FATIMA COLLEGE (AUTONOMOUS)



Re-Accredited with "A++" Grade by NAAC (Cycle - IV) Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: RESEARCH CENTRE OF

HOME SCIENCE

NAME OF THE PROGRAMME : HUMAN NUTRITION &

NUTRACEUTICALS

PROGRAMME CODE : PSNN

ACADEMIC YEAR : 2021-2022

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Convened on 14.03.2022.	
Members Present	Convened at 2pm.
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2. DR. G. SRIDEVI,	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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3. DR. P. C. JEMINA RANI,	10: 1 us. P. Magazansi V Rom
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4. DR. SRIDEVI SIVAKAMI. PL,	annois 46 M CR
ASSOCIATE PROFESSOR	SUBJECT EXPERT.
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7. DR. N. MALATHI	JWar 1413/22
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8. Dr. S. SANTHI	STAFF MEMBER.
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	STAFF MEMBER
ASST. PROFESSOR	k-k-ather
10. MRS. P. MAGDELENE VIRJINI,	STAFF MEMBER.
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11. Ms. C. HELEN,	TAFE MEMBER
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12. Ms.D. MOUNA	TAFF MEMBER
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13. DR C. PRIVACATHA S.	TAFF MEMBER
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14. Ms. J. JOSEPHINE JESINTHA ST ASST. PROPESSOR	AFF MEMBER
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15. Ms. T. ASHMA STA	FF MEMBOR
ASST. PROFESSOR	Mr.

MS. A. MABEL ESTHER PARIAURNA	FGD - STAFF MEMBER.
MS. BHAVANI	A. Mabel Esthu Pacipuna.
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## VISION OF THE DEPARTMENT

To empower the potential home makers and home scientists with life management skills to face the multidimensional challenges and contribute towards the progress of home and nation.

## MISSION OF THE DEPARTMENT

- To empower today's women with entrepreneurial skills to face the challenges of life effectively.
- To make them self-reliant.
- To explore ways and means to strengthen the industry-institution tie-up in order to prepare the students to meet the industrial expectations through internship in hospitals and industries.
- To kindle the scientific approach of the students towards research.

## PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

	Our graduates will be academic, digital and information literates;			
PEO 1	creative, inquisitive, innovative and committed researchers who would			
	be desirous for the "more" in all aspects			
	They will be efficient individual and team performers who would			
PEO 2	deliver excellent professional service exhibiting progress, flexibility,			
	transparency, accountability and in taking up initiatives in their			
professional work				

The graduates will be effective managers of all sorts of real						
PEO 3	professional circumstances, making ethical decisions, pursuing					
	excellence within the time framework and demonstrating at leadership					
	skills					
	They will engage locally and globally evincing social and					
PEO 4	environmental stewardship demonstrating civic responsibilities and					
	employing right skills at the right moment.					

# **GRADUATE ATTRIBUTES (GA)**

Fatima College empowers her women graduates holistically. A Fatimite achieves all-round empowerment by acquiring Social, Professional and Ethical competencies. A graduate would sustain and nurture the following attributes:

I. SOCIAL COMPETENCE						
GA 1	Deep disciplinary expertise with a wide range of academic and digital literacy					
GA 2	Hone creativity, passion for innovation and aspire excellence					
GA 3	Enthusiasm towards emancipation and empowerment of humanity					
GA 4	Potentials of being independent					
GA 5	Intellectual competence and inquisitiveness with problem solving abilities befitting the field of research					

GA 6	Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms
GA 7	Communicative competence with civic, professional and cyber dignity and decorum
GA 8	Integrity respecting the diversity and pluralism in societies, cultures and religions
GA 9	All – inclusive skill sets to interpret, analyse and solve social and environmental issues in diverse environments
GA 10	Self awareness that would enable them to recognise their uniqueness through continuous self-assessment in order to face and make changes building on their strengths and improving their weaknesses
GA 11	Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals
GA 12	Dexterity in self-management to control their selves in attaining the kind of life that they dream for
GA 13	Resilience to rise up instantly from their intimidating setbacks
GA 14	Virtuosity to use their personal and intellectual autonomy in being life-long learners
GA 15	Digital learning and research attributes
GA 16	Cyber security competence reflecting compassion, care and concern towards the marginalised

