5	3	25	75	100
	Core Practical – I (CP)	Advanced Dietetics I – Practical	22PFS1CC1P	6	4	3	40	60	100
	Elective Course – I (EC)	A. Applied Physiology	22PFS1EC1A	6	4	3	25	75	100
		B. Nutrition for Fitness	22PFS1EC1B						
		C. Nutrition in Clinical Critical Care	22PFS1EC1C						
		<b>TOTAL</b>		<b>30</b>	<b>23</b>				<b>500</b>

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDIT
22PFS1CC1	ADVANCED FOOD SCIENCE	CORE	6	5

### Course Objective

- To gain knowledge on nutritional composition and properties of food.
- To study the factors affecting the cooking quality of different foods.
- To develop skills to judge the quality of food.

### Pre requisites

- Basic knowledge about food groups and nutritional composition.
- Fundamentals of food chemistry.

### Course Outcome and Cognitive Level Mapping

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

CO Number	CO Statement	Cognitive Level
CO1	Estimate the nutritional composition of food groups	K1, K2, K3, K4, K5
CO2	Relate properties of food with processing and preparation techniques	K1, K2, K3, K4, K5
CO3	Analyze the changes that take place during cookery and factors affecting cooking quality	K1, K2, K3, K4, K5
CO4	Evaluate role of subjective and objective methods on food quality evaluation	K1, K2, K3, K4, K5
CO5	Assess importance of food additives	K1, K2, K3, K4, K5

### Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2	3	3	2	2	2
CO2	3	3	3	2	2	3	3	2	2	2
CO3	3	3	3	2	2	3	3	2	2	2
CO4	3	3	3	2	2	3	3	2	2	2
CO5	3	3	3	2	2	3	3	2	2	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

## **SYLLABUS**

### **UNIT I**

**(18 HOURS)**

#### **a. CEREALS**

Structure, nutritional composition- Rice, Wheat, Millets. Gluten formation, factors affecting gluten formation. Gelatinization, gelation, retrogradation, syneresis, dextrinisation. Role of cereals in cookery, problems encountered in cereal cookery. Starch – components, types of starches, modified starch.

#### **b. PULSES AND LEGUMES**

Nutritional composition, processing of pulses – soaking, germination, decortication, fermentation. Factors affecting cooking quality of pulses. Toxins in pulses.

#### **c. NUTS AND OILSEEDS**

Classification, nutritional composition, uses in cookery.

### **UNIT II**

**(18 HOURS)**

#### **a. MILK AND MILK PRODUCTS**

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

#### **b. SUGAR**

Types of sugar, physical and chemical properties of sugar, stages of sugar cookery, crystallization, factors affecting crystallization.

#### **c. FATS AND OILS**

Physical and chemical properties of fats and oils, hydrogenation, winterization, rancidity- types, prevention, flavor reversion, smoking point, thermal changes in fat, role in cookery. Absorption of fat, factors affecting absorption of fat, fat replacers.

### **UNIT III**

**(18 HOURS)**

#### **a. MEAT, POULTRY, FISH**

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

#### **b. EGG**

Structure and nutritional composition, selection, storage, quality check, foam formation, factors affecting foam formation.

### **UNIT IV**

**(18 HOURS)**

#### **a. FRUITS**

Classification, composition, selection, storage, ripening, enzymatic browning and preventive measures.

#### **b. VEGETABLES**

Classification, composition, selection, storage, changes during cooking, loss of nutrients while cooking, changes in plant pigments while cooking.

#### **c. SPICES AND CONDIMENTS**

Types, role in cookery, volatile compounds.



## UNIT V

(18 HOURS)

### a. EVALUATION OF QUALITY OF FOODS

Sensory characteristics of food –appearance, colour, flavor, odour, taste, mouth feel. Methods of sensory analysis- Difference test, Rating test, Sensitivity test, Descriptive profile method.

Requirements for conducting sensory tests. Objective methods- chemical methods, physio-chemical methods, microscopic examination, physical methods.

### b. COLLOIDAL SYSTEM

Types of colloidal dispersion, properties of colloidal system, emulsion-types, stability of emulsion, emulsifiers.

### c. FOOD ADDITIVES

Types - Preservatives, antioxidants, sequestrants, humectants, bleaching and maturing agents, starch modifiers, emulsifiers, stabilizers, gelling agents, thickeners and surface active agents, anti-caking agents, anti foaming agents, colouring agents, flavour enhancer, acids, bases and buffers, glazing agents.

## UNIT VI

### SELF STUDY FOR ENRICHMENT

(Not to be included for External Examination)

Benefits of germination. Role of sugar in cookery. Coagulation of egg protein. Uses of spices and condiments in Indian cookery. Role of food additives in food industry

## PRACTICALS

1. **Starch cookery:** Microscopic examination of different starches, gelatinization of starch.
2. **Pulse cookery:** Factors affecting the cooking quality of pulses.
3. **Milk Cookery:** Effect of heat, acid, curdling of milk.
4. **Sugar cookery:** Stages of sugar cookery
5. **Fats and Oils:** Smoking temperature, factors affecting absorption of fat.
6. **Meat, fish and poultry Cookery:** Effect of cooking methods on meat, fish, poultry.
7. **Egg Cookery:** Testing the quality of egg. Coagulation of egg white and egg yolk.
8. **Fruits:** Measures for the prevention of enzymatic browning.
9. **Vegetables:** Effect of acid, alkali and heat on pigments in vegetables.
10. **Sensory evaluation of food:** Preparation of score card and Sensory analysis.

