



**Dr. M. G. R.**  
**EDUCATIONAL AND RESEARCH INSTITUTE**  
(Deemed to be University)  
**MADURAVOYAL, CHENNAI – 600 095**

**Regulations for B.Sc. (Allied Health Science) Courses**

**Introduction:**

**B.Sc. (Allied Health Science), a (3-year course work + 1-year internship)** program under the **Faculty of Allied Health Sciences**, is aimed at training students who will be able to meticulously assist the doctors for providing quality patient care in selected areas of clinical speciality. This program is a taught course that covers relevant topics and specialized areas of knowledge as opted. The aim of this B.Sc. program is to provide a thorough training to the candidates through formal lectures and/or seminars and practical programs which culminate in a one year internship that finally prepares the student for the rigors of the medical world.

**1. Short Title and Commencement:**

These Regulations shall be called the “Regulations for B.Sc. (Allied Health Science) Course” of Dr. M.G.R Educational and Research Institute. These regulations shall come into force from the academic year 2018-2019. These regulations are subject to modifications as may be approved by the Academic Council from time to time.

**2. Eligibility for Admission:**

- a) A candidate desiring to join the (3-year course work + 1-year internship) program, leading to the degree B.Sc. (Allied Health Science) should have passed the HSC/CBSE/ISC or equivalent examination with one of the following subject combinations:
- i) Physics, Chemistry, Biology,
  - ii) Physics, Chemistry, Botany and Zoology
  - iii) Physics, Chemistry, Biology, biochemistry
  - iv) Physics, Chemistry, Biology, nutrition dietetics

b) A candidate shall, at the time of admission submit to the Head of the Institution, a certificate of medical fitness from an authorized Medical Officer certifying that the candidate is physically fit to undergo the academic course and does not suffer from any disability or contagious disease.

### **3. Age limit for admission**

A candidate should have completed the age of 17 years or would complete the age as on 31<sup>st</sup> December of the year of admission to the B.Sc .Allied Health Science Course.

### **4. Eligibility Certificate**

Candidates, who have passed any qualifying examination other than the Higher Secondary Course examination conducted by the Government of Tamil Nadu, shall obtain an Eligibility Certificate from Dr. M.G.R Educational and Research Institute and produce the same at the time of admission.

### **5. Registration**

A candidate admitted to the course shall register his/her name with the University by submitting the application form for registration, duly filled in along with the prescribed fee, through the Head of the Institution within the stipulated date.

### **6. Duration of the course**

The duration of the B.Sc. (Allied Health Science) Degree Course shall be 3-year course work comprising of 6(six) semesters and one year (semesters 7 & 8) of compulsory internship. The candidate is required to pursue the course on a full time basis, and must complete the course within seven years from the date of provisional registration.

### **7. Commencement of the Course:**

The course shall ordinarily commence by the month of August of the academic year.

### **8. Curriculum:**

The Curriculum and syllabus for the course shall be as specified in the annexure to these regulations which are subject to modifications by the standing

Academic Board from time to time.

(i) The first three years of the course will be utilized as follows:

- The first two semesters will be spent on Basic Nutrition, Physiology, Biochemistry, Food Microbiology, Family Meal Management, Diet Therapy, Quantity Food Production, Advance Nutrition, English and Communication skills and Introduction to Computer Science.
- At the beginning of the third semester, students will be assigned to one of the following branches of specialization as per the admission policy, and they will be offered specialized training in that specialty during the third, fourth, fifth and sixth semesters.

(ii) The fourth year of the course shall be compulsory internship in the respective speciality.

#### **9. Medium of Instruction:**

English shall be the medium of instruction for all the subjects of study and for the examination.

#### **10. Working Days:**

Each semester shall consist of not less than 100 working days and each academic year shall have a total of 200 working days or above in the first to Sixth Semesters. In the Seventh and Eighth semesters, each semester shall have a minimum of 120 working days.

#### **11. Attendance:**

The candidate shall have not less than 80% attendance in Theory and Practical separately. Each semester shall be taken as a unit for the purpose of calculating the attendance. The candidate lacking attendance in a subject shall be denied permission to appear for the University Examination in that subject.

#### **12. Condonation of Lack of Attendance:**

The discretionary power of condonation of shortage of attendance to appear for University Examination rests with the University.

Lack of attendance can be condoned up to a maximum of 10% of the minimum attendance required in the following exceptional circumstances:

- (i) Any illness/ accident (for which Medical certificate from a registered medical practitioner must be produced)
- (ii) Any unforeseen tragedy in the family (should produce the letter from the parent/guardian)
- (iii) Participation in NCC/NSS and other co-curricular activities representing the Institution / University. (Certificate from competent authority is required)

For any of the above reasons, request shall be made by the candidate with prescribed fees to the Controller of Examination through proper channel, ten days prior to the commencement of the theory examination.

### **13. Commencement of the examinations**

There shall be two sessions of University examinations in an academic year, viz., February and August.

### **14. Continuous (Internal) Assessment:**

Continuous (Internal) Assessment for Theory shall be the average of the best two out of three.

Continuous (Internal) Assessment for Practical shall be the average of the best two out of three.

### **15. Semester - End Examination (University/Department):**

a. The examination in B.Sc. (Allied Health Science) shall consist of Written Theory examinations and Practical examinations. The Semester - End Examination (University/Department) shall be conducted at the end of each semester.

b. Papers for which Internal Examination is recommended by the Board of Studies and approved by the Academic Council, the date of Semester - End Examinations (Internal examinations) shall be as per the University guidelines.

**16. Pattern of Semester - End Examination (University/Department):**

**EXAMINATION PATTERN-**

**SEMESTER-I AND SEMESTER-II (FOR ALL SPECIALITIES)**

**THEORY**

**MARKS- 60 Marks**

**DURATION -2<sup>1</sup>/<sub>2</sub> Hours**

**PART –A (Answer any one from Two)**

1. Essay (1x15=15 Marks)

**PART-B (Answer all questions)**

1. Short Notes (5x5=25 Marks)

**PART-C (Answer all questions)**

1. Short answers (10x2=20 Marks)

**PRACTICAL**

Practical (including Orals) 15 Marks

**CONTINUOUS (INTERNAL) ASSESSMENT**

Theory 20 Marks

Practical 5 Marks

**TOTAL**

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**100 Marks**

## Question pattern for SEMESTER III – SEMESTER VI

**Duration -3hours**

### **Theory**

**80 marks**

#### **Section –A (Answer any TWO from THREE)**

1. Essay (2x15=30)

#### **Section-B (Answer any EIGHT from TEN)**

1. Short notes (8x5=40)

#### **Section-C**

1. Very short notes (5x2=10)

#### **Internal assessment**

Based on CAT Exams (I,II,III & Model)

**20 marks**

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**TOTAL**

**100 Marks**

### **Practicals Pattern**

1. Spotters
2. Viva (Theory &Practicals)
3. Charts/stations
4. Record

**80 marks**

20 marks

20 marks

20 marks

20 marks

#### **Internal assessment**

**20 marks**

- Attendance
  - Based on CAT exams
  - Log book
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**TOTAL**

**100 Marks**

### **17. Marks Qualifying for a Pass:**

For passing the University/End-Semester Examination from Semester I to Semester VI, the candidate shall secure the marks as stated below,

- 40% minimum in the University End-Semester Theory examination
- 40% minimum in the University End-Semester Practical examination
- 40% of marks in the subject where internal evaluation alone is conducted
- 40% of aggregate of theory, practical and internal assessment taken together

### **18. Classification of successful candidates:**

- a) Successful candidates who secure 75% marks and above as a course aggregate in the first appearance taking University theory, practical, and project/dissertation evaluation shall alone be awarded Distinction. This will also apply for award of University rank.
- b) Successful candidates who secure 60% marks and above as a course aggregate in the University theory, practical, project/dissertation evaluation and viva shall be awarded First Class.
- c) All others who secure 40-59% in gross percentage will be classified to have passed in Second Class.

### **19. Revaluation of answer papers**

There shall be revaluation and retotaling of answer papers of failed candidates. Failed candidates are however, permitted to apply to the University within fifteen days of publication of the results for revaluation and retotaling.

### **20. Carry- over of failed subjects**

- 1) A candidate has to pass in theory and practical examinations separately in each of the paper.
- 2) If the candidate fails either in theory or practical examinations, he/she has to reappear for both (theory and practical)

3) The student shall start the Internship training (VII & VIII semester) only after he/she clears all the papers from Semester I to Semester VI.

## **21. Temporary break of study**

- a) A candidate is not normally permitted to temporarily break the study.
- b) If a candidate is continuously absent from the institute for four or more weeks,
  - i) Having notified the Dean/Director/Principal within this period, this absence shall be treated as “Temporary Break of Study”.
  - ii) Without notifying the Dean/Director/Principal, his/her name will be removed from the institute rolls.
- c) If a candidate is compelled to temporarily break the study for valid reasons (such as accident or hospitalization due to prolonged ill health), he/she shall apply for condonation of the break to the Dean/Director/Principal through the Head of the Department.
- d) For condonable break of study:
  - i) If the lack of attendance is within condonable limits as per Clause No. 12, the candidate shall be permitted to write the examination for the current semester.
  - ii) If there is non-condonable lack of attendance, the candidate shall rejoin the program at the respective semester as and when it is offered after the break and shall be governed by the rules and regulations in force at the time of rejoining.
- e) The total period for completion of the program reckoned from the commencement of the semester to which the candidate was first admitted shall not exceed the maximum period specified in Clause No.6 irrespective of the period of break of study in order that he/she may be qualified for the award of the degree.



- f) In any case, a candidate shall be permitted to temporarily break the study only once during the entire duration of the program. The candidate shall forfeit the registration in case of a second break or in case of a non-condonable break of study.
- g) Without prejudice to the above rules, the candidate who has completed the attendance requirement for a semester, but has proceeded on a condonable break of study without appearing for the University Examination, shall be permitted to appear for the examinations without repeating the semester and thereafter continue the subsequent semester.