GA 17	Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario					
	PROFESSIONAL COMPETENCE					
GA 18	Optimism, flexibility and diligence that would make them professionally competent					
GA 19	Prowess to be successful entrepreuners and become employees of trans-national societies					
GA 20	Excellence in Local and Global Job Markets					
GA 21	Effectiveness in Time Management					
GA 22	Efficiency in taking up Initiatives					
GA 23	Eagerness to deliver excellent service					
GA 24	Managerial Skills to Identify, Commend and tap Potentials					
	II. ETHICAL COMPETENCE					
GA 25	Integrity and be disciplined in bringing stability leading a systematic life promoting good human behaviour to build better society					
GA 26	Honesty in words and deeds					
GA 27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life					
GA 28	Social and Environmental Stewardship					

GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience
GA 30	Right life skills at the right moment

# PROGRAMME OUTCOMES (PO)

On completion of M. Sc Programme, the graduates would be able to

PO 1	Apply acquired scientific knowledge to solve major complex issues in the society/industry.				
PO 2	Attain research skills to solve complex cultural, societal and environmental issues.				
PO 3	Employ latest and updated tools and technologies to solve complex issues.				
PO 4	Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.				

# PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of M.Sc. Human Nutrition and Nutraceuticals programme, the graduates would be able to

PSO 1	Attain enhanced scientific knowledge about the physiology of the human body.
PSO 2	Gain advanced scientific knowledge in foods, functional foods, nutrition and nutraceuticals
PSO 3	Obtain professional competence in planning diet for normal & therapeutic conditions and diet counseling.
PSO 4	Acquire advanced knowledge and understanding on the preventive and therapeutic role of functional foods.

# CBCS Curriculum for M.Sc Human Nutrition & Nutraceuticals

PSO 5	Develop understanding on the perspectives of research and formulate research designs.				
PSO 6	Integrate the basic principles of community nutrition processes to address the major health related concerns of the population.				
PSO 7	Imbibe scientific knowledge on the principles, instrumentation techniques and applications of different hi-tech analytical instruments.				
PSO 8	Acquire skills in analyzing food components and blood constituents				
PSO 9	Demonstrate the knowledge of the scientific basis available to develop innovative value added food products				
PSO 10	Achieve professional competence in implementing nutrition care during critical illness and disasters.				
PSO 11	Acquire knowledge and understanding the concepts of microbiology in the diverse areas such as food, environment and health.				
PSO 12	Attain enhanced knowledge and understanding of the bio molecules and its vital processes in human body.				
PSO 13	Advanced scientific knowledge and skill in the maintenance and monitoring of food safety and quality assurance.				
PSO 14	Demonstrate the knowledge and skill gained in the management of food service institutions.				
PSO 15	Acquire in-depth knowledge on production of processed food products.				

# I M.Sc., HUMAN NUTRITION AND NUTRACEUTICALS SEMESTER -I

## For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSNN	19PG1N1	Advanced Human Nutrition	Major Core	6	4

### **COURSE DESCRIPTION**

The course provides the knowledge on classification, functions, metabolism and deficiency of macro and micronutrients and its interrelationship.

### **COURSE OBJECTIVES**

- Gain in depth knowledge in the study of major and minor nutrients.
- Understand the recent trends in the study of nutrients
- Develop competence for undertaking nutritional investigations.

#### UNITS

### UNIT -I MACRONUTRIENTS AND WATER

(18 HRS.)

Carbohydrate - Definition, classification, functions, sources, requirements, digestion and absorption, Dietary Fibre - Definition, classification, functions, sources, requirements.

Protein - Definition, classification, functions, sources, requirements, digestion and absorption, Evaluation of protein quality- protein efficiency ratio, digestibility coefficient, biological value, net protein utilization, net protein ratio, chemical scores and PDCAAS.