### **Text Book**

1. Avantina Sharma., (2012), *Textbook of Food Science and Technology*, CBS Publishers and Distributors Pvt.Ltd.
2. Singh, S. K., (2019), *Essentials of Food Science*, Ishwar Books, New Delhi, India.
3. Mohini Sethi., (2019), *Food Science Experiments and Applications*, 2<sup>nd</sup> Edition. CBS Publishers and Distributors Pvt.Ltd.
4. S.M.Reddy., (2015), *Basic Food Science and Technology*, New Age International(P) Limited, Publishers, New Delhi, India .
5. B.Srilakshmi., (2018), *Food Science* 7<sup>th</sup> Edition. New Age International (P) Limited, Publishers, New Delhi, India.

### **Reference Books**

1. Norman N. Potter, (2007), *Food Science*, 5<sup>th</sup> Edition. CBS Publishers and Distributors Pvt.Ltd.
2. H.K.Chopra., (2015), *Food Chemistry*, Narosa Publishing House Pvt.Ltd.

### **Web References**

1. <https://starch.eu/ingredients/>
2. <https://www.britannica.com/science/fat-processing>
3. <http://www.yourarticlelibrary.com/home-science/eggs/egg->
4. <https://www.who.int/news-room/fact-sheets/detail/food-additives>
5. [http://samples.jbpub.com/9781449694777/9781449603441\\_CH03.pdf](http://samples.jbpub.com/9781449694777/9781449603441_CH03.pdf)

### **Journals**

1. Food Chemistry, Elsevier Sci. Ltd, England.
2. Food Science and Technology, Soc Brasileira Ciencia Tecnologia Alimentos, Brazil.
3. Food Research International, Elsevier Science Bv, United States.
4. Journal of Food and Agriculture, Wiley-Blackwell, England.
5. Journal of Food Science and Technology, Scientific Publishers, India

### **Pedagogy**

Chalk and talk, PPT, e-content, Discussion, Assignment, Demo, Quiz, Seminar, Industrial visit.

### **Course Designers**

1. Ms. B.THANUJA
2. MS.S.AGALYA

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDIT
22PFS1CC2	HUMAN NUTRITION AND PUBLIC HEALTH	CORE	6	5

### Course Objective

- To understand the importance of meal planning.
- To comprehend the nutritional needs pertaining to different stages of life.
- To plan menu for various age groups.

### Pre requisites

- Principles of nutrition and application of meal planning guidelines throughout life cycle.
- Fundamentals of community nutrition.

### Course Outcome and Cognitive Level Mapping

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

CO Number	CO Statement	Cognitive Level
CO1	Infer basic sciences relevant to nutrition and apply public health principles to current public health related issues	K1,K2,K3, K4,K5
CO2	Assess the nutritional status of the population making use of the different evidence- based scientific assessment methods and protocols	K1,K2,K3, K4,K5
CO3	Interpret the impact of Nutrition policies on the health of individual as well as population	K1,K2,K3, K4,K5
CO4	Compare and contrast the health and nutritional challenges encountered in different regions and understand the various strategies employed to address them	K1,K2,K3, K4,K5
CO5	Design Nutrition Education programs for a target population using appropriate aids	K1,K2,K3, K4,K5

### Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	-	3	2	3	3	3
CO2	2	3	3	1	-	2	2	3	3	3
CO3	2	3	2	3	-	-	2	3	3	3
CO4	3	3	3	3	-	2	2	3	3	2
CO5	3	3	3	3	2	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

## **SYLLABUS**

### **UNIT I**

**(18 HOURS)**

#### **a. NUTRITION AND HEALTH**

Inter relationship between nutrition and health. Meaning of adequate nutrition, undernutrition, and malnutrition. 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, children's, adolescents, adults and geriatrics.

#### **b. 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 breastfeeding, Difference between breast milk and cow's milk.

### **UNIT II**

**(18 HOURS)**

#### **a. INFANCY, PRE-SCHOOL, SCHOOL-GOING CHILDREN AND ADOLESCENTS**

Growth and development of infants, preschool children, school- going children and adolescence. Artificial feeding, Breastfeeding vs. bottle feeding, Weaning and Supplementary foods, Feeding of premature infants. Factors influencing food habits of preschoolers.

#### **b. 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**

**(18 HOURS)**

#### **a. EPIDEMIOLOGY**

Definition, aim, components, measurement in Epidemiology - 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. MALNUTRITION**

Definition, Ecological factors leading to malnutrition - income, size of families, dietary pattern, occupation, customs food fads, fallacies, ignorance and other factors, Classification according to grades of malnutrition.

### **UNIT IV**

**(18 HOURS)**

#### **a. NUTRITION INTERVENTION PROGRAMMES IN INDIA**

School Lunch Programme (SLP), Chief Minister's Nutritious Noon Meal Program (CMNNMP), National Nutrition Mission- POSHAN Abhiyaan, 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, Sustainable Development Goals (WHO).

**b. NATIONAL AGENCIES**

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).

**c. 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**

**(18 HOURS)**

**a. 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 assessment of nutritional deficiencies, Clinical assessment of nutritional disorders and Dietary surveys-Family diet survey, individual diet survey, Quantitative diet survey, and food balance sheet.

**b. 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 - PowerPoint presentation, E-learning, Organization of Nutrition education programmes: Nutrition intervention theories – Behavioural theory, Social Cognitive Theory, Health Belief Model and Meaningful learning model. Principles of planning, executing and evaluating nutrition education programmes.