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**FACULTY OF ALLIED HEALTH SCIENCES**

**SCHEME OF EXAMINATION**

**Semester-I**

**(B.Sc., CLINICAL NUTRITION AND DIETETICS)**

**TOTAL HOURS – 330 HRS**

S. No	PAPER	Hours per semester		Evaluation (Marks)				Total
				Continuous assessment (Internals)		End Semester Examination (University/ Department Exams)		
		Theory	Practical	Theory	Practical	Theory	Practical	
1	Basic Nutrition (UE)	40 hours	20 hours	20	05	60	15	100
2	Physiology –I (UE)	40 hours	20 hours	20	05	60	15	100
3	Biochemistry –I (UE)	40 hours	20 hours	20	05	60	15	100
4	Food Microbiology –I (UE)	40 hours	20 hours	20	05	60	15	100
5	Family Meal Management –I (UE)	40 hours	20 hours	20	05	60	15	100
6	English (IE)	30 hours	-	-	-	50	-	50

<b>UE</b>	<b>University Exams</b>
<b>IE</b>	<b>Internal Examinations</b>

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**FACULTY OF ALLIED HEALTH SCIENCES**

**SCHEME OF EXAMINATION**

**Semester-II**

**(B.Sc., CLINICAL NUTRITION AND DIETETICS)**

**TOTAL HOURS – 330 HRS**

S. No	PAPER	Hours per semester		Evaluation (Marks)				Total
				Continuous assessment (Internals)		End Semester Examination (University/ Department Exams)		
		Theory	Practical	Theory	Practical	Theory	Practical	
1	Diet Therapy (UE)	40 hours	20 hours	20	05	60	15	100
2	Physiology –II (UE)	40 hours	20 hours	20	05	60	15	100
3	Biochemistry –II (UE)	40 hours	20 hours	20	05	60	15	100
4	Food Microbiology –II (UE)	40 hours	20 hours	20	05	60	15	100
5	Family Meal Management –II (UE)	40 hours	20 hours	20	05	60	15	100
6	Quantity Food Production (UE)	40 hours	20 hours	20	05	60	15	100
7	Advance Nutrition (IE)	30 hours	-	-	-	50	-	50
8	Computer Science (IE)	30 hours	-	-	-	50	-	50

<b>UE</b>	<b>University Exams</b>
<b>IE</b>	<b>Internal Examinations</b>

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**FACULTY OF ALLIED HEALTH SCIENCES**

**SCHEME OF EXAMINATION**

**Semester-III**

**(B.Sc., CLINICAL NUTRITION AND DIETETICS)**

**Total Hours: 420 Hrs**

S.No	PAPER	Hours / Semester		Evaluation (Marks)				
		Lecture	Practical	Continuous assessment (Internals)		End Semester Examination (University/ Department Exams)		Total
				Theory	Practical	Theory	Practical	
1.	Basic Dietetics (UE)	60	-	20	-	80	-	100
2.	Basic Dietetics- practical(UE)	-	120	-	20	-	80	100
3.	Food science - Theory (UE)	60	-	20	-	80	-	100
4.	Food science - Practical(UE)	-	120	-	20	-	80	100
5.	Medical Ethics and Bio safety (IE)	30	-	-	-	50	-	50
6.	Psychology(IE)	30	-	-	-	50	-	50

<b>UE</b>	<b>University Exams</b>
<b>IE</b>	<b>Internal Examinations</b>

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**FACULTY OF ALLIED HEALTH SCIENCES**

**SCHEME OF EXAMINATION**

**Semester-IV**

**(B.Sc., CLINICAL NUTRITION AND DIETETICS)**

Total Hours: 420 Hrs

S.No	PAPER	Hours / Semester		Evaluation (Marks)				
		Lecture	Practical	Continuous assessment (Internals)		End Semester Examination (University/ Department Exams)		Total
				Theory	Practical	Theory	Practical	
1.	Advanced Dietetics (UE)	60	-	20	-	80	-	100
2.	Advanced Dietetics Practical(UE)	-	120	-	20	-	80	100
3.	Personnel Management - Theory (UE)	60	-	20	-	80	-	100
4.	Personnel Management - Practical(UE)	-	120	-	20	-	80	100
5.	Basics And Advanced Life Support(IE)	30	-	-	-	-	50	50
6.	Medical Sociology(IE)	30	-	-	-	-	50	50

<b>UE</b>	<b>University Exams</b>
<b>IE</b>	<b>Internal Examinations</b>

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**FACULTY OF ALLIED HEALTH SCIENCES**

**SCHEME OF EXAMINATION**

**Semester-V**

**(B.Sc., CLINICAL NUTRITION AND DIETETICS)**

**Total Hours: 390 Hrs**

S.No	PAPER	Hours / Semester		Evaluation (Marks)				
		Lecture	Practical	Continuous Assessment (Internals)		End Semester Examination (University/ Department Exams)		Total
				Theory	Practical	Theory	Practical	
1.	Clinical Nutrition I- (UE)	60		20		80		100
2.	Clinical Nutrition I - Practicals (UE)		120		20		80	100
3.	Community nutrition (UE)	60		20		80		100
4.	Community Nutrition-Practicals (UE)		120		20		80	100
5.	Environmental Science And Community Medicine (IE)	30				50		50

<b>UE</b>	<b>University Exams</b>
<b>IE</b>	<b>Internal Examinations</b>

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**SCHEME OF EXAMINATION**

**Semester-VI**

**(B.Sc., CLINICAL NUTRITION AND DIETETICS)**

**Total Hours: 390 Hrs**

S.No	PAPER	Hours / Semester		Evaluation (Marks)				
		Lecture	Practical	Continuous Assessment (Internals)		End Semester Examination (University/ Department Exams)		Total
				Theory	Practical	Theory	Practical	
1.	Clinical Nutrition II - Theory (UE)	60	-	20	-	80	-	100
2.	Clinical Nutrition II -Practical (UE)	-	180	-	20	-	80	100
3.	Dietetics and Counseling- Theory (UE)	60	-	20	-	80	-	100
4.	Dietetics and Counseling-Practical (UE)	-	180	-	20	-	80	100
5.	Healthcare and Basic principles (IE)	30	-	-	-	50	-	50

UE	University Exams
IE	Internal Examinations

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**FACULTY OF ALLIED HEALTH SCIENCES**

**SCHEME OF EXAMINATION**

**Semester-VII**

**Project/Dissertation**

S.No	PAPER	Hours / Semester		Continuous Assessment (Internals)		E
		Lecture	Practical	Project	Viva	
1.	Project/ Dissertation(UE)			100		10
2.	Statistics and research methodology(IE)	30				TH 50

UE	University Exams
IE	Internal Examinations



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**FACULTY OF ALLIED HEALTH SCIENCES**  
**SCHEME OF EXAMINATION**

**SEMESTER – VII & VIII (FOR ALL SPECIALITIES)**

**Internship -1YEAR**

## SEMESTER I

<b>S.No</b>	<b>SUBJECT</b>
1	BASIC NUTRITION (UE)
2	PHYSIOLOGY-I(UE)
3	BIOCHEMISTRY- I (UE)
4	FOOD MICROBIOLOGY –I (UE)
5	FAMILY MEAL MANAGEMENT – I (UE)
6	ENGLISH(IE)

**SEMESTER – I**  
**BASIC NUTRITION (UE)**

**OBJECTIVES**

To enable the students to:

- To understand the relation between nutrition and health.
- To acquire knowledge about the main nutrients and its functions in the body.
- To understand the modifications in nutrient and dietary requirement for various diseases.

**UNIT-I**

- Introduction to Nutrition: Health, Food, Functions of food, Nutrients, Nutrition, Scope of Nutrition, Health, Nutrients, Nutritional status, Visible symptoms of good health, Malnutrition.

**UNIT-II**

- Carbohydrates: Composition, Classification, functions, Sources, digestion, absorption and transport. Components of dietary fibre, Role of fiber in health and disease.
- Protein: Composition, classification, functions, sources, requirements, digestion, absorption and transport, protein quality evaluation.
- Lipids: Composition, Classification, functions, sources, requirements, digestion, absorption and transport.

**UNIT-III**

- Water and Electrolytes: Water, Sodium, Potassium: Distribution of water and Electrolytes, Functions, Sources, Requirements, Water balance, Maintenance of water balance, Water depletion, Water excess, Distribution of Electrolytes, Maintenance of Electrolyte balance.

**UNIT IV**

- Energy: Unit of energy, sources, determination of energy expenditure, energy value of foods, Measurement of total energy requirement, Resting energy expenditure, Physical Activity Level (PAL), Factors affecting PAL, Basal Metabolic Rate, determination of BMR, SDA.

## **PRACTICALS**

- 1) Planning and Nutritive value calculation and preparation of macro nutrient rich dishes
  - a. Carbohydrate- Starch, Fiber
  - b. Protein
  - c. Fat
  
- 2) Planning and Nutritive value calculation and preparation of micro nutrient rich dishes
  - a. Vitamins- Vitamin A, Vitamin C, Thiamine, Riboflavin and Niacin
  - b. Minerals- Calcium, Iron, Zinc, Phosphorus, Potassium

### **Recommended book**

1. Modern Nutrition in Health and Disease 10th edition by Maurice E. Shils
2. Robinson. Basic Nutrition And Diet Therapy (8th Edition)
3. Willims S. R.: Essentials of Nutrition and Diet Therapy, 4th ed., Mosby College Pub. S. Louis, 1986.
4. Antia, F.P (1973): Clinical dietetics and Nutrition, Second Edition, Oxford University Press, Delhi.

## **PHYSIOLOGY-I**

### **OBJECTIVES OF THE COURSE:**

At the end of this course the students should be able to:

- Comprehend basic terminologies used in the field of Human Physiology
- Define and describe basic Physiological processes governing the normal functioning of the human body.
- Apply this knowledge in their Allied Health Science practice.

## CONTENTS

### UNIT I

#### **General Physiology**

- Concept of Homeostasis
- Cell structure and functions
- Transport across membranes

#### **Nerve and muscle**

- Nerve structure, classification of nerve fibers,
- Muscles- classification , structure ,Neuro-Muscular junction(NMJ).
- Muscle contraction-mechanism,types.

#### **Blood and body fluids**

- Body fluid volumes,compartments, and composition
- Blood composition and functions
- Plasma proteins
- Erythrocytes –Morphologyand functions
- Leucocytes-Morphology and functions
- Platelets-Morphology and functions
- Blood groups.

### UNIT II

#### **Digestive system**

- Salivary glands -Nerve supply, functions of saliva.
- Gastric juice-composition &functions of gastric juice.
- Pancreatic juice- composition, functions and regulation of pancreatic juice.
- Bile- composition, functions of bile and bile salts.
- Succus entericus and small intestinal movements.
- Deglutition, vomiting, functions of large intestine.

### **Excretory system**

- Structure of Nephron and its blood supply, Juxtaglomerular Apparatus(JGA).
- Formation of urine-Filtration, Reabsorption and secretion.
- Counter-Current mechanism
- Micturition.

### **PRACTICAL & VIVA VOCE**

- Microscope
- Estimation of Hemoglobin
- RBC
- WBC
- Spotters

### **Recommended book**

1. Basics of Medical Physiology (Third edition) by D. Venkatesh/ H.H. Sudhakar

### **Reference books**

1. Medical physiology for under graduates by Indhu Khurana,
2. Text Book of Physiology by A.K. Jain for BDS.

### **BIOCHEMISTRY-I(UE)**

#### **OBJECTIVES:**

At the end of this course the students should be able to:

- To have a knowledge about the chemistry and metabolism of various macromolecules- carbohydrate, protein and lipids

- To learn about enzymes, vitamins, minerals and nutrition
- To know the structure and function of Hemoglobins, Nucleic acids.
- To learn about the organ function tests like Liver Function Tests and Renal Function Tests

## CONTENTS

### **UNIT I - CARBOHYDRATES**

- Classification of carbohydrates and their biological importance,
- Reducing property of sugars.

#### **Metabolism of Carbohydrates:**

- Digestion and Absorption of carbohydrates,
- Steps of Glycolysis and energetics,
- Steps of TCA cycle and energetics,
- Steps of Glycogen synthesis and breakdown,
- Significance of HMP shunt pathway,
- Definition and steps of Gluconeogenesis, Galactose metabolism
- Galactosemia.
- Diabetes mellitus ,

#### **Bioenergetics:**

- Importance of ATP, Outline of respiratory chain.