Fat - Definition, classification, functions, sources, requirements, digestion and absorption, Essential fatty acids – functions and effects of deficiencies.

Water- Definition, distribution, functions, sources, water balance, fluid and electrolyte balance, Water Deprivation, dehydration, rehydration.

## **UNIT -II ENERGY**

(18 HRS.)

Energy – Definition, Units of energy, Determination of energy value of foods – Direct – Bomb Calorimetry, Indirect Calorimetry – Benedicts Oxy calorimetry, Determination of energy requirements – BMR – Definition and factors influencing BMR, Measurement of Basal metabolism, Direct Calorimetry – Atwatar Rose Respiratory Calorimeter, Indirect Calorimetry –Benedict Roth Apparatus, Determination of BMR using production equations (ICMR), Physiological fuel value, gross energy value, Respiratory Quotient, Thermal effect of foods (SDA), Energy requirements during work, Reference man, reference women, RDA for energy, food sources.

## **UNIT -III MINERALS**

(18 HRS.)

Calcium, Phosphorus, Magnesium, Sodium, Potassium, Iron, Iodine, Fluorine, Zinc, Selenium and Vanadium – Introduction, functions, sources, requirements, digestion, absorption, storage, excretion, deficiency and toxicity.

#### UNIT -IV VITAMINS

(18 HRS.)

Fat soluble and water soluble vitamins (Thiamine, riboflavin, niacin, vitamin B12, folic acid, pyridoxine, pantothenic acid, biotin and ascorbic acid nomenclature, functions, sources, requirements, digestion, absorption, storage, excretion, deficiency and toxicity.

# UNIT -V INTERRELATIONSHIP AND INTERDEPENDENCE BETWEEN NUTRIENTS AND DRUG INTERACTION (18 HRS.)

Nutrient and nutrient interaction, Nutrient and drug interaction.

## **BOOK REFERENCES:**

- 1. Berdanier, C.D.(1988). *Advanced Nutrition- Micronutrients*, Marcel Dekker, inc., New York.
- 2. Brown, M.L. (1990). Present knowledge in Nutrition, VI Edition, International Life Science Institute, Nutrition Foundation, Washington.
- 3. Gruff, J.L., Gropper, S.S, & Hunt, S.M (1995). *Advanced Nutrition and Human metabolism*, West Publishing Company, Minneapolis.

- 4. Helen, A. Guthrie. (1989). *Introductory Nutrition*, VII edition, Mosby College Publishing Col, Toranto.
- 5. Mahtab S. Bamji, Palhad Rao R, & Vinodhini Reddy, (1998). *Text book of Human Nutrition*,Oxford and IBH publishing co., Pvt.Ltd., New Delhi.
- 6. Sith K.L & Dekker M. (1990) . Trace Minerals in Foods, Inc., New York.

#### **JOURNAL REFERENCES:**

- 1. British journal of nutrition, Cambridge University Press, London.
- 2. Nutrition news, Nutrition Institute of Nutrition, Hyderabad.
- 3. Nutrition reviews, the Nutrient Foundation, Inc., New York.
- 4. Nutrition and food science- incorporating home economics and technology, Pvt. Ltd., England.
- 5. The journal of nutrition, Cambridge University Press, London.
- 6. World review of Nutrition and Dietetics- all volumes.

## **Open Educational Resources:**

- 1) <a href="https://en.wikibooks.org/wiki/Fundamentals-of-Human Nutrition">https://en.wikibooks.org/wiki/Fundamentals-of-Human Nutrition</a>
- 2) <a href="http://pressbooks.oer.hawaii.edu/humannutrition/">http://pressbooks.oer.hawaii.edu/humannutrition/</a>
- 3) https://www.youtube.com/watch?v=sorIaN6vRBI
- 4) <a href="http://pressbooks.oer.hawaii.edu/humannutrition2/">http://pressbooks.oer.hawaii.edu/humannutrition2/</a>

<u>5)</u>https://oer.galileo.usg.edu/cgi/viewcontent.cgi?article=1006&context=health-textbooks