**UNIT VI**

**SELF STUDY FOR ENRICHMENT**

**(Not to be included for External Examination)**

Galactagogues. Eating disorders – Bulimia nervosa, Binge eating and Anorexia nervosa in adolescence. Vicious Cycle of malnutrition. Activities of World Health Organization (WHO). Problems of nutrition education programme .

**PRACTICALS**

1. Menu planning, nutritive value calculation and preparation of meals for pregnancy and lactation.
2. Menu planning, nutritive value calculation and preparation of meals for infancy, pre-school, school-going children, adolescents, adults and geriatrics.
3. Menu planning, nutritive value calculation and preparation of meals for PEM, Vitamin A, Iron and iodine deficiency.
4. Nutrition Education for pre- school and school going children.
5. Assessment of nutritional status.

### **Text Books**

1. Brown Judith, E.(2008) *Nutrition*. 3<sup>rd</sup> Edition. Thomson Wadsworth USA.
2. Park, K. (2008) *Essentials of Community Health Nursing* 5<sup>th</sup> Edition. M/s Banarsidas Bhanot Publishers. Jabalpur.
3. Josephine Martin and Charlotte Beckett Oakley, (2008). *Managing Child Nutrition Programs*. 2<sup>nd</sup> Edition. Jones & Bartlett Publishers.
4. Seema Sonkar and Doreas L. Essiamah, (2008) *Food and Nutrition Security challenges towards combating malnutrition*. Chandralok Prakashan. Kanpur.
5. Bamji M.S, Prahlada Rao N, Reddy. (2016) *Textbook of Human Nutrition*. 4<sup>th</sup> Edition. Oxford and PBH Publishing Co. Pvt. Ltd. New Delhi.

### **Reference Books**

1. Prakash Shetty,(2002). *Nutrition through the life cycle*. 1<sup>st</sup> Edition. Leatherhead publishing. Leatherhead International Ltd. UK.
2. Gibney, M.J.,Margetts, B.M.,Kearney, J.M.,Arab, L., (2004). *Public Health Nutrition*. 2<sup>nd</sup> Edition. UK. Blackwell Publishing Co.
3. Carolyn D. Berdanice., (2009), *Advanced Nutrition*, 2<sup>nd</sup> Edition. CRC Press.
4. M.Swaminathan., (2012), *Advanced Textbook on Food and Nutrition*. 2<sup>nd</sup> Edition. Bangalore Printing and Publishing Co. Ltd., Bangalore,
5. Raheena Begum. M., (2015), *A textbook of Foods, Nutrition and Dietetics*. 3<sup>rd</sup> Edition. Sterling Publishers Pvt. Ltd., New Delhi.
6. Park K.,( 2021), *Park's Textbook of Preventive and Social*. 26<sup>th</sup> Edition. M/S Banarasidas, Bharat Publishers, Jabalpur, India.

### **Web References**

1. <https://www.who.int/>
2. <https://www.encyclopedia.com/food/encyclopedias-almanacs-transcripts-and-maps/assessment-nutritional-status>
3. <https://www.fao.org/about/en/>
4. <https://www.nin.res.in/downloads/NNMBREPORT2001-web.pdf>
5. <https://www.icmr.gov.in/>

### **Journals**

1. Society for Nutrition Education and Behavior, Elsevier Sci. Ltd, England
2. Journal of the Academy of Nutrition and Dietetics, Elsevier Science Inc publishing, United States.
3. Public Health Nutrition, Cambridge University, England
4. Food Research International, Elsevier Science Inc, United States.
5. Journal of Food and Agriculture, Wiley-Blackwell, England

### **Pedagogy**

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar, Visit to ICDS

### **Course Designers**

1. Ms. M. VINOTHINI
2. Ms. K.S. MITHILA

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS: 75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDIT
22PFS1CC3	ADVANCED DIETETICS I	CORE	6	5

### Course Objective

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

### Pre requisites

- Principles of menu planning.
- Basics of therapeutic nutrition.

### Course Outcome and Cognitive Level Mapping

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

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Identify role of dietitian in the hospitals and interpret the importance of computer in nutrition practice	K1,K2,K3, K4,K5
CO2	Describe the principles of dietary counseling for various diseases.	K1,K2,K3, K4,K5
CO3	Predict the nutritional requirements and menu plans for therapeutic conditions	K1,K2,K3, K4,K5
CO4	Diagnose symptoms, causes and complications of various diseases and apply dietary modifications of therapeutic conditions	K1,K2,K3, K4,K5
CO5	Evaluate special feeding methods and psychology of the patients	K1,K2,K3, K4,K5

### Mapping of CO with PO and PSO

COs	PSO1	PSO 2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	2	3	3	3	3	3
CO5	3	3	3	3	2	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

## **Syllabus**

### **UNIT I**

**(18 HOURS)**

#### **a. DIETITIAN**

Definition and types of dietitians, role of dietitian in the hospital and community.

#### **b.**

**CO**

#### **UNSELING**

Definition, counsellor and Client, techniques of counseling and classification of counseling.

#### **c.**

**CO**

#### **MPUTERS IN NUTRITION PRACTICE**

General information – data input, data output, data analysis, data communication, clinical care – communication in patient care, Nutritional therapy.

### **UNIT II**

**(18 HOURS)**

#### **a.**

**RO**

#### **UTINE HOSPITAL DIETS**

Clear fluid diet, full fluid diet, soft diet, Regular diet

#### **b. FEEDING THE PATIENTS**

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.