### **UNIT II - LIPIDS**

- Classification of lipids,
- Essential fatty acids,
- Functions of cholesterol,
- Triglycerides,
- Phospholipids

#### **Metabolism of Lipids:**

- Digestion and Absorption of lipids,
- Fatty acid synthesis & Steps of  $\beta$  oxidation of fatty acids,
- Types and functions of lipoprotein,
- Lipid profile, hyper cholesterolemia

### **Unit III – VITAMINS**

## Vitamins, its classification

- Vitamin A
- Vitamin D
- Vitamin E & K
- Vitamin B complex
- Vitamin C

## Unit IV - ENZYMES

- Definition,
- Classification,
- Coenzymes,

Factors affecting enzyme activity, Types and examples of enzyme inhibition

## **PRACTICAL & VIVA VOCE**

1. Reactions of Glucose
2. Reactions of Fructose
3. Reactions of Maltose
4. Reactions of Lactose
5. Tests for Sucrose
6. Tests for Starch
7. Identification of unknown Carbohydrates

## **SPOTTERS**

- **CRYSTALS**
  - Maltosazone
  - Lactosazone
  - Glucosazone/Fructosazone
- **REAGENTS**



- Benedict's reagent
- Barfoeds reagent
- Foulgers reagent
- Seliwanoff reagent
- Fouchets reagent
- **CHEMICALS**
  - Sodium Acetate
  - Phenylhydrazine
  - $\alpha$ Naphthol
- **STRUCTURES.**
  - Structure of Cholesterol
  - Structure of Glucose
  - Structure of Fructose
- **VITAMINS**
  - Carrots
  - Rickets
  - Scurvy
  - Egg

**Text books Recommended :**

- Textbook of Biochemistry for Paramedical Students By Dr.P.Ramamoorthy
- Essentials of Biochemistry by U. Sathyanarayana

**Reference books :**

- Text book of Biochemistry for Medical students by DM vasudevan, Sreekumari S, Kannan Vaidyanathan. 7<sup>th</sup> Edition
- Harper's Illustrated Biochemistry – 30<sup>th</sup> Edition.

**FOOD MICROBIOLOGY- I (UE)**

**OBJECTIVES:**

At the end of the semester the students should be able to

- Understand the basic concepts of food microbiology.
- Understand the basic fundamental aspect of food microbiology and study the common disease caused by them.

## **UNIT I**

### **Food Microbiology**

- Introduction to food microbiology and its relevance to everyday life - General characteristics of Bacteria, Fungi, Virus, Protozoa & Algae.

### **Growth of micro-organisms**

- Growth curve, effect of environmental factors in growth of micro organism- pH, water activity, oxygen availability, temperature and others.

## **UNIT II**

### **Primary sources of micro organisms in foods**

- Physical and chemical methods used in the destruction of micro organisms, pasteurization and sterilization

## **UNIT III**

### **Fundamentals of control of micro-organisms in foods**

- Extrinsic & intrinsic parameters affecting growth and survival of organisms.
- Use of high & low temperature, controlling moisture as water content, freezing, freezing-drying, irradiation and use of preservatives in food.

## **PRACTICALS**

### **SPOTTERS**

1. Study of equipments in a microbiology lab.
2. Identification of culture media.
3. Gram staining
4. Identifications of important moulds & yeast in food items.

### **RECOMMENDED BOOK:**

1. William. C. Frazier – Food Microbiology

**REFERENCE BOOKS:**

1. Ananthanaryanan and Paniker's - Textbook of Microbiology.
2. Subhash Chandra Parija – Textbook of Microbiology.

**PRACTICAL BOOK:**

1. Patwardhan,Bhat,Satish Patwardhan – Handbook of Practical examination in Microbiology

## **FAMILY MEAL MANAGEMENT I (UE)**

### **OBJECTIVES:**

To enable students to:

- Learn the principles of meal planning
- Acquire knowledge on planning meals for different age groups

### **UNIT I**

#### **Menu Planning**

- Balanced Diet, Food groups, Food guide, food pyramid, My Plate, Low cost balanced diets RDA, Basic principles of menu planning, Points to be considered while planning menu.

### **UNIT II**

#### **Nutrition in pregnancy**

- Physiological changes, Relationship between maternal and foetal nutrition, Impact of nutritional deficiency on the outcome of pregnancy, Nutritional and food requirements, Dietary guidelines, Dietary problems, Complications of pregnancy, GDM.

### **UNIT III**

#### **Nutrition during Lactation**

- Physiology of lactation, Hormonal control of lactation, Let Down Reflex, Nutritional and food requirements, Factors affecting volume & Composition of breast milk, Breast feeding and its advantages, Pre-term milk (PTM), Expressed Breast Milk (EBM), Drip Breast Milk (DBM), Common problems during breast feeding.

### **UNIT IV**

#### **Nutrition during Infancy**

- Growth & development, LBW, Small for Gestational Age and Pre term baby, Nutritional requirements, Artificial feeding, Hazards of Bottle feeding, Feeding of the Preterm and LBW babies, Weaning, Feeding problems in weaning, Family Pot Feeding, Low cost supplementary foods, ARF.

## **PRACTICAL**

1. Basic principles of meal and menu planning.
2. Daily food guide – Basic five food groups, food pyramid, my plate, use of food groups, food costing.
3. Plan and prepare a diet for Sedentary pregnant woman, Lactating mother (0 – 6 months) and
4. Infant (0 – 6 months). Prepare weaning foods.

### **RECOMMENDED BOOK:**

1. Nutrition and Diet Therapy Corroll lutz & Karen Przytulski Japee, 14Th edition
2. Therapeutic Paediatric Nutrition Madhu Sharma Japee,1st edition,2011
3. Diet Management Rekha Sharma Elsevier,4th edition,2011
4. Food and Nutrition L.C.Gupta,Kusum Gupta,Abhishek Gupta Japee,6th edition,2010
5. Nutrition and Therapeutic Diets Darshan Sohi Japee,1st edition,2013

### **REFERENCE BOOKS:**

1. Nutritive Value of Indian Foods C.Gopalan,B.V.Rama Sastri and S.C.Balasubramanian Japee,1st edition,1971
2. Food and Nutrition Dr.Shrinandan Bansal AITB,2nd edition,2012

## **ENGLISH (IE)**

### **GENERAL OBJECTIVES:**

At the end of the semester the students should be able to

- To improve comprehensive and writing skills in English
- To discuss about effective communication skills
- To prevent barriers in communication.

### **Unit I: Grammar**

- Components of a sentence
- Positive and Negative statements
- Interrogative Statement
- Parts of speech in brief
- Transformation and synthesis of sentences
- Verb and Tense forms
- Voice
- Reported Speech
- Common errors and how to avoid them

### **Unit II: Vocabulary**

- Medical Terminology
- Words often confused or misused
- Words and expression in British and American English
- Idioms and Phrases

### **Unit III: Oral communication**

- Importance of speaking efficiently
- Voice culture
- Preparation of Speech
- Secrets of good delivery
- Audience Psychology

- Presentation Skills
- Using non-verbal communication
- Interview technique
- Skill in arguing

#### **Unit IV: Spoken English**

- The phonetic symbols
- Stress
- Intonation
- Rhythm
- Transcription
- Using dictionaries for learning to pronounce

#### **Unit V: Written communication**

##### **(a) Art of writing**

- Rules for effective writing
- Expansion of proverbs & Ideas
- Précis writing

##### **(b) Letter writing**

- Private letters & Social letters
- Business letters
- Letter to a Bank
- Letter to a Newspaper
- Letter to Application
- Curriculum Vitae (Different models)
- Placing an order

##### **(c) Report writing**

- Guidelines to prepare a good report
- Usage of impersonal language
- Preparing lab reports

**(d) Note making and Note taking**

- Note making and note taking strategies
- Organizing notes
- Exercise and note making / taking

**(e) Comprehension**

- Listening and reading comprehension  
(Exercise of prescribed short answers)

**Unit VI: Reading**

- What is efficient and fast reading?
- Awareness of existing reading habits
- Tested techniques for improving speed
- Improving concentration and comprehension through systematic study.

**Reference Books:**

1. English for Competitive Examinations by R.P.Bhatnagar, Rajiel Bhargava
2. English for college and competitive exams by Dyvadatham
3. Written Communication in English by Sarah Freeman
4. Writing with a purpose by Tickoo & Sasikumar
5. English phonetics for Beginners by P.Iyadurai
7. Empowerment through verbs & idioms by Padmini devkumar
8. High School English Grammer and Composition by Wren & Martin
9. Communication techniques for your success everywhere by Muralidharan.



## SEMESTER II

<b>S.No</b>	<b>Subject</b>
1.	Diet Therapy (UE)
2.	Physiology –II (UE)
3.	Biochemistry II (UE)
4	Food Microbiology – II(UE)
5.	Family Meal Management-II(UE)
6.	Quantity Food Production (UE)
7.	Advanced Nutrition(IE)
8.	Computer science (IE)

# **SEMESTER – II**

## **DIET THERAPY (UE)**

### **OBJECTIVES**

To enable the students to:

- Study the aetiology, symptoms and medical nutrition therapy in various diseases
- Learn how to plan and prepare diet for various diseases.
- To acquire knowledge regarding effect of various diseases on nutritional status and nutrient requirements.

### **UNIT- I**

#### **INTRODUCTION TO DIET THERAPY**

- Glycemic Index
- Dietary Supplements
- Diet and Inflammation
- Prebiotics & Probiotics
- Artificial Sweeteners
- Food, Nutrition and Drug Interaction
- Personalized Nutrition.

### **UNIT II**

#### **THE DIETITIAN**

- Classification,
- Ethics & Responsibilities
- Responsibilities of Specific Dietitians
- Indian Dietetic Association

### **UNIT III**

#### **THERAPEUTIC DIETS**

- Immuno Nutrition
- Routine Hospital Diets

- Nutrition Support Service
- Malnutrition In Hospitalized Patients
- Nutrition And Wound Healing.
- Summary of Therapeutic Diet.

## **PRACTICALS**

1. GI foods
2. Anti-Inflammatory food pyramid
3. Prebiotics and probiotics
4. Artificial sweeteners
5. Routine Hospital Diets
6. Nutrition support service
7. Therapeutic diet
8. Spotters
9. Charts

### **Recommended books**

1. Bamji et al. 1996. Text Book of Human Nutrition. New Delhi, Oxford and IBH Publishing Co. Pvt. Ltd.
2. Devlin. T.M. 1997. Text book of Clinical Biochemistry. New York, John Wiley and Sons.
3. Harper. H.A. 1997. Review of Physiological Chemistry. 21st edition. Los Angeles, Lange Medical Publications.
4. Leninger. A. L. 1992. The molecular basic of cell structure and functions. New Delhi, Kalyani Publishers.

## **PHYSIOLOGY-II (UE)**

### **OBJECTIVES:**

- To develop vocabulary for appropriate terminologies to effectively communicate terms related to physiology of various body systems
- To identify and describe physiological functions of various structures involved in smooth functioning of the body.

### **Unit I Cardiovascular System**

- Cardiac muscle, action potential and conducting system of the heart.
- Cardiac cycle.
- ECG, heart sounds, Heart Rate.
- Cardiac output-Definition, factors regulating cardiac output and measurement of cardiac output.
- Blood pressure-Definition, measurement, factors maintaining BP.
- Regional circulation-Coronary and cerebral.