# COURSE CONTENTS & LECTURE SCHEDULE:

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids	
	UNIT -1	MACRO	NUTRIENTS AND WA	TER	
1.1	Carbohydrate	4	Chalk & Talk, Lecture, Seminar	Black Board,PPT,Video s	
1.2	Dietary Fibre	2	Chalk & Talk, Lecture, Seminar	Black/white Board,PPT,Video s	
1.3	Protein	4	Chalk & Talk, Lecture, Seminar	PPT & White board	
1.4	Fat	3	Lecture, Discussion	PPT & White board, Videos	
1.5	Essential Fatty acids	2	Lecture	Black/white Board	
1.6	Water	3	Lecture, Group Discussion, Seminar	PPT & White board,Videos	
	UNIT -2	ENI	ERGY		
2.1	Energy	3	Lecture, Group Discussion	PPT & White board	
2.2	Direct calorimetry	3	Chalk & Talk, Lecture, Demo	Black/white Board, PPT	
2.3	Indirect calorimetry	3	Chalk & Talk, Lecture, seminar	Black/white Board, PPT	

2.4 Energy requirements during work  2.5 BMR-Direct Calorimetry  3 Chalk & Talk, Lecture, seminar  2.6 BMR-Indirect Calorimetry  3 Chalk & Talk, Lecture, seminar  3.1 Introduction, Calcium  3 Lecture, Group Discussion  3.2 Phosphorus, Magnesium  3 Chalk & Talk, Lecture, seminar  3 Lecture, Group Discussion  3 Chalk & Talk, Lecture, seminar  4 Chalk & Talk, Lecture, seminar  5 Chalk & Talk, Lecture, Seminar  6 Chalk & Talk, Lecture, Seminar  7 Chalk & Talk, Lecture, Seminar  8 Chalk & Talk, Lecture, Seminar  9 Chalk & Talk, Lecture, Seminar  8 Chalk & Talk, Black Board, PPT, Video s  8 Chalk & Talk, Lecture, Seminar  8 Chalk & Talk, Black Board, PPT, Video s  8 Selenium, Vanadium  9 Chalk & Talk, Lecture, Seminar  10 Chalk & Talk, Black Board, PPT, Video s  11 Chalk & Talk, Black Board, PPT, Video s  12 Chalk & Talk, Black Board, PPT, Video s  13 Chalk & Talk, Black Board, PPT, Video s  14 Vitamin A,D  15 Chalk & Talk, Black Board, PPT					
2.6 Calorimetry  2.6 BMR-Indirect Calorimetry  3 Chalk & Talk, Lecture, seminar Board, PPT  UNIT-3 MINERALS  3.1 Introduction, Calcium  3.2 Phosphorus, Magnesium  3.3 Chalk & Talk, Lecture, seminar Board, PPT  3.4 Iron, Iodine  3.5 Fluorine, Zinc  3.6 Selenium, Vanadium  3 Lecture, seminar  3 Chalk & Talk, Lecture, Seminar  3 Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video s  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video s  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video s  Selenium, Vanadium  3 Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video s  Black Board, PPT	2.4	requirements	3	Lecture	· '
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3.2 Magnesium  3 Lecture, seminar  Board, PPT  3.3 Sodium, Potassium  3 Chalk & Talk, Lecture, Seminar  Black Board, PPT, Videos  Black Board, PPT, Videos  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Videos  Black Board, PPT, Video S  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  UNIT - 4 VITAMINS  4.1 Vitamin A,D  3 Lecture, Seminar  Black Board, PPT, Video S  UNIT - 4 VITAMINS  4.1 Vitamin A,D  3 Lecture, Seminar  Black Board, PPT	3.1	·	3	· •	
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4.3	Vitamin B1,B2	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT,Video	
4.4	Niacin,B12 3		Chalk & Talk, Lecture, Seminar	Black Board,PPT,Video	
4.5	Pyridoxine, Pantothenic acid	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT,Video	
4.6	Biotin,Folic acid, Vitamin C	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT,Vides	
UNIT –	-		AND INTERDEPEND DRUG INTERACTION		
5.1	Interrelationshi p between Macronutrients	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT	
5.2	Vitamins and Vitamins	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT	
5.3	Minerals and Minerals	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT	
5.4	Vitamins and Minerals	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT	
5.5	Macro and micro nutrients	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT	
5.6	Nutrients & Drug Interaction	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT	