### **UNIT III**

**(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, stages of HIV infection, ART, opportunistic infections, women and HIV nutritional management.

### **UNIT IV**

**(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

### **UNIT V**

**(18 HOURS)**



**a. DIET IN METABOLIC DISORDERS- 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, clinical manifestation, complications, dietary and lifestyle modifications and surgical management

**UNIT VI**

**SELF STUDY FOR ENRICHMENT**

**(Not to be included for External Examination)**

Professional ethics and obligations of dietitian. Psychology of feeding the patient. Aetiology of HIV. Types of jaundice. Theories of Obesity.

### **Text Books**

1. Mahan, Kathleen, L., Krause's, (2004). *Food, Nutrition and Diet Therapy*. 11<sup>th</sup> Edition. Pennsylvania; Saunders.
2. Antia, F . P., (2005). *Clinical Dietetics and Nutrition*. 5<sup>th</sup> Edition. Oxford University Press, New Delhi,
3. Prakash Lohar, S., (2007). *Endocrinology –Hormones and Human Health*, MJP publishers, Chennai.
4. Srilakshmi, B., (2009). *Dietetics*. 2nd Edition. New Age International Publications, New Delhi.
5. Shubhangini Joshi, A., (2014), *Nutrition and Dietetics*. 5<sup>th</sup> Edition. McGraw Hill, Education Private Limited, New Delhi.
6. Swaminathan, M., (2012). *Essentials of Food and Nutrition*. Ganesh and Company, Madras.  
Maity, S . P., *Pharmacology for Second Professional Students*. 6<sup>th</sup> Edition . Books & Allied Pvt. Ltd.

### **Reference Books**

1. Robinson, Corrine, H., (1982). *Normal and Therapeutic Nutrition*. 16<sup>th</sup> Edition. 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*, 3<sup>rd</sup> Edition. New Age International Publications, New Delhi.
4. Indrani, T.K., (2008). *Nursing Manual of Nutrition and Therapeutic Diet*. 2<sup>nd</sup> Edition. 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.

### **Web References**

1. <https://gpadampur.files.wordpress.com/2015/08/caft-complete-vedpal.pdf>
2. <https://sfsurgery.com/wp-content/uploads/2014/06/Pancreatitis.pdf>
3. <https://my.clevelandclinic.org/health/treatments/21098-tube-feeding--enteral-nutrition>
4. <https://my.clevelandclinic.org/health/diseases/7104-diabetes-mellitus-an-overview>
5. <https://www.mayoclinic.org/diseases-conditions/cancer/symptoms-causes/syc-20370588>

### **Journals**

1. Food and Nutrition Bulletin, Sage Publications Inc, Japan.
2. Food and Nutrition Research, Co-Action Publishing, Sweden.
3. Food Digestion, Springer Verlag, Germany.
4. Nutrition and Cancer, Lawrence Erlbaum Associates Inc. United States
5. Nutritional Therapy and Metabolism, Wichtig Publishing, Italy.
6. Nutrition in Clinical Practice, Sage Publications Inc, United States

### **Pedagogy**

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

### **Course Designers**

1. Ms. S. AGALYA

2. Ms. E. AGALYA



<b>SEMESTER I</b>	<b>INTERNAL MARKS: 40</b>	<b>EXTERNAL MARKS: 60</b>		
<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>Hrs / Week</b>	<b>CREDIT</b>
<b>22PFS1CC1P</b>	<b>ADVANCED DIETETICS I- PRACTICAL</b>	<b>CORE PRACTICAL</b>	<b>6</b>	<b>4</b>

### Course Objective

- 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 dietitians in hospitals.

### Pre requisites

- Application of dietary principles.
- Planning and preparation of modified diet.

### Course Outcome and Cognitive Level Mapping

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

<b>CO Number</b>	<b>CO Statement</b>	<b>Cognitive Level</b>
CO1	Describe nutrient composition of clear fluid, full fluid and soft diet	K1,K2,K3, K4,K5
CO2	Classify foods to be included and avoided in the treatment of diseases	K1,K2,K3, K4,K5
CO3	Determine importance of dietary principles in the management of diseases	K1,K2,K3, K4,K5
CO4	Evaluate the nutritive value and plan menu for therapeutic conditions	K1,K2,K3, K4,K5
CO5	Assess various routine hospital diets.	K1,K2,K3, K4,K5

### Mapping of CO with PO and PSO

<b>COs</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
CO1	3	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3
CO4	3	3	3	3	2	3	3	3	3	3
CO5	3	3	3	3	2	3	3	3	3	3

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

## **SYLLABUS**

### **1. PLANNING AND PREPARATION OF ROUTINE HOSPITAL DIETS**

Clear liquid diet, Full liquid diet, soft diet and Blenderized, mechanically altered diet. (12 HOURS)

### **2. PLANNING AND PREPARING DIETS FOR FEBRILE CONDITIONS**

Acute, Intermittent and Chronic. (12 HOURS)

### **3. PLANNING AND PREPARING DIETS FOR GASTROINTESTINAL DISORDERS**

Peptic ulcer, Diarrhea and Constipation. (18 HOURS)

### **4. PLANNING AND PREPARING DIETS FOR LIVER DISORDERS**

Hepatitis and Cirrhosis. (15 HOURS)

### **5. PLANNING AND PREPARING DIETS FOR GALL BLADDER DISORDERS**

Cholecystitis and Cholelithiasis. (15 HOURS)

### **6. PLANNING AND PREPARING DIETS FOR METABOLIC DISORDERS**

Diabetes mellitus and Obesity. (18 HOURS)