### **Unit -II Nervous system**

- Structure & Properties of Neuron.
- Nerve- Classification, injury.
- Types and properties of Receptors
- Synapse and synaptic transmission.
- Reflex and its properties.
- Spinal cord-Ascending & Descending tracts.
- Thalamus, Basal ganglia, Cerebellum, Cerebral cortex, Hypothalamus & Cerebrospinal fluid.
- Autonomic nervous system.
- Ascending and descending tracts.

### **Unit –III Respiratory system**

- Structure of upper and lower respiratory tract. Muscles of respiration and Mechanism of respiration.
- Lung volumes and capacities-definition,normal values,intrapulmonary and intra pleural pressures,surfactant.
- Oxygen transport,carbon-dioxide transport.
- Neural and chemical regulation of respiration.
- Hypoxia ,cyanosis,Artificial Respiration.

### **Unit – IV Special sense and skin**

- Vision,
- Audition,
- Olfaction,
- Gustation.

### **Unit – V Reproductive system**

- Male reproductive organs-Spermatogenesis and testosterone actions.
- Female reproductive organs.
- Contraception Methods.

### **Unit – VI Endocrine system**

- Hypothalamus hypophyseal inter relationship.
- Anterior pituitary hormones and their functions.
- Posterior pituitary hormones and their actions.
- Thyroid hormones, biosynthesis and functions.
- Parathyroid hormones ,functions.
- Insulin, glucagons, actions and Diabetes mellitus.
- Adrenal cortex hormones and their functions.
- Adrenal medullary hormones and their actions

## **PRACTICAL & VIVA VOCE SYLLABUS**

1. WBC.
2. Blood pressure.
3. Bleeding time
4. Clotting time.
5. Charts and spotters.

### **Recommended book**

- Basics of Medical Physiology (Third edition) by D. Venkatesh/ H.H. Sudhakar

### **Reference books**

- Medical physiology for under graduates by Indhu Khurana,
- Text Book of Physiology by A.K. Jain for BDS.

## **OBJECTIVES:**

At the end of the semester the students should be able

- To have a knowledge about the chemistry and metabolism of proteins
- To learn about nutrition-balanced diet and malnutrition
- To know the structure and function of Hemoglobins, Nucleic acids.
- To learn about the organ function tests like Liver Function Tests and Renal Function Tests.

## **UNIT I - PROTEINS**

- Classification of amino acids,
- Structure of proteins,
- Plasma proteins,
- Immunoglobulins.

### **Metabolism of Proteins :**

- Digestion and absorption of proteins,
- Transamination,
- Deamination,
- Steps of urea cycle,
- Phenylketonuria,
- Alkaptonuria,
- Transmethylation,
- Products derived from Glycine and tyrosine

## **UNIT II - NUCLEIC ACIDS**

- Structure & Function of DNA,
- Structure, Its types & Functions of RNA
- Nucleic Acid Metabolism

## **UNIT III - HAEMOGLOBIN**

- Structure & Function of Haemoglobin
- Haemoglobin Metabolism

#### **UNIT IV-- MINERALS**

- Macro & Minor Minerals & Metabolism

#### **UNIT V -- NUTRITION**

- BMR, SDA & Glycemic Index
- Dietary Fibers & Balanced Diet
- Protein Energy Malnutrition

#### **UNIT VI -- ORGAN FUNCTION TEST**

- RFT

#### **UNIT XI - ACID BASE BALANCE**

- pH Homeostasis
- Buffers
- Buffers
- Acidosis
- Alkalosis

#### **PRACTICAL & VIVA VOCE**

- Non- Protein Nitrogenous Substances
- Analysis Constituents of normal urine
- Analysis Constituents of abnormal urine
- Identification of abnormal constituents in urine
- Estimation of Glucose in blood
- Estimation of Urea in blood.

#### **Spotters**



**Spotters: The student must identify the spotter and write some important uses of the spotter.**

1. Urinometer
2. Lactometer
3. Centrifuge
4. Spectroscope
5. Colorimeter
6. pH meter
7. Ryles' Tube
8. Chromatography apparatus
9. Electrophoresis apparatus
10. Micropipette
11. Fluorosis
12. Inborn Errors of Metabolism
13. Protein Energy Malnutrition
14. Benzidine powder
15. Sulphur powder
16. Fouchet's Reagent
17. Structure of t RNA
18. Egg White
19. Jaundice
20. Gout

**Text books Recommended :**

- Textbook of Biochemistry for Paramedical Students By Dr.P.Ramamoorthy
- Essentials of Biochemistry by U. Sathyanarayana

**Reference books :**

- Text book of Biochemistry for Medical students by DM vasudevan, Sreekumari S, Kannan Vaidyanathan. 7<sup>th</sup> Edition
- Harper's Illustrated Biochemistry – 30<sup>th</sup> Edition.

## **OBJECTIVES:**

At the end of the semester the students should be able to

- Explain general and specific spoilage of foods
- Explain in detail about soil borne, water borne and air borne infections.

## **UNIT I – Microbiology of Deficient food**

Spoilage, contamination sources, types, effect on the following:

- Cereal & cereal products
- Sugar & sugar products
- Vegetables & fruits
- Meat & meat products
- Fish, egg and poultry
- Milk & milk products
- Canned foods.

## **UNIT II – Environmental Microbiology**

- Water & water borne diseases, Air & air borne diseases, Soil & soil borne diseases, Sewage and diseases.
- Beneficial effect of micro organisms.

## **UNIT III – Microbial intoxication and infections**

- Sources of contamination of food, toxin production and physiological action, sources of infection of food by pathogenic organisms, symptoms and method of control. Relevance of microbiology standards for food safety.

## **PRACTICALS**

## **I. SPOTTERS**

### **II. Clinical case discussion with charts**

1. Food poisoning
2. Gastroenteritis
3. Water borne disease
4. Air borne disease
5. Milk borne disease

### **RECOMMENDED BOOK:**

1. Dr.C.P.Baveja- Microbiology in Nutshell (Arya Publications).
2. Food Microbiology, 1st Edition, M. R. Adams 1995
3. Food Microbiology, 5th Edition Frazier, Westhoff, Vanitha N M 2014

### **REFERENCE BOOKS:**

1. Ananthanaryanan and Paniker's - Textbook of Microbiology.
2. Subhash Chandra Parija – Textbook of Microbiology.

### **PRACTICAL BOOK:**

1. Patwardhan,Bhat,Satish Patwardhan – Handbook of Practical examination in Microbiology

## **OBJECTIVES**

To enable students to:

- Learn the principles of meal planning
- Acquire knowledge on planning meals for different age groups

### **UNIT I**

- **Nutrition during early childhood (Toddler/Preschool):** Growth and nutrient needs, Food requirements, Dietary guidelines, Feeding problems, Nutrition related problems, Growth monitoring, Importance of growth charts, GOBIFFF.

### **UNIT II**

- **Nutrition during school children:** Nutritional and food requirements, Dietary guidelines, Importance of breakfast, Feeding problems, Packed lunch, School lunch programmes

### **UNIT III**

- **Nutrition during adolescence:** Growth and nutrient needs, Food requirements, Food habits and dietary guidelines, Nutritional problems, Nutritional programmers' for adolescence.

### **UNIT IV**

- **Nutrition during adulthood** – Reference man, Reference woman, Nutritional requirements, feeding pattern. Geriatric nutrition: Process of ageing, Factors affecting food intake and nutrient use, Change in organ function with ageing, Nutrient needs, Nutrition related problems

## **PRACTICALS**

### **Plan and prepare a diet for**

1. A pre-school child (1-3 years)
2. A school going child (boy and girl of 7- 9 years)
3. An adolescent (boy and girl 17 – 19 years)

### **Plan and prepare a diet for**

1. Sedentary, moderate and heavy worker (male and female)

2. A senior citizen
3. A middle income family

**RECOMMENDED BOOK:**

1. Nutrition and Diet Therapy Corroll lutz & Karen Przytulski Japee, 14Th edition
2. Therapeutic Paediatric Nutrition Madhu Sharma Japee,1st edition,2011
3. Diet Management Rekha Sharma Elsevier,4th edition,2011
4. Food and Nutrition L.C.Gupta,Kusum Gupta,Abhishek Gupta Japee,6th edition,2010
5. Nutrition and Therapeutic Diets Darshan Sohi Japee,1st edition,2013

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1. Nutritive Value of Indian Foods C.Gopalan,B.V.Rama Sastri and S.C.Balasubramanian Japee,1st edition,1971
2. Food and Nutrition Dr.Shrinandan Bansal AITB,2nd edition,2012

## **QUANTITY FOOD PRODUCTION (UE)**

### **OBJECTIVES:**

- To understand the application of basic principles of bulk production of the food.
- To gain knowledge regarding selection and purchase of food.
- To develop skills in menu planning for quantity food preparation.
- To understand the different styles of food services.
- To gain knowledge of food service layout.

### **COURSE CONTENT:**

#### **Unit I: Aims and objectives of different service outlets**

- Industrial
- Institutional
- Hospital

#### **Unit II: Different food and beverage outlets**

- 5 types of services of food and beverage outlets.
- Staff organization of different outlets (A la carte and Table d hote)

#### **Unit III: Menu planning**

- Sequence of course- Indian- techniques of writing menus.
- Types of meals and styles of service
- Breakfast, lunch, dinner, afternoon, tea & snacks (table d hote and a la carte).

#### **Unit IV: Plant and equipment management**

- Maintenance, sanitation of plant, safety, security, garbage disposal & pest control.

#### **Unit V: Beverages**

- Alcoholic and non-alcoholic- Hot & cold- Classification of beverages, use & importance in meals and snacks, suitable glassware for beverage service.

#### **Unit VI: Use of bills and checks in control system outlets**

#### **Recommended books:**

1. Food service system and Lewis J. Minor, Ronald F. Cichy, Avi Publishing Co.
2. Food service Operations; Mahmood A.Khan, Avi Publishing Co.

#### **Reference books:**

1. Modern Restaurant service, John Fuller, Hutchinson, 1983.
2. Food and Beverage Service, D.R. Lillicarp 2<sup>nd</sup> edn. BLBS, Reprinted 1989.
3. Mass Catering WHO publication.

## **PRACTICAL & VIVA VOCE**

### **OBJECTIVES:**

- Develop skills in food production and service.

### **CONTENT:**

1. Organizing, preparing and serving food for three different meals for 10 members.
2. Setting up the restaurant- laying of table cloth changing, setting up the silver and other table arrangements.
3. Serving and clearing practice, French and English service.
4. Service of beverages tea, coffee, juices and alcoholic beverages.
5. Laying for breakfast
6. Tray service
7. Order taking, making out check bills, presentation of bills.
8. Up keep and cleaning of cutlery, crockery, other equipment.

### **WESTERN COOKERY**

- Soups: Mixed veg, tomato cream soup, carrot cream soup, mulligatawny soup, minestone soup, chicken soup and corn soup.
- Sauces: white sauce, cheese sauce, mayonnaise sauce, pizza sauce, curry sauce, tomato sauce and hollandaise sauce.
- Entrees: Vegetable pie, veg and meat loaf, chicken casserole, hamburgers, vegetable burgers.
- Vegetables: vegetables au gratin, Baked cauliflower, savoury vegetables, baked stuffed capsicum
- Sweets: Bread pudding, soufflés, trifle, coffee mousse, gateaux.