	C1	C2	С3	C4	C5	Total Scholastic Marks	Non Schola stic Marks C6	CIA Total
Levels	T1	Т2	Seminar	Assign ment	ОВТ/РРТ			
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.
K2	4	4	1	-	-	8	ı	8
К3	2	2	-	5	-	9	-	9
K4	2	2	-	-	5	9	-	9
K5	2	2	5	-	-	9	-	9
Non Scholastic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

CIA	
Scholastic	35
Non Scholastic	5
	40

- ✓ All the course outcomes are to be assessed in the various CIA components.
- ✓ The levels of CIA Assessment based on Revised Bloom's

**K2-**Understand, **K3-**Apply, **K4-**Analyze, **K5-** Evaluate

## **EVALUATION PATTERN**

	SCHOLASTIC				NON - SCHOLASTIC	MARKS		
<b>C</b> 1	C2	СЗ	C4	<b>C</b> 5	C6	CIA	ESE	
10	10	5	5	5	5	40	60	

- C1 Internal Test-1
- **C2** Internal Test-2
- C3 Seminar
- **C4** Assignment
- C5 OBT/PPT
- **C6** Non Scholastic

# COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Explain the functions, digestion, absorption, deficiency, sources & requirements of Macronutrients and water	K2	PSO1, PSO2,PSO3,PSO8 & PSO12
CO 2	Elaborate the energy value of foods by using different Calorimetric methods	K2	PSO1, PSO2,PSO3,PSO8 &PSO12
CO 3	Identify the functions, digestion, absorption, deficiency, sources & requirements of Minerals	КЗ	PSO1,PSO2, PSO3,PSO8 & PSO12
CO 4	Analyze the functions, digestion, absorption, deficiency,sources & requirements of Vitamins	K4	PSO1,PSO2, PSO3,PSO8 & PSO12
CO 5	Explain the knowledge on nutrient-nutrient and nutrient- drug interrelationship	K5	PSO1,PSO2, PSO3,PSO8 & PSO12

# Mapping of COs with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9	PSO 10	PSO	PSO 12	PSO 13	PSO 14	PSO 15
CO1	3	3	3	1	1	1	1	3	1	1	1	3	1	1	1
CO2	3	3	3	1	1	1	1	3	1	1	1	3	1	1	1
соз	3	3	3	1	1	1	1	3	1	1	1	3	1	1	1
CO4	3	3	3	1	1	1	1	3	1	1	1	3	1	1	1
CO5	3	3	3	1	1	1	1	3	1	1	1	3	1	1	1

# Mapping of COs with POs

CO/ PSO	PO1	PO2	РО3	PO4
CO1	2	2	1	1
CO2	2	2	1	1
соз	2	2	1	1
CO4	2	2	1	1
CO5	2	2	1	1

Note: Strongly Correlated – 3

" Moderately Correlated – 2 "

Weakly Correlated -1

**COURSE DESIGNER:** 

1. Dr. K.KARTHIGA

Forwarded By

(Dr. Vasantha Esther Rani)

Marante E Rain

# I M.Sc., HUMAN NUTRITION AND NUTRACEUTICALS SEMESTER -I

## For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSNN	19PG1N1	Advanced Human Nutrition	Major Core	6	4

#### COURSE DESCRIPTION

The course provides the knowledge on classification, functions, metabolism and deficiency of macro and micronutrients and its interrelationship.

#### **COURSE OBJECTIVES**

- Gain in depth knowledge in the study of major and minor nutrients.
- Understand the recent trends in the study of nutrients
- Develop competence for undertaking nutritional investigations.

#### UNITS

#### UNIT -I MACRONUTRIENTS AND WATER

(18 HRS.)