### **Text Books**

1. Mahan, Kathleen, L., Krause's, (2004). *Food, Nutrition and Diet Therapy*. 11<sup>th</sup> Edition. Pennsylvania; Saunders.
2. Antia, F . P., (2005). *Clinical Dietetics and Nutrition*. 5<sup>th</sup> Edition. Oxford University Press, New Delhi.
3. Prakash Lohar, S., (2007). *Endocrinology –Hormones and Human Health*, MJP publishers, Chennai.
4. Srilakshmi, B., (2009). *Dietetics*. 2<sup>nd</sup> Edition.. New Age International Publications, New Delhi.
5. Shubhangini Joshi, A., (2014), *Nutrition and Dietetics*. 5<sup>th</sup> Edition. McGraw Hill, Education Private Limited, New Delhi.
6. Gopalan, C., & etal., (2018). *Nutritive Value of Indian Foods*, National Institute of Nutrition Hyderabad.

### **Reference Books**

1. Joshi, Y. K., (2003). *Basics of Clinical Nutrition*. 2<sup>nd</sup> Edition. Jaypee Brothers, Medical Publishers, New Delhi.
2. Indrani, T.K., (2008). *Nursing Manual of Nutrition and Therapeutic Diet*. 2<sup>nd</sup> Edition. Jaypee Brothers medical publishers (P) Ltd.
3. Mary Marian, (2008). *Clinical Nutrition for surgical patients*, Jones and Barletta Publishers.

### **Web References**

1. <https://sfsurgery.com/wp-content/uploads/2014/06/Pancreatitis.pdf>
2. <https://my.clevelandclinic.org/health/treatments/21098-tube-feeding--enteral-nutrition>
3. <https://my.clevelandclinic.org/health/diseases/7104-diabetes-mellitus-an-overview>

### **Journals**

1. Food and Nutrition Research, Co-Action Publishing, Sweden.
2. Food Digestion, Springer Verlag, Germany.
3. Nutritional Therapy and Metabolism, Wichtig Publishing, Italy.
4. Nutrition in Clinical Practice, Sage Publications Inc, United States

### **Pedagogy**

Lecture, Demonstration, Practical

### **Course Designers**

1. Ms. S. AGALYA
2. Ms. E. AGALYA

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDIT
22PFS1EC1A	APPLIED PHYSIOLOGY	ELECTIVE	6	4

### Course Objective

- To acquire core knowledge about Cellular adaptation.
- To understand about functioning abnormalities of various human systems.
- To study about the symptoms and signs of abnormal physiological functions.

### Pre – requisites

- Exposure to human cell structure and function.
- Prior knowledge on human physiology

### Course Outcome and Cognitive Level Mapping

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

CO Number	CO Statement	Cognitive Level
CO1	Illustrate adaptation of human body to maintain homeostasis	K1,K2,K3, K4,K5
CO2	Predict physiological abnormality in different system of human body.	K1,K2,K3, K4,K5
CO3	Ascertain disease conditions associated with organs present in human body.	K1,K2,K3, K4,K5
CO4	Evaluate disease prognosis of physiological functions	K1,K2,K3, K4,K5
CO5	Conceive severity of degeneration prevalent in various organs.	K1,K2,K3, K4,K5

### Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	2	3	2
CO2	3	3	2	2	2	3	2	2	3	2
CO3	3	3	2	2	2	3	2	2	3	2
CO4	3	3	2	2	2	3	2	2	3	2
CO5	3	3	2	2	2	3	2	2	3	2

“1” – Slight (Low) Correlation  
“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation –  
“-” indicates there is no correlation.

## **SYLLABUS**

### **UNIT I**

**(18 Hours)**

#### **GENERAL PHYSIOLOGY OF CELL AND BODY FLUIDS**

- a. Cell** – Action potential of cell, Cell adaptation – Atrophy, Hypertrophy, Hyperplasia, Dysplasia, Metaplasia, Cell Junction – Hereditary deafness, ichthyosis, Sclerosing Cholangitis, hereditary hypomagnesemia, synovial sarcoma, 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, Anemia, Abnormal haemoglobin 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**

**(18 Hours)**

#### **CARDIOVASCULAR AND RESPIRATORY SYSTEM**

- a. Heart and Circulation** –Abnormal pulse-pulses deficit, pulsus alternans, anacrotic pulse, threadypulse, pulsus paradoxus, water hammer pulse, abnormal pulse in patent ductus arteriosus, abnormal pulse in aortic regurgitation, abnormal venous pulse, Arterial Blood Pressure- Hypertension, hypotension coronary artery disease, Stroke, varicose vein, thrombophlebitis, heart failure.
- b. Respiratory System** –; Apnea hyperventilation, hypoventilation, hypoxia, oxygen toxicity, hypercapnia, asphyxia, dyspnea, bronchial asthma; Infectious Diseases of Lungs-tuberculosis, pneumonia.