## **BAKERY PRODUCTS**

- Short crust pastries: different types of tarts, pies and turn overs. Vegetable and mutton pattis.
- Cakes and Cookies: plain cake, fruit cake, banana bread, date and walnut cake and varieties of cookies.
- Breads, different kinds of rolls, doughnuts.
- Different types of Icings.

### **Text books suggested for reading:**

1. Modern Restaurant service, John Fuller, Hutchinson, 1983.
2. Food and Beverage Service, D.R. Lillicarp 2<sup>nd</sup> edn. BLBS, Reprinted 1989.
3. Mass Catering WHO publication.

## **ADVANCED NUTRITION (IE)**

### **Objectives**

To enable the students

- To understand the relation between nutrition and health.
- To acquire knowledge about the main nutrients and its functions in the body.

### **Unit-I**

#### **Macro minerals**

- Calcium, Phosphorus, Magnesium - Functions, sources, requirements, factors affecting absorption and utilization, Deficiency and Toxicity. Calcium – Phosphorus ratio.

## **Unit II**

### **Micro minerals**

- Iron, Zinc, Copper, Selenium, Chromium, Iodine and Fluorine- Functions, sources, requirements, factors affecting absorption and utilization, deficiency and toxicity.

## **Unit III**

### **Fat Soluble Vitamins**

- Functions, sources, requirements, factors affecting absorption and utilization, deficiency, toxicity of vitamin A, D, E, K , conversion factor of vitamin A and Vitamin D.

## **Unit IV**

### **Water Soluble Vitamins**

- Functions, sources, requirements, factors affecting absorption and utilization, deficiency and toxicity of Thiamin, Riboflavin, Niacin, vitamin B6, Vitamin B12, Biotin, Pantothenic acid, Folic acid and Vitamin C.

## **RECOMMENDED BOOKS:**

1. Robert's Nutrition Work with Children, Martin S.R., 1963, The University of - Chicago Press, Chicago.
2. Assessment of Nutrition Status of the Community, Jelliffe D.B. 1966, WHO, Geneva.
3. Nutrition in the Sub-Tropics and Tropics, Jelliffe D.B. 1968.

## **Computer Science (IE)**

### **Unit-I. History of computers**

- Definition of computers, Input devices, Output devices, Storage devices, Types of memory and units of measurement, Range of computers, Generations of computers, Characteristics of computers

### **Unit-II. System**

- Hardware, Software, system definition, Fundamentals of Networking, Internet, Performing searches and working with search engines, types of software and its applications

### **Unit-III. Office application suite**

- Word processor, spreadsheet, presentations, other utility tools, Fundamentals of Linux / Windows operating system, functions, interfaces, basic commands, working with the shell and other standard utilities.

### **Unit-IV. Language**

- Comparison chart of conventional language, Programming Languages, Generations Of Programming Languages, Compilers and Interpreters, Universal programming constructs based on SDLC, Variable, constant, identifiers, functions, procedures, if while, do – while, for and other Structures. Programming in C language, Data types, identifiers, functions and its types, arrays, union, structures and pointers

### **Unit-V. Introduction to object oriented programming with C++**

- Classes, Objects, Inheritance Polymorphism and Encapsulation. Introduction to databases, and query languages, Introduction to Bioinformatics.

### **Practicals:**

1. Various browsers, search engines, email
2. Text document with images with multiple formatting options using a specified office package
3. Spreadsheet using a specified office package
4. Presentation on a specified topic using the specified locations
5. Shell programming-parameters
6. Shell program- regular expressions

7. C program- functions
8. C program – file handling
9. C program demonstrating the usage of user defined variables
10. Databases
11. Applications in allied health sciences

**Text Books:**

1. Peter Norton., Introduction to Computers. 7th Edition, Tata McGraw Hill Education Private Limited 2010.
2. Gary B. Shelly, Thomas J. Cashman, Misty E. Vermaat., Microsoft Office 2007. 1stEdition, Delmar Cengage Learning 2010

**Reference Books:**

1. C programming tutorial (K&R version 4) Author(s) Mark Burgess
2. Red hat Linux 9 bible by Christopher Negus May 2003

**SEMESTER -III**

S.No	SUBJECT
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1	Basic Dietetics –Theory(UE)
2	Basic Dietetics -Practical(UE)
3	Food Science -Theory(UE)
4	Food Science - Practical(UE)
5	Medical Ethics and Biosafety(IE)
6	Psychology(IE)

### **SEMESTER-III**

#### **BASIC DIETETICS – THEORY (UE)**

##### **OBJECTIVES:**

The students will be able to

1. Gain basic knowledge of the diet therapies and nutritional care in disease conditions.

2. Develop skills in planning a diet for disease condition.

#### **UNIT I – Diet Therapy & Nutritional care in disease**

- The nutritional care process
- Nutritional care plan

#### **UNIT II – Adjuncts to Diet Therapy**

- Physical activity, exercise, yoga and stress management

#### **UNIT III – Pre & Post Operative Nutrition**

#### **UNIT IV – Nutrition support in Burn patients**

#### **UNIT V – Diet in Infections and Fevers**

- General Dietary considerations, Typhoid, Influenza, Malaria, Tuberculosis & AIDS

#### **REFERENCE BOOKS:**

1. Srilakshmi B., Dietetics, New Age International (P) Ltd, Publishers, Eighth multi colour edition, 2016.
2. Mangala Kango, Normal Nutrition, Curing diseases through diet, CBS Publications, First edition, 2005.
3. Sue Rodwell Williams, Nutrition and Diet Therapy, C.V. Melskey Co., 6 th edition, 2000.
4. Mahtab. S. Bamji, Kamala Krishnaswamy and G.N.V Brahman, Text Book of Human Nutrition, Oxford and IBH Publishing Company, Third Edition. 2009.

### **BASIC DIETETICS – PRACTICAL (UE)**

#### **PRACTICALS**

1. Planning, preparation and displaying of diet for Post operative patient
2. Planning, preparation and displaying of diet for Burn patient
3. Planning, preparation and displaying of diet for Typhoid

4. Planning, preparation and displaying of diet for Influenza
5. Planning, preparation and displaying of diet for Malaria
6. Planning, preparation and displaying of diet for Tuberculosis
7. Planning, preparation and displaying of diet for AIDS

### **REFERENCE BOOKS:**

1. Srilakshmi B., Dietetics, New Age International (P) Ltd, Publishers, Eighth multi colour edition, 2016.
2. Mangala Kango, Normal Nutrition, Curing diseases through diet, CBS Publications, First edition, 2005.
3. Sue Rodwell Williams, Nutrition and Diet Therapy, C.V. Melskey Co., 6 th edition, 2000.
4. Mahtab. S. Bamji, Kamala Krishnaswamy and G.N.V Brahman, Text Book of Human Nutrition, Oxford and IBH Publishing Company, Third Edition. 2009.

### **FOOD SCIENCE - THEORY (UE)**

#### **OBJECTIVE:**

The students will be able to

1. Learn about the functions of food
2. Study in detail about food groups



## **UNIT I: INTRODUCTION TO FOODS**

- Definition, functions, food groups, classification of foods. Study of different cooking methods, merits and demerits, Solar cooking, Microwave cooking. Cereals - Cereals and millets- breakfast cereals, cereal products, fast foods- structure, processing, use in variety of preparation, selection, variety, storage, nutritional aspects and cost.

## **UNIT II: PULSES**

- Pulses and legumes- Production (in brief), Selection and variety, storage, processing, use in variety of preparation, nutritional aspects and cost. Highlighting soya beans, lathyrism- removal of toxins.

## **UNIT III: MILK AND MILK PRODUCTS**

- Composition, classification, quality, processing, coagulation of milk, digestion of milk, storage, uses and cost. Nutritional aspects of milk, curd, butter, paneer, khoa, cheese, ice cream, kulfi and various kinds of processed milk.

## **UNIT IV: EGG, FISH, POULTRY AND MEAT**

- Selection, quality, purchase, storage, uses and nutritional aspects. Spoilage of egg, fish, poultry and meat.

## **UNIT V: VEGETABLES AND FRUITS**

- Variety, selection, purchase, storage, availability, cost, use and nutritional aspects of raw and processed vegetables and fruits. Effects of cooking on colour, texture, flavour, appearance and nutritive value.

## **TEXT BOOKS**

1. Swaminathan (1995): “Food & Nutrition”, The Bangalore Printing & publishing co ltd., Vol I, Second Edition, Bangalore.
2. Srilakshmi (1997): “Food Science”, New Age International (P) Ltd, Publishers, Pune.

## **REFERENCE BOOKS**

1. Mudambi .R. Sumathi & Rajagpal M.V (1983), “Foods & Nutrition”, Willey Eastern Ltd, Second Edition, New Delhi.
2. Thangam.E.Philip(1965): Modern Cookery, Orient Longman, II edition. Vol II, Bombay.

## **FOOD SCIENCE- PRACTICAL (UE)**

### **OBJECTIVES**

- To understand the techniques of estimating nutrients

### **EXERCISE**

1. Familiarization with different stoves, ovens and simple kitchen equipment.
2. Methods of measuring and weighing dry ingredients and liquids.

### 3. Cereal cookery

- Methods of combining flour with liquid eg. Powdered cereal coarse(eg. Phirnee, broken wheat uppuma) and fine (eg. Ragi porridge, wheat halwa).
- Cereal Grains – different methods of cooking rice – straining, absorption – cooking over low heat, pressure cooking, addition of fat, microwave and rice cooker.
- Rice preparations – lime rice, tamarind rice, coconut rice, curd rice, egg fried rice, peas fried rice, iddli and dosai.
- Wheat and ragi preparations – Kesari, poori, paratha, bhathura, naan, ragi puttu, ragi leaf cake, ragi adai.

### 4. Pulse Cookery

- Different methods of cooking pulses – hard water, soft water, soaking, addition of soda bicarbonate, addition of raw papaya, pressure cooking eg. Any whole gram and any dhal.
- Pulse Preparations – brinjal sambar, sprouted green gram patchadi, cow peas sundal, adai, tomato dhal maseel, ven pongal, ompodi, sugian, green gram payasam, masala vadai and chole.

### 5. Vegetable Cookery

- Different methods of cooking vegetables – effect of shredding, dicing, acid and alkali, pressure cooking, steaming with and without lid. Eg. Potato, beetroot, carrot and greens.
- Vegetable preparations – potato methi curry, mashed potatoes, aloo tikke, vegetable kurma, avial, keerai maseel, cabbage pugath, carrot cucumber, ridge gourd and green gram dhal kootu, tomato chutney and carrot halwa.

### 6. Fruits

- Different ways of serving oranges, stuffed dates, banana fritters, fruit salad, stewed apricots, banana with custard, fruit jelly, grape jam, fruit punch, baked apple and pineapple upside down cake.

## **MEDICAL ETHICS AND BIO SAFETY (IE)**

### **UNIT-I**

Definition and key Concepts; philosophical considerations; epistemology of science; ethical terms; principles and theories; relevance to health care; ethics and the law issues: genetic engineering, stem cells, cloning, medical techniques, trans-humanism, bio-weapons.

### **UNIT-II**

Define negligence, malpractice & liability; iatrogenic harm; Influence of ethics in general practice; Describe primary and secondary ethical principles; Hippocrates' oath; Professional codes of ethics; Describe the moral basis of informed consent and advance directives; research ethics – animal rights, ethics of human cloning, and stem cell research; ICMR guidelines.