Carbohydrate - Definition, classification, functions, sources, requirements, digestion and absorption, Dietary Fibre - Definition, classification, functions, sources, requirements.

Protein - Definition, classification, functions, sources, requirements, digestion and absorption, Evaluation of protein quality- protein efficiency ratio, digestibility coefficient, biological value, net protein utilization, net protein ratio, chemical scores and PDCAAS.

Fat - Definition, classification, functions, sources, requirements, digestion and absorption, Essential fatty acids – functions and effects of deficiencies.

Water- Definition, distribution, functions, sources, water balance, fluid and electrolyte balance, Water Deprivation, dehydration, rehydration.

## **UNIT -II ENERGY**

## (18 HRS.)

Energy – Definition, Units of energy, Determination of energy value of foods – Direct – Bomb Calorimetry, Indirect Calorimetry – Benedicts Oxy calorimetry, Determination of energy requirements – BMR – Definition and factors influencing BMR, Measurement of Basal metabolism, Direct Calorimetry – Atwatar Rose Respiratory Calorimeter, Indirect Calorimetry –Benedict Roth Apparatus, Determination of BMR using production equations (ICMR), Physiological fuel value, gross energy value, Respiratory Quotient, Thermal effect of foods (SDA), Energy requirements during work, Reference man, reference women, RDA for energy, food sources.

### **UNIT -III MINERALS**

(18 HRS.)

Calcium, Phosphorus, Magnesium, Sodium, Potassium, Iron, Iodine, Fluorine, Zinc, Selenium and Vanadium – Introduction, functions, sources, requirements, digestion, absorption, storage, excretion, deficiency and toxicity.

## UNIT -IV VITAMINS

(18 HRS.)

Fat soluble and water soluble vitamins (Thiamine, riboflavin, niacin, vitamin B12, folic acid, pyridoxine, pantothenic acid, biotin and ascorbic acid nomenclature, functions, sources, requirements, digestion, absorption, storage, excretion, deficiency and toxicity.

# UNIT -V INTERRELATIONSHIP AND INTERDEPENDENCE BETWEEN NUTRIENTS AND DRUG INTERACTION (18 HRS.)



Nutrient and nutrient interaction-Protein-Energy Interrelationship, Effect of Carbohydrate on Protein and Fat metabolism, Effect of Macronutrients on Vitamin requirements, Vitamin-Vitamin Interaction, Vitamin-Mineral Interaction, Mineral-Mineral Interaction.

#### **BOOK REFERENCES:**

- 1. Berdanier, C.D.(1988). *Advanced Nutrition- Micronutrients*, Marcel Dekker, inc., New York.
- 2. Brown, M.L. (1990). Present knowledge in Nutrition, VI Edition, International Life Science Institute, Nutrition Foundation, Washington.
- 3. Gruff, J.L., Gropper, S.S, & Hunt, S.M (1995). *Advanced Nutrition and Human metabolism*, West Publishing Company, Minneapolis.
- 4. Helen, A. Guthrie. (1989). *Introductory Nutrition*, VII edition, Mosby College Publishing Col, Toranto.
- 5. Mahtab S. Bamji, Palhad Rao R, & Vinodhini Reddy, (1998). *Text book of Human Nutrition*,Oxford and IBH publishing co., Pvt.Ltd., New Delhi.
- 6. Sith K.L & Dekker M. (1990) . Trace Minerals in Foods, Inc., New York.

### **JOURNAL REFERENCES:**

- 1. British journal of nutrition, Cambridge University Press, London.
- 2. Nutrition news, Nutrition Institute of Nutrition, Hyderabad.
- 3. Nutrition reviews, the Nutrient Foundation, Inc., New York.
- 4. Nutrition and food science- incorporating home economics and technology, Pvt. Ltd., England.
- 5. The journal of nutrition, Cambridge University Press, London.
- 6. World review of Nutrition and Dietetics- all volumes.