### **UNIT III**

**(18 Hours)**

#### **NERVOUS SYSTEM AND SENSE ORGANS**

- a. Nervous System** –. Diseases of spinal cord- Syringomyelia, tabes dorsalis, multiple sclerosis, disk prolapse, effects of motor neuron lesion, paralysis, thalamic lesion, thalamic syndrome. Disorders of basal ganglia - parkinson disease, Wilson disease, chorea, athetosis, choreoathetosis, Huntington chorea, hemiballisms, kernicterus. Frontal lobe syndrome, temporal lobe syndrome. Sleep Disorder, epilepsy.
- b. Sense Organs** – Eye- Glaucoma, cataract, 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**

**(18 Hours)**

#### **DIGESTIVE SYSTEM AND EXCRETORY SYSTEM**

- a. Digestive system** - Disorders of Upper Gastro Intestinal Tract-Hyposalivation, hypersalivation, esophageal, achalasia, 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, appendicitis, ulcerative colitis, dysphagia, gastric dumping syndrome, vomiting. Pancreatitis, jaundice, hepatitis, cirrhosis and gallstones.
- b. 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, uninhibited neurogenic bladder, nocturnal micturition.

#### **UNIT V**

**(18 Hours)**

- a. Muscular and Skeletal System** - Disorders of Skeletal Muscle- Myopathy-Sprain and strain, Muscular Dystrophy. Diseases involving muscle tone, Tetany Osteoporosis Arthritis, Spondylitis, Osteomalacia, Rickets, fractures
- b. Reproductive system** – Effects of extirpation of testis, hypergonadism in males, hypogonadism in males, enlargement of prostate gland, azoospermia, oligozoospermia, teratozoospermia, aspermia, oligospermia, hematospermia. Abnormal menstruation – menstrual symptoms, premenstrual syndrome, anovulatory cycle, amenorrhea, hypomenorrhea, menorrhagia, oligomenorrhea, polymenorrhea, dysmenorrhea and metrorrhagia

#### **UNIT – VI**

#### **SELF STUDY FOR ENRICHMENT**

**(Not to be included for External Examination)**

Symptoms of Anemia. Types of Hypertension. Errors of refraction. Structure and functions of Liver, gall bladder, Pancreas. Phases of Menstrual cycle.

### Text books

1. Wilson and Ross, (2014). *Anatomy and Physiology in Health and illness*: New Delhi Reed Elsevier India Private Limited
2. Sembulingam. K..(2016). *Essentials of Medical Physiology*: New Delhi Health Sciences Publisher.
3. Subramanyam, Sarada.(2018). *Text book of Human Physiology*: New Delhi S Chand & Company Ltd.

### Reference books

1. Waugh, Anne Ross and Wilson.(2018). *Anatomy and Physiology in Health and Illness*, 13<sup>th</sup> Edition. New York Churchill, Livingston.
2. Murugesh N.(2011). *Basic Anatomy and Physiology*: Madurai Sathya Publishers.
3. Indu Khurana.(2013). *Textbook of Human Physiology*, Elsevier.
4. Wilson and Ross.(2014). *Anatomy and Physiology in Health and Illness*: New Delhi, Reed Elsevier India Private Limited.
5. Sembulingam. K. (2016). *Essentials of Medical Physiology*: New Delhi Health Sciences Publisher.

### Web Link:

1. <https://ncdc.gov.in/https://www.cdc.gov/globalhealth/countries/india/default.htm>
2. <https://www.egyankosh.ac.in/handle/123456789/32973>
3. <https://www.google.co.in/books/edition/Applied Physiology Of Exercise Laborator/VWFE EAAAQBAJ?hl=en&gbpv=1&dq=on+line+course+material+on+applied+physiolo>
4. <https://www.sciencedirect.com/topics/medicine-and-dentistry/menstrual-irregularity>
5. <https://ce.napnap.org/system/files/14-Musck%20Stevenson.pdf>

### Journals:

1. Applied Physiology, Nutrition and Metabolism, National Research Council Canada.
2. Journal of Applied Physiology, American Physiological Society, United States.
3. European Journal of Applied Physiology, Springer, Germany.

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

### Course Designers:

- Ms. S.FATHIMA
- Ms. C.NIVETHA

<b>SEMESTER I</b>	<b>Internal Marks: 25</b>		<b>External Marks: 75</b>	
<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>Hrs / Week</b>	<b>CREDIT</b>
<b>22PFS1EC1B</b>	<b>NUTRITION FOR FITNESS</b>	<b>ELECTIVE</b>	<b>6</b>	<b>4</b>

### Course Objective

- To enable students to understand the interaction between exercise and nutrient metabolism.
- To enlighten the students to understand the various physiological aspects for sportspersons.
- To help the students to understand the role of ergogenic aids to enhance sports performance.

### Pre requisites

- Basic knowledge on nutrition
- Fundamentals of physiological functions of human body

### Course Outcome and Cognitive Level Mapping

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

<b>CO Number</b>	<b>CO Statement</b>	<b>Knowledge Level</b>
<b>CO1.</b>	Describe the role of nutrition in fitness.	K1,K2,K3, K4,K5
<b>CO2.</b>	Apply the nutritional assessment techniques among individuals.	K1,K2,K3, K4,K5
<b>CO3.</b>	Determine the nutritional requirements for pre and post event of athletes.	K1,K2,K3, K4,K5
<b>CO4.</b>	Assess the ergogenic foods for sports individuals.	K1,K2,K3, K4,K5
<b>CO5.</b>	Appraise effect of exercise on physiological and biochemical functions.	K1,K2,K3, K4,K5

### Mapping of CO with PO and PSO

<b>COs</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
CO1	3	2	3	3	3	3	2	3	3	3
CO2	3	2	3	3	3	2	2	2	3	3
CO3	3	2	3	3	3	2	2	2	3	3
CO4	3	2	3	3	3	2	2	2	3	3
CO5	3	2	3	3	3	2	2	2	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

## **SYLLABUS**

### **UNIT I**

**(18 hours)**

#### **INTRODUCTION TO FITNESS**

##### **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 pyramid.

### **UNIT II**

**(18 Hours)**

#### **EFFECT OF PHYSICAL FITNESS ON HEALTH STATUS**

##### **a. PHYSIOLOGICAL AND BIOCHEMICAL EFFECT OF EXERCISE**

Aerobic and anaerobic exercises, muscle contraction, weight and body composition of athletes, adaptation of muscle and body physiology to exercise.