### **UNIT-III**

Genetic testing, genetic screening, Fertility and birth control, sex determination and sex selection, Reproductive control: assisted reproduction and ethics, pre-natal genetic counseling, pre-implantation genetic diagnosis, Ethical issues in applied medicine; Workers compensation.

### **UNIT-IV**

Euthanasia and physician-assisted dying; end-of-life care; Physicians, patients and other: autonomy, truth telling & confidentiality; emerging issues: impact of medical advances on society; Use of genetic evidence in civil and criminal court cases; Challenges to public policy – to regulate or not to regulate; improving public understanding to correct misconceptions.

### **UNIT-V**

Introduction to Biosafety; biological safety cabinets; containment of biohazard; precautions for medical workers; precautions in patient care; Biosafety levels of microorganisms; mitigation of antibiotic resistance; radiological safety; measurement of radiation; guidelines for limiting radiation exposure; maximum reasonable dose; precautions against contamination; Institutional Biosafety committee.

### **TEXT BOOKS:**

1. Medical Ethics - CM Francis 2e, Jaypee publishers, India (2004)
2. Medical Law, ethics, and bioethics - M Lewis and C Tamparo, 4e. FA Davis publishers (1998)
3. Biomedical ethics - Terry O' Neill, Greenhaven Press (1999)

### **REFERENCE BOOKS:**

1. Human factor, a bridge between care and cure, eds. R Tartaglia, S Bagnaro et al. Taylor and Francis(2005)
2. Medical Ethics - Robert Snedden, Steck-Vaughn Publishers, Texas, USA (2000)

## **PSYCHOLOGY (UE)**

### **UNIT 1: Basic Concepts of Psychology**

Definition of Psychology, Origin of Psychology - Philosophical roots of psychology, Schools of Psychology –Structuralism – Gestalt – Functionalism – Behaviorism - Psychoanalysis – Humanistic. Fields of Psychology - Work of a psychologist – Applications of psychology.

### **UNIT 2: Learning principles and methods**

Definition of learning, Factors In The Process of Learning Classical conditioning - Operant Conditioning – The principle of reinforcement and Punishment. Theory of learning. Cognitive learning- Latent learning, Insight learning, and Imitation.

### **UNIT 3: Motivation, Emotion, Memory and forgetting**

Motivation - Definition of motivation – Theories of motivation - Physiological basis of motivation – Motivational factors in aggression – Self-actualization motivation. Emotion – Emotional expression – Theories of emotions. Kinds of remembering – Retrieval processes – The nature of forgetting – Two process theories of memory – Improving memory –Language and thought – Symbols and concepts – Structure – Forms of thought - Thinking and reasoning – Concept formation.

### **UNIT 4: Development, Sensory Processes and Perception.**

Erikson's stages of psychosocial development Lawrence Kohlberg's stages of moral development Freud's Stages of Psychosexual Development Physiological basis of behavior – The brain and nervous system –The sensory process , Some general characteristic of senses – Five senses ,Perception: Organization – The role of learning in perception – Perception and attention – Perceptual process.

### **UNIT 5: Intelligence & Personality**

Theories of intelligence – Measuring Intelligence – Kinds of intelligence tests – Ability – Formation of aptitude and attitude – Aptitude tests –Creativity and its tests. Personality – Definition of Personality – Theories of Personality – Assessment of Personality. Social Factors Influencing Personality.

### **UNIT 6: Social Psychology**

Definition, Nature, Subject Matter and Scope Of Social Psychology-Applications and Importance of Social Psychology, Groups: Definition and Type- Primary And Secondary Groups Social Interaction, Social and Inter-Personal Relations. Inter-personal attraction – Love and Companionship. Prosocial-behavior. Modes of empathy: self – other differentiation and development of empathy. Social influence: attitude and conformity. Definition - Characteristics and Classification of Crowd. Leadership: Definition and characteristics, Defense Mechanisms, frustration and conflict, sources of frustration and conflict, types of conflicts. Aggression and Types of aggression.

## **UNIT 7: Health Psychology**

Definition of Health Psychology -Relating Health Psychology to other fields Clinical Health Psychology, Public Health Psychology, Community Health Psychology, Critical Health Psychology

Abnormal Psychology: Concepts of normality and abnormality, causation of mental illness, neuroses, psychoses, psychosomatic disorders, measures to promote mental health.

Stress - Definitions- Models of Stress – Theories of Stress - Stress reactions – Coping and Stress Management techniques, Pain and its management - Psychological reactions of a patient to loss – Stages of Acceptance by Kubler-Ross.

### **REFERENCES:**

1. Clifford T. Morgan, Richard a. King, John R. Weis and John Schopler,“**Introduction to Psychology**” – **7th Edition**. Tata McGraw Hill Book Co. New Delhi, 1993.
2. Baron, R. A., & Byrne, D (2006), “**Social psychology**”, New Delhi: Prentice hall of India private limited.
- 3.Elliot Aronson, Timothy D. Wilson, Robin M. Akert, Samuel R. Sommers, “**Social psychology**” **9<sup>th</sup> edition** published by Pearson education, Inc.,2006
4. Shelley E. Taylor. “**Health Psychology**” **Third Edition**. McGraw Hill International Editions, 1995.
5. Swaminathan, V.D, Latha Sathish, “**Psychology for Effective Living**”, Department of Psychology, University of Madras.
6. Coleman, James. 1980. “**Abnormal Psychology and modern life**”. New Delhi: Tata McGraw Hill Ltd.

## SEMESTER IV

<b>S.No</b>	<b>SUBJECT</b>
1	Advance Dietetics–Theory(UE)
2	Advance Dietetics -Practical(UE)
3	Personnel Management - Theory(UE)
4	Personnel Management - Practical(UE)
5	Basics And Advanced Life Support(IE)
6	Sociology(IE)

## **SEMESTER IV**

### **ADVANCE DIETETICS –THEORY (UE)**

#### **OBJECTIVES:**

The students will be able to

1. Gain basic knowledge of the major deficiencies.
2. Develop skills in planning special diets for disease condition.

#### **UNIT I: An overview of Special Diets**

- Purine-Restricted Diet, Ketogenic Diet, Paleo diet, Diet in Cleft Lip and /or Palate.

#### **UNIT II: Food Sensitivity**

- Types of reactions, foods involved in Sensitivity, Symptoms, Diagnosis, Treatment, food Intolerance.

#### **UNIT III: Nutritional Anaemia**

- Prevalence, causes, types, differentiating Anaemias & prevention.

#### **UNIT IV: PEM**

- Prevalence, aetiology, clinical features, Nutritional Requirement, Treatment, Prevention.

#### **TEXT BOOKS**

1. Antia, F.P (1973): Clinical dietetics and Nutrition, Second Edition, Oxford University Press, Delhi.
2. Joshi, S.A (1992): Nutrition and Dietetics, TATA McGraw Hill publications, New Delhi

#### **REFERENCE BOOKS**

1. Mahan,L.K.Arlin.M.T(1992) Krause's Food, Nutrition and Diet Therapy, 8th Ed.W.B.Saunders Company, London
2. Williams S.R. (1989): Nutrition and Diet Therapy, 6th Ed. Times Mirror / Mosby College Publishing, St. Louis.
3. Raheena Begum(1989) A Test Book of Foods, Nutrition and Dietetics, Sterling Publishers, New Delhi.
4. Robinson, C.H., Lawler, M.R,Chenoweth, W,L, and Garwick A,E(1986) Normal and Therapeutic Nutrition, 17th Ed., Macmillan Publishing Co.
5. Dacie and Lewis Practical Haematology, Bain, 11th Edition, Elsevier Health Sciences, 2012.



## **ADVANCE DIETETICS –PRACTICAL (UE)**

### **PRACTICALS**

1. Planning, preparation and displaying of diet for Purine-Restricted Diet
2. Planning, preparation and displaying of diet for Ketogenic Diet
3. Planning, preparation and displaying of diet for Paleo Diet
4. Planning, preparation and displaying of diet for Iron Rich Diet
5. Planning, preparation and displaying of diet for Energy Rich Diet
6. Planning, preparation and displaying of diet for Protein Rich Diet

### **TEXT BOOKS**

1. Antia, F.P (1973): Clinical dietetics and Nutrition, Second Edition, Oxford University Press, Delhi.
2. Joshi, S.A (1992): Nutrition and Dietetics, TATA McGraw Hill publications, New Delhi

## **PERSONNEL MANAGEMENT–THEORY (UE)**

### **OBJECTIVES:**

The students will be able to

1. Gain basic knowledge about the organization and management.
2. To learn about labour laws and legislations

### **UNIT I- Organization & Management**

- Definition, types of organization, functions and tools of management.

### **UNIT II- Food Material Management**

- Food selection, purchasing, receiving and storeroom management.
- Controls of management.

### **UNIT III- Personnel Management**

- Recruitment, selection and training of personalities, work standards, productivity, supervision, performance appraisal and motivation incentives for effective performances.

### **UNIT IV- Labour Policies & Legislation**

- Personal policies,
- Laws affecting food service institution.

### **Text book:**

1. Mohini sethi: Institutional food management, 2nd edition, New age international publisher.
2. Mohini sethi: Catering management ,3rd edition ,New age international publisher.

## **PERSONNEL MANAGEMENT–PRACTICAL (UE)**

### **PRACTICALS**

#### **VISIT & APPRAISAL OF ANY ONE MEDICAL ORGANISATION**

1. Work simplifications: food preparation, calculating work unit, time norms etc.
2. Costing, accounting, budgeting and purchase.
3. Store keeping: listing and management of food items in the store.
4. Personnel recruitment: preparations of a project and report making.
5. Maintenance of the clothing for persons and staff involved in kitchen area.
6. Prepare an inventory for evaluating staffs personal hygiene.

#### **Text book:**

1. Mohini sethi: Institutional food management, 2nd edition, New age international publisher.
2. Mohini sethi: Catering management ,3rd edition ,New age international publisher.

## **BASIC AND ADVANCED LIFE SUPPORT(IE)**

### **Unit-I: TRAUMA LIFE-Part 1**

- BLS, TRIAGE-Primary Survey, Secondary Survey, Airway & Ventilatory management, Shock, Central & peripheral venous access, Thoracic trauma – Tension pneumothorax, Other thoracic injuries Abdominal trauma – Blunt injuries Abdominal trauma – Penetrating injuries.

### **Unit-II: TRAUMA LIFE-Part 2**

- Spine and spinal cord trauma, Head trauma, Musculoskeletal trauma, Electrical injuries, Thermal burns, Cold injury.

### **Unit-II: TRAUMA LIFE-Part 3**

- Pediatric trauma, Trauma in pregnant women, Workshop BLS, Workshop cervical spine immobilization, Imaging studies in trauma.

### **Unit-III: BASIC CARDIAC LIFE SUPPORT**

- BLS, The universal algorithm for adult ECC, Ventricular fibrillation/Pulseless ventricular tachycardia algorithm, Pulseless electrical activity (PEA) / asystole algorithm, Bradycardia treatment algorithm, Tachycardia Treatment algorithm.

### **Unit-IV: ADVANCED CARDIAC LIFE SUPPORT**

- Hypotension/Shock, Acute myocardial infarction, Pediatrics Advanced life support, Defibrillation, Drugs used in ACLS, Emergency cardiac pacing, AED, Techniques for oxygenation and ventilation.

### **Text Books:**

1. Handbook of Emergency Medicine, Suresh S. David, 8th edition, Elsevier, 2012

### **Reference Books:**

1. Emergency Medicine, S. N. Chugh, 4th edition, CBS publishers, 2014

## **SOCIOLOGY(IE)**

### **Unit 1: NATURE AND SCOPE OF SOCIOLOGY**

- Definition, Historical background, subject matter of sociology, Nature and scope, Importance, Sociology of India, Relationship of sociology with other social sciences

### **Unit 2: FUNDAMENTAL CONCEPTS OF SOCIOLOGY**

- Society and Individual, Community, Social structure and functions of Institutions, Association, Organization, Social system, social order, Social control, social groups, Social Process, Social change,

### **Unit 3: CLASSICAL THINKERS AND THEIR CONTRIBUTIONS**

- Auguste comte, Emile Durkheim, Karl Marx, Max Weber, Herbert Spencer

### **Unit 4: SOCIOLOGY OF INDIA**

- Characteristics of Indian society, Racial linguistic, Religious and demographic, Hindu social organization-ashramas, varnas, dharma and karma, purushartha, Caste system, Problems of SC&ST, Sanskritisation, Westernization and Modernization,

### **Unit 5: ANTHROPOLOGY AND CULTURAL ANTHROPOLOGY**

- Definition of anthropology, Subfield of anthropology, Cultural Anthropology yesterday and today, Anthropological Perspectives, Early Anthropologist
- Environment and culture, Kinship, Clan Ethno methodology, Gender, Subsistence and Exchange, Social Organization and evolution of political system

### **Reference:**

1. Bottomore.T.B., Sociology: A guide to problems and Literature,1971,Random House
2. Gisbert P. Fundamentals of sociology,3rd Edition,2004,Orient Longman publications
3. Neil J.Smelser,Handbook of sociology,1988.sage publication
4. Johnson R.M,Systematic Introduction to Sociology,1960,Allied Publishers
5. Cultural Anthropology,Barbara D.Miller,2006 Pearson/Allyn and Bacon Co
6. C.N.ShankarRao., Introduction to Sociology, 2008, S.CHAND & Company Publications.
- 7.C.N.ShankarRao., Sociology of India, S.CHAND & Company Publications.

## SEMESTER V

<b>S.No</b>	<b>SUBJECT</b>
1.	Clinical Nutrition I - Theory(UE)
2.	Clinical Nutrition I - Practical(UE)
3.	Community Nutrition -Theory(UE)
4.	Community Nutrition - Practical(UE)
5.	Environmental Science And Community Medicine(IE)

## **SEMESTER V**

### **CLINICAL NUTRITION I – THEORY (UE)**

#### **OBJECTIVES:**

- To enable the students to understand the principles of diet and nutrient modifications for different diseases
- Develop skills in planning and evaluating nutrition for different disease condition.

#### **UNIT I – Diet in Obesity**

- Aetiology, Theories & Role of hormones
- Assessment, Grades, Types
- Treatment, Principles of Dietetic Management, Complications

#### **UNIT II – Diet in underweight**

- Aetiology
- Nutritional & Food requirement

#### **UNIT III – Diet in Cardiovascular Diseases**

- Clinical effects, risk factors
- Role of Fat in the development of Atherosclerosis
- Treatment

#### **UNIT IV – Diet in Hypertension**

- Causes, pathogenesis
- Types, symptoms
- Principles of diet.

#### **UNIT V – Diet in Diabetes mellitus**

- Types, Aetiology
- Insulin Resistance, symptoms, diagnosis
- Treatment, complications

## **TEXTBOOKS**

1. Shubangini A Joshi, (1998): Nutrition and Dietetics, Tata Mc Graw Hill Pub. Co. Ltd., New Delhi.
2. National Institute of Nutrition, (2005): Dietary Guidelines for Indians – A Manual, Hyderabad.
3. Srilakshmi. B, (2005): Dietetics, V Edition, New Age International (P) Ltd, Publishers, Chennai.

## **REFERENCES BOOKS**

1. Mahan, L.K. and Escott-Stump, S. (2000) Krause's Food, Nutrition and Diet Therapy, 10<sup>th</sup> Ed. W.B. Saunders Company, London.
2. Williams S.R. (1993): Nutrition and Diet Therapy, 7<sup>th</sup> Ed. Times Mirror / Mosby College Publishing, St. Louis.
3. Antia F.P, Clinical Dietetics and Nutrition, Oxford University Press.
4. Shills, M.E, Oslon, J.A, Shike, M and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9<sup>th</sup> Edition.



## **CLINICAL NUTRITION I – PRACTICAL (UE)**

### **CONTENTS**

1. Planning, preparation and calculation of diets for Obesity.
2. Planning, preparation and calculation of diets for Underweight.
3. Planning, preparation and calculation of diet in cardiovascular diseases.
4. Planning, preparation and calculation of diets for Hypertension
5. Planning, preparation and calculation of diets for Insulin dependent Diabetes mellitus,
6. Planning snacks, desserts and beverages for diabetes.

### **TEXTBOOKS**

1. Shubangini A Joshi, (1998): Nutrition and Dietetics, Tata Mc Graw Hill Pub. Co. Ltd., New Delhi.
2. National Institute of Nutrition, (2005): Dietary Guidelines for Indians – A Manual, Hyderabad.
3. Srilakshmi. B, (2005): Dietetics, V Edition, New Age International (P) Ltd, Publishers, Chennai.

## **COMMUNITY NUTRITION -THEORY (UE)**

### **OBJECTIVES:**

To enable the students

1. Gain insight into the national nutritional problems and their implications
2. Appreciate the national and international contribution towards nutrition improvement in India.
3. Understand the importance of nutrition education
4. Develop skills in organizing and evaluating nutrition projects in the community

### **UNIT I Concept and scope of community nutrition, Assessment of Nutritional Status.**

### **UNIT II Nutrition related policies and programmes**

- Millennium Development Goals
- NNP
- Health, Nutrition and Family Welfare Through the XIIth five year plan
- Programmes to control malnutrition
- National Food Security Act, 2013.

### **UNIT III - Role of International and National agencies in combating Malnutrition.**

- International Agencies- WHO, FAO, UNCF, CARE
- National Agencies- ICAR, ICMR, NIN, CFTRI.

### **UNIT IV - Nutrition Education**

- Methods, Teaching Aids, Mass communication media & Computer applications.

### **UNIT V - Nutrition and Infection**

- Immunity, Infections and Infestations, Effect of Malnutrition on Infection, Effect of Infection on Nutritional status & nutrients, AIDS.

## **TEXT BOOK**

1. Swaminathan, M., Essentials of Food and Nutrition. An Advanced Textbook Vol.I, The Bangalore Printing and Publishing Co. Ltd, Bangalore, 2007.
2. Srilakshmi, B., Nutrition Science, New Age International Publication, New Delhi, 2010.

## **REFERENCE BOOKS**

1. Park, A. Park's Textbook of Preventive and Social Medicine, XIX Edition M/S Banarasidas, Bharat Publishers, 1167, Prem Nagar, Jabalpur, 428 001(India), 2007.
2. Bamji M.S, Prahlad Rao N, Reddy V., Textbook of Human Nutrition, II Edition, Oxford and PBH Publishing Co. Pvt. Ltd , New Delhi, 2004.
3. Bhatt D.P, Health Education, Khel Sahitya Kendra, New Delhi, 2008.
4. Gibney, M.J., Margetts, B.M., Kearney, J.M., Arab, L., Public Health Nutrition, Blackwell Publishing Co. UK, 2004.

## **COMMUNITY NUTRITION -PRACTICAL (UE)**

### **OBJECTIVES:**

The objectives of this practical course are to enable the students

- To learn and prepare different types of visual aid for the community
- To gain practical experience in giving demonstration and conducting survey and other methods of assessments.

### **PRACTICALS**

1. Diet and Nutrition surveys
  - a) Identifying vulnerable and at risk groups.
  - b) Diet survey and breast feeding and weaning practices of specific groups.
  - c) Use of anthropometric measurements in children.
2. Methods of Extension used in community
  - a) Preparation of visual aids-charts, posters models, etc. for exhibition.
  - b) Lecture and Method Demonstrations to target groups.
3. Field visits
  - a) Observe the working of nutrition programmes.
  - b) Hospitals to observe nutritional deficiencies.

### **TEXTBOOK:**

1. Bhatt D.P, Health Education, Khel Sahitya Kendra, New Delhi, 2008.
2. Srilakshmi, B., Nutrition Science, New Age International Publication, New Delhi, 2010.
3. Gibney, M.J., Margetts, B.M., Kearney, J.M., Arab, L., Public Health Nutrition, Blackwell Publishing Co. UK, 2004.

## ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE(IE)

### UNIT-I

- **Natural Resources:** Introduction, Multi-disciplinary nature of environmental studies, Earth Resources and Man, Renewable And Non-Renewable Resources, Water Resources, Mineral Resources: Food Resources: Effects of modern agriculture, Fertilizer/pesticide problems, Water logging, and salinity, Energy Resources.

### UNIT-II

- **Ecosystems:** Concept of an Ecosystem, Structure And Functions of an Ecosystem, Producers, Consumers and Decomposers, Cycles in The Ecosystem

### UNIT-III

- **Biodiversity:** Introduction, Definition: Genetic, Species, Ecosystem Diversity, India as a Mega Diversity Nation, Hotspots of Biodiversity Threats to Biodiversity. Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic

### UNIT-IV

- **Pollution:** Definition, Causes, Effects and Control Measures of Air Pollution, Water Pollution, Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards, Solid Waste Management role of Individuals in Pollution Prevention.

### UNIT-V

- **Social Issues Human, Population and Environment:** From Unsustainable To Sustainable Development, Urban Problems Related To Energy, Water Conservation, Rain Water Harvesting, global warming, acid rain, ozone layer depletion, nuclear accidents and nuclear holocaust.

### UNIT-VI

- **Concept of health & disease:** Concept of health, Definition of health, Philosophy of health- Dimension of health - Concept of well being, Spectrum of health, Responsibility of health - Determinates of health & Indicators of health - Concepts of disease & Concepts of cessation - Determinates of health & Indicators of health - Concepts of disease & Concepts of cessation - Determinates of health & Indicators of health - Concepts of disease & Concepts of cessation - Modes of Intervention, Changing pattern of disease.

## UNIT-VII

- **Epidemiology**: Definition & Explanation, Aims, Epidemiologic approach, Basic measurement in epidemiology & tools of measurement – of Mortality , Epidemiologic methods – Descriptive epidemiology – Analytical epidemiology -Cohort study – Experimental epidemiology – RCT- Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Mode of Transmission – Disinfection – Definitions Types Agents used Recommended disinfection procedures – Investigation of an epidemic.