##### **b. EFFECT OF PHYSICAL EXERCISE ON VARIOUS SYSTEMS**

Circulatory- Cardiovascular regulation and integration, muscular, skeletal and neural control, endocrines and exercise, respiratory systems.

### **UNIT III**

**(18 Hours)**

#### **COMPONENTS OF ASSESSMENT**

##### **a. ASSESSMENT OF FITNESS**

Anthropometry, assessment of Cardio Respiratory Vo<sub>2</sub> max, assessment of physical and functional capacity, hydration assessment and recommendation. Assessment of muscular fitness, muscle strength, endurance and flexibility exercise-Bench jumps, pushups, sit and reach test.

##### **b. NUTRITIONAL ASSESSMENT**

Measurement of body composition, Somato typing, dietary assessment, biochemical assessment, clinical assessment, body composition and sports performance.

### **UNIT IV**

**(18 Hours)**

#### **EFFECT OF FITNESS ON NUTRITION**

##### **a. IMPORTANCE OF NUTRITION**

Need and scope of nutrition in fitness, nutritional guidelines for health and fitness, goals of

optimal nutrition for athletes, nutritional supplement.

**b. NUTRITIONAL PROBLEMS**

Nutritional problems in physically active persons - mineral malnutrition, athletic triad, vitamin malnutrition, eating disorders, weight concerns. The female athlete triad, eating disorders, amenorrhea, osteoporosis, travelling athletes, diabetic athletes, GI stress and athletes, cramps and stitches.

**UNIT V**

**(18 Hours)**

**NUTRITIONAL GUIDELINES**

**a. NUTRITIONAL REQUIREMENTS**

Role of macronutrient on exercise and sports performance, Role of micronutrient on exercise and sports performance, sources of energy, Energy balance, Body mass and composition, Fuel needs for training and recovery, weight loss energy calculation.

**b. PRINCIPLES OF DIET PLANNING**

Principles of diet planning for different exercise/sports conditions, Pre game meals, Post Game meals, During meals, On-season and Off-season meals, Ergogenic aids-nutritional and non-nutritional ergogenic aids. Nutritional standards – dietary reference intake, probiotics, exercise and weight management.

**UNIT VI**

**SELF STUDY FOR ENRICHMENT (Not to be included for External Examination)**

Basics of Physical Activity Guidelines. Effect of physical exercise on digestive system. Methods of measuring energy expenditure during exercise. Government and Non-Governmental organization for sports nutrition. Role of Probiotics in Sports Nutrition.

### Text Books

1. Shubhangini Joshi, A.(2014). *Nutrition and Dietetics*. 5<sup>th</sup> Edition.. McGraw Hill. Education Private Limited, New Delhi.
2. Srilakshmi, B. et.al., (2017), *Exercise physiology fitness and sports nutrition*. New Age International Publishers.

### Reference Books

1. Kathleen Mahan, L. (2008). *Krause's Food & Nutrition Therapy*. Sauder's Elsevier.. Canada.
2. Jose Antonio, et al., *Essentials of Sports Nutrition and Supplements*: Humana Press.
3. Wener, W.K., et al. (2009). *Lifetime Physical Fitness and Wellness: A Personalized Program* Cengage Learning, United States.
4. Jerrold, S. (2012). *Empowering Health Decisions*. Jones & Bartlett Publishers. Burlington.
5. Asker Jeukendrup, Michael Gleeson, (2019). *Sport Nutrition*: Human Kinetics. United States.

### Journals:

1. Journal of the International Society of Sports, Nutrition Biomed Central Ltd, United States
2. American health & Fitness Journal, American College of Sports Medicine, 401 W. Michigan Street Indianapolis, IN 46202-3233

### Web links:

1. <http://www.sportsauthorityofindia.nic.in>
2. <https://www.hhs.gov/programs/prevention-and-wellness/nutrition-and-fitness/index.html>
3. <https://www.hopkinsmedicine.org/health/wellness-and-prevention/nutrition-and-fitness>

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

### Course designers

- Ms. S. FATHIMA
- Ms. T.R. REVATHI

SEMESTER I	Internal Marks: 25		External Marks: 75	
COURSE CODE	COURSE	CATEGORY	Hrs/Week	CREDITS
22PFS1EC1C	NUTRITION IN CLINICAL	ELECTIVE	6	4

	<b>CRITICAL CARE</b>			
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### Course Objective

- 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

### Pre requisites

- Fundamentals on nutrition and disease.
- Basic knowledge on nutritional assessment.

### Course Outcome and Cognitive Level Mapping

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

CO Number	CO Statement	Knowledge Level
CO 1	Explain the nutritional assessment methods	K1,K2,K3, K4,K5
CO 2	Compute principles of nutritional care	K1,K2,K3, K4,K5
CO 3	Analyze nutritional status of critically ill patients	K1,K2,K3, K4,K5
CO 4	Assess importance of enteral and parenteral nutrition	K1,K2,K3, K4,K5
CO 5	Evaluate role of nutrients in critical care	K1,K2,K3, K4,K5

### Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	2	2
CO2	3	3	3	3	2	3	3	3	2	2
CO3	3	3	3	3	2	3	3	3	2	2
CO4	3	3	3	3	2	3	3	3	2	2
CO5	3	3	3	3	2	3	3	3	2	2

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

## SYLLABUS

### UNIT I

(18 Hours)

#### SCREENING AND NUTRITIONAL ASSESSMENT OF CRITICALLY ILL PATIENTS

- a. Screening:** Diagnosis of malnutrition, Nutrition screening, Methods for nutritional screening  
Malnutrition Universal Screening Tool, Nutritional Risk Screening, Mini Nutritional Assessment.