## UNIT-VIII

- **Environmental & health**: Definition & Components (environment sanitation environmental sanitation) Water : Safe & Whole some water Requirements Uses source of water supply (sanitary well ) – Purification (1).Large scale purification, (2). Small scale purification – Water quality – Special treatment of water Air: Composition the air of occupied room discomfort. Air pollution & its effects. Prevention & Control of air pollution .Ventilation : Definition Standards of ventilation Types of Ventilation. Light, Noise & Radiation, Meteorological environment, Housing, Disposal of waste Excreta disposal

## RECOMMENDED TEXT BOOKS:

1. Textbook of Preventive and Social medicine by k. Park, 21st edition, published by Banarsidas Bhanot

## SEMESTER VI

<b>S.No</b>	<b>SUBJECT</b>
1	Clinical Nutrition II - Theory (UE)
2	Clinical Nutrition II - Practical (UE)
3	Dietetics And Counseling - Theory(UE)
4	Dietetics And Counseling - Practical(UE)
5	Healthcare And Basic Principles(IE)

## **SEMESTER VI**

### **CLINICAL NUTRITION II – THEORY (UE)**

#### **OBJECTIVES:**

To enable the students to understand the principles of diet and nutrient modifications for different diseases.

#### **UNIT I – Diet in GI diseases**

##### **1) Upper Gastrointestinal Diseases**

- GERD
- Peptic Ulcer
- Gastric surgery

##### **2) Intestinal Diseases**

- Constipation
- Diarrhea

##### **3) Malabsorption**

##### **4) Inflammatory Bowel Disease**

#### **UNIT II – Diet in Diseases of Liver and Pancreas**

- Functions of liver, causes
- Damage caused to Liver
- Infective Hepatitis
- Cirrhosis of Liver
- Hepatic Encephalopathy
- Liver Transplantation
- Cholecystitis & cholelithiasis
- Pancreatitis

#### **UNIT III – Diet in Diseases of Kidneys**

- Functions of kidneys
- Glomerulonephritis
- Nephrotic syndrome
- Renal Failure



- Dialysis
- Renal transplant
- Urolithiasis

#### **UNIT IV – Diet in Cancer**

- Classification, Risk factors, Symptoms
- Nutritional problems of Cancer Therapy
- Nutritional Requirements
- Dietary Management

#### **TEXTBOOKS**

1. Shubangini A Joshi, (1998): Nutrition and Dietetics, Tata Mc Graw Hill Pub. Co. Ltd., New Delhi.
2. National Institute of Nutrition, (2005): Dietary Guidelines for Indians – A Manual, Hyderabad.
3. Srilakshmi. B, (2005): Dietetics, V Edition, New Age International (P) Ltd, Publishers, Chennai.

#### **REFERENCES BOOKS**

4. Mahan, L.K. and Escott-Stump, S. (2000) Krause's Food, Nutrition and Diet Therapy, 10<sup>th</sup> Ed. W.B. Saunders Company, London.
5. Williams S.R. (1993): Nutrition and Diet Therapy, 7<sup>th</sup> Ed. Times Mirror / Mosby College Publishing, St. Louis.
6. Antia F.P, Clinical Dietetics and Nutrition, Oxford University Press.
7. Shills, M.E, Oslon, J.A, Shike, M and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9<sup>th</sup> Edition.

## **CLINICAL NUTRITION II – PRACTICAL (UE)**

### **CONTENTS**

1. Planning, preparation and calculation of diets for Peptic Ulcer
2. Planning, preparation and calculation of diets for Constipation
3. Planning, preparation and calculation of diet for Diarrhoea
4. Planning, preparation and calculation of diets for Cirrhosis of liver
5. Planning, preparation and calculation of diets for Pancreatitis
6. Planning, preparation and calculation of diets for Nephrotic syndrome
7. Planning, preparation and calculation of diets for Renal failure
8. Planning, preparation and calculation of diets for Cancer.

### **TEXTBOOKS**

1. National Institute of Nutrition, (2005): Dietary Guidelines for Indians – A Manual, Hyderabad.
2. Srilakshmi. B, (2005): Dietetics, V Edition, New Age International (P) Ltd, Publishers, Chennai.

## **DIETETICS AND COUNSELLING - THEORY (UE)**

### **OBJECTIVES:**

To enable students to:

- Obtain knowledge on the role of diet in disease conditions
- Gain experience in planning, preparing and serving therapeutic diets
- Understand the role of dietitian in the hospital and community

### **UNIT-1**

- Practical consideration in giving dietary advice and counseling
  - a) Factors affecting and individual food choice.
  - b) Communication of dietary advice
  - c) Consideration of behaviour modification
  - d) Motivation.

### **UNIT-II**

- Counseling and educating patient
  - a) Introduction to nutrition counseling
  - b) Determining the role of nutrition counselor
  - c) Responsibilities of the nutrition counselor
  - d) Practitioner v/s client managed care
  - e) Conceptualizing entrepreneur skills and behavior
  - f) Communication and negotiation skills.

### **UNIT-III**

- Teaching aids used by dietitians
  - a) Charts, leaflets, posters etc.,
  - b) Preparation of teaching material for patients suffering from Digestive disorders, Hypertension, Diabetes, Atherosclerosis & Hepatitis and cirrhosis.

## **UNIT-IV**

- Computer application
  - a) Use of computers by dietitian
  - b) Dietary computations
  - c) Dietetic management
  - d) Education/ training
  - e) Information storage
  - f) Administrations
  - g) Research

## **UNIT-V**

- Computer application
  - a) Execution of software packages
  - b) Straight line, frequency table, bar diagram, pie chart, Preparation of dietary charts for patients
  - c) Statistical computation- mean, median, standard deviation, conclusion and regression test.

## **TEXT BOOK**

1. Shills and Young. Modern Nutrition In Health And Disease 15. Willims, S. R.: Nutrition and Diet Therapy, 4th ed., The C. V. Mosby Co., S1. Louis, 1981.
2. Willims S. R.: Essentials of Nutrition and Diet Therapy, 4th ed., Mosby College Pub. S. Louis, 1986.
3. Antia, F.P (1973): Clinical dietetics and Nutrition, Second Edition, Oxford University Press, Delhi.
4. Joshi, S.A (1992): Nutrition and Dietetics, TATA McGraw Hill publications, New Delhi Mahan,L.K.Arlin.M.T(1992) Krause's Food, Nutrition and Diet Therapy, 8 th Ed.W.B.Saunders Company, London

## **DIETETICS AND COUNSELLING- PRACTICAL (UE)**

### **OBJECTIVES**

- a) To enable the students to understand the modifications in nutrients and dietary requirements for the therapeutic condition and dietary management of different diseases.

### **PRACTICALS**

- 1) Project planning for any one disease.
- 2) Computer application for different diseases.
- 3) Submitting computed data.
- 4) Preparations of teaching aids in the field of nutrition.
- 5) Preparation of case history of a patient and feeding of information in the hard disc.

### **TEXT BOOK**

1. Willims S. R.: Essentials of Nutrition and Diet Therapy, 4th ed., Mosby College Pub. S. Louis, 1986.
2. Antia, F.P (1973): Clinical dietetics and Nutrition, Second Edition, Oxford University Press, Delhi.

## **HEALTH CARE AND BASIC PRINCIPLES (IE)**

### **UNIT-I Concept of Health Care and Health Policy**

- Health in Medical Care
- Indigenous systems of Health Care & their relevance
- Framework for Health Policy Development

### **UNIT-II Health Organization**

- Historical development of Health Care System in the third world & India
- Organization & Structure of Health Administration in India
- Type of Health Organization including International Organizations
- Private & Voluntary Health care provider
- Distribution of Health Care Services
- Health Care System in Public Sector Organization
- Health systems of Various Countries

### **UNIT-III Health Policy and National Health Programme**

- National Health Policy
- Drug Policy
- National Health Programs (Malaria, T.B., Blindness, AIDS etc.)
- Evaluation of Health Programs (Developing indicators for evaluation)
- Medical Education & Health Manpower Development

### **UNIT-IV Health Economics**

#### **Fundamentals of Economics**

- Scope & Coverage
- Demand for Health Services
- Health as an Investment
- Population, health of Economic Development

### **UNIT-V Methods & Techniques of Economic Evaluation of Health Program**

- Cost Benefit & Cost Effective Methods

## **UNIT-VI Household & Health**

### Health Expenditure & Outcome

- Rationale for Government action
- Household capacity, income and schooling

## **UNIT-VII Economics of Health**

- Population based health services
- Economics of Communicable and Non Communicable diseases

## **UNIT-VIII Health Insurance**

### **REFERENCE BOOKS:**

1. Principles of Hospital Administration and Planning, BM Sakharkar, 2nd edition, Jaypee Brothers, Medical Publishers Pvt. Limited, 2008
2. Hospital Administration And Management : Theory And Practice, R. Kumar S.L. Goel, Deep and Deep Publications, 2007
3. Principles of Management, Mason Andrew Carpenter, Talya Bauer, 3rd edition, Flat World Knowledge, L.L.C., 2010

**SEMESTER-VII**

<b>S.NO</b>	<b>SUBJECT</b>
1	Project/ Dissertation
2	Biostatistics and research methodology



## **SEMESTER-VII**

### **BIOSTATISTICS AND RESEARCH METHODOLOGY(IE)**

#### **UNIT-I Statistics - Definition and Terms**

- What is statistics – Importance of statistics in behavioural sciences – Descriptive statistics and inferential statistics – Usefulness of quantification in behavioural sciences.

#### **UNIT-II Measurements:**

- Scales of measurements – Nominal, Ordinal, Interval and Ratio scales.

#### **UNIT-III Data collection:**

- Classification of data – Class intervals – Continuous and discrete measurements – Drawing frequency polygon – types of frequency polygon – Histogram.

#### **UNIT-IV Cumulative frequency curve:**

- Cumulative frequency curve – Ogives – Drawing inference from graph.

#### **UNIT-V Measures of central tendency**

- Need – types: Mean, Median, Mode – Working out these measures with illustrations.

#### **UNIT-VI Measures of variability :**

- Need – Types: Range, Quartile deviation, Average deviation, Standard deviation, Variance – Interpretation.

#### **UNIT-VII Normal distribution**

- General properties of normal distribution – Theory of probability – Illustration of normal distribution – area under the normal probability curve.

#### **UNIT-VIII Variants from the normal distribution :**

- Skewness – Quantitative measurement of skewness – kurtosis – measurement of kurtosis – factors contributing for non-normal distribution.

#### **UNIT-IX Correlation :**

- Historical contribution – meaning of correlation – types: Product, moment, content correlation, variation of product, movement correlation, rank correlation, Regression analysis.

**UNIT-X Tests of significance:**

- Need for – significance of the mean – sampling error – significance of differences between means – interpretation of probability levels – small samples – large samples.

**REFERENCE BOOKS:**

1. Methods In Biostatistics BK Mahajan Jaypee, brothers Publication pvt ltd, sixth edition, 2002
2. Introduction to Biostatistics and research methods P.S.S Sundar Rao, J Richard, Prentice-Hall of India pvt ltd, fourth edition, 2006
3. MS Excel 2007 Made Simple, Prof. Satish Jain, BPB Publicatons pvt ltd, 2008
4. Introductory Statistics. Prem S.Mann, John Wiley and sons (Asia) pvt ltd, Fifth edition (2004)
5. Biostatistics A methodology for the health sciences,Gerald Van Belle, Lloyd Fisher, John Wiley and Sons, second edition, 2004.
6. Biostatistics D.Rajalakshmi, G.N. Prabhakaran, Jaypee, brothers Publication pvt ltd, Second edition, 2008

**SEMESTER – VII (FOR ALL SPECIALITIES)**

**Project/ Dissertation**

**SEMESTER – VIII (FOR ALL SPECIALITIES)**

**Internship -6 months**