- b. **Assessment of Nutritional Status:** Anthropometric Assessment - Body Mass Index, Mid Arm Circumference, Triceps skin fold thickness; Biochemical assessment – Urea, Creatinine, liver function tests, plasma changes in minerals, plasma protein tests; Clinical assessment – temperature, Blood Pressure, Pulse Rate; Dietary assessment – 24-hour recall method, food frequency questionnaires.

## **UNIT II**

**(18 Hours)**

### **NUTRITIONAL CARE FOR HOSPITALIZED PATIENTS**

- a. **Principles of nutrition care** – Nutrition care process, Progressive diets- Clear fluid diet, full fluid diet, soft and regular diet.
- b. **Surgical Conditions-** Hormonal response during surgery, levels of stress, starvation, sepsis, Infections, post operative diet.

## **UNIT III**

**(18 Hours)**

### **NUTRITIONAL SUPPORT SYSTEM**

- a. **Enteral nutrition** – Types, routes, mode of feeding and importance, advantages and disadvantages of home-based feed, precautions while feeding and complications.
- b. **Parenteral nutrition** – Types, composition, importance of total parenteral nutrition, precautions while feeding and complications. Refeeding syndrome and clinical manifestations of refeeding syndrome.

## **UNIT IV**

**(18 Hours)**

### **NUTRITIONAL SUPPORT IN BURN AND TRAUMA**

- a. **Burns** – Principles of nutrition management, Clinical effects of malnutrition and factors affecting nutritional requirements in burn patients.
- b. **Trauma** – Classification, Principles of nutrition management, Clinical effects of malnutrition and factors affecting nutritional requirements in trauma patients.

## **UNIT V**

**(18 Hours)**

### **NUTRITIONAL SUPPORT SPECIFIC CONDITIONS**

- a. **Renal failure** –types, metabolic aspects and nutritional requirement, effects of renal treatment on nutrition and nutritional therapy.
- b. **Hepatic failure** – Consequences of hepatic failure upon nutritional status and nutritional support.
- c. **Pulmonary diseases** – types, effects of pulmonary treatment on nutrition and nutritional support.
- d. **Cancer** -Types of cancer, overview of nutrition in cancer care, effects of cancer treatment on nutrition and nutritional support.



## UNIT - VI

### SELF STUDY FOR ENRICHMENT

(Not to be included for External Examination)

Classification of Malnutrition.

Pre operative diet in surgical condition

Comparison of enteral and parenteral nutrition.

Classification of burns.

Types of hepatic failure.

### Textbooks

1. Luc Cynober A, Frederick Moore A., (2003), *Nutrition and Critical Care*, Karger Medical and Scientific Publishers.
2. Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S., (2013), *Textbook of Nutrition and Dietetics*, Phoenix Publishing House Pvt Ltd.
2. Frederick A. Moore, Edward Abraham., (2017), *Textbook of Critical Care*, Elsevier

### Reference Book

1. Verma P K., (2008), *Principles and Practice of Critical Care*, B. I Publications.
2. Pierre Singer., (2013), *Nutrition in Intensive Care Medicine: Beyond Physiology*, Karger Medical and Scientific Publishers.
3. Peter Faber, Mario Siervo., (2014), *Nutrition and Critical Care*, Cambridge University Press.
4. Rajkumar Rajendram, Victor R. Preedy, Vinood B. Patel., (2015), *Diet and Nutrition in Critical Care*, Springer New York.
5. Gail A. Cresc., (2016), *Nutrition Support for critically ill patient*, CRC Press.

### Journals

1. Journal, Indian Academy of Clinical Medicine, Med IND, India.
2. Journal of the American Academy of PAs, Wolters Kluwer, United States

### Web References

1. <https://www.slhd.nsw.gov.au/rpa/neonatal%5Ccontent/pdf/guidelines/tpn.pdf>
2. [https://www.clinicalnutritionjournal.com/article/S0261-5614\(20\)30194-1/fulltext](https://www.clinicalnutritionjournal.com/article/S0261-5614(20)30194-1/fulltext)
3. [https://www.researchgate.net/publication/244829589\\_Basics\\_in\\_Clinical\\_Nutrition\\_Nutritional\\_support\\_in\\_trauma](https://www.researchgate.net/publication/244829589_Basics_in_Clinical_Nutrition_Nutritional_support_in_trauma)
4. [https://nutritionguide.pcrm.org/nutritionguide/view/Nutrition\\_Guide\\_for\\_Clinicians/1342058/all/Burns](https://nutritionguide.pcrm.org/nutritionguide/view/Nutrition_Guide_for_Clinicians/1342058/all/Burns)
5. <https://www.nutritioncaresystems.com/chronic-obstructive-pulmonary-disease/>
6. <https://www.cancer.gov/about-cancer/treatment/side-effects/appetite-loss/nutrition-pdq>

### Pedagogy:

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

### Course Designers

- Ms. M. VINOTHINI
- Ms. C. NIVETHA