## **Open Educational Resources:**

- 1) <a href="https://en.wikibooks.org/wiki/Fundamentals_of_Human_Nutrition">https://en.wikibooks.org/wiki/Fundamentals_of_Human_Nutrition</a>
- 2) http://pressbooks.oer.hawaii.edu/humannutrition/
- 3) https://www.youtube.com/watch?v=sorIaN6vRBI
- 4) http://pressbooks.oer.hawaii.edu/humannutrition2/

<u>5)https://oer.galileo.usg.edu/cgi/viewcontent.cgi?article=1006&context=health-textbooks</u>

# COURSE CONTENTS & LECTURE SCHEDULE:

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids					
	UNIT -1 MACRONUTRIENTS AND WAY								
1.1	Carbohydrate	4	Chalk & Talk, Lecture, Seminar	Black Board,PPT,Video s					
1.2	Dietary Fibre	2	Chalk & Talk, Lecture, Seminar	Black/white Board,PPT,Video s					
1.3	Protein	4	Chalk & Talk, Lecture, Seminar	PPT & White board					
1.4	Fat	3	Lecture, Discussion	PPT & White board, Videos					
1.5	Essential Fatty acids	2	Lecture	Black/white Board					
1.6	Water	3	Lecture, Group Discussion, Seminar	PPT & White board,Videos					
	UNIT -2	ENI	ERGY						
2.1	Energy	3	Lecture, Group Discussion	PPT & White board					
2.2	Direct calorimetry	3	Chalk & Talk, Lecture, Demo	Black/white Board, PPT					
2.3	Indirect calorimetry	3	Chalk & Talk, Lecture, seminar	Black/white Board, PPT					

2.4 Energy requirements during work  2.5 BMR-Direct Calorimetry  3 Chalk & Talk, Lecture, seminar  2.6 BMR-Indirect Calorimetry  3 Chalk & Talk, Lecture, seminar  3.1 Introduction, Calcium  3 Lecture, Group Discussion  3.2 Phosphorus, Magnesium  3 Chalk & Talk, Lecture, seminar  3 Chalk & Talk, Lecture, Group Discussion  3 Chalk & Talk, Lecture, Seminar  3 Chalk & Talk, Lecture, Seminar  4 Chalk & Talk, Lecture, Seminar  5 Sodium, Potassium  3 Chalk & Talk, Lecture, Seminar  6 Chalk & Talk, Lecture, Seminar  7 Chalk & Talk, Lecture, Seminar  8 Black Board, PPT, Videos  8 Chalk & Talk, Lecture, Seminar  8 Chalk & Talk, Lecture, Seminar  8 Chalk & Talk, Lecture, Seminar  8 Chalk & Talk, Black Board, PPT, Video S  8 Chalk & Talk, Lecture, Seminar  8 Chalk & Talk, Black Board, PPT, Video S  8 Chalk & Talk, Lecture, Seminar  9 Chalk & Talk, Black Board, PPT, Video S  8 Chalk & Talk, Black Board, PPT, Video S  8 Selenium, Vanadium  1 Chalk & Talk, Black Board, PPT, Video S  1 Chalk & Talk, Black Board, PPT, Video S  1 Chalk & Talk, Black Board, PPT, Video S  1 Chalk & Talk, Black Board, PPT, Video S  1 Chalk & Talk, Black Board, PPT, Video S  1 Chalk & Talk, Black Board, PPT, Video S  1 Chalk & Talk, Black Board, PPT, Video S  1 Chalk & Talk, Black Board, PPT, Video S  1 Chalk & Talk, Black Board, PPT, Video S  1 Chalk & Talk, Black Board, PPT					
2.6 Calorimetry  2.6 BMR-Indirect Calorimetry  3 Chalk & Talk, Lecture, seminar Board, PPT  UNIT-3 MINERALS  3.1 Introduction, Calcium  3.2 Phosphorus, Magnesium  3.3 Chalk & Talk, Lecture, seminar Board, PPT  3.4 Iron, Iodine  3.5 Fluorine, Zinc  3.6 Selenium, Vanadium  3 Lecture, seminar  3 Chalk & Talk, Lecture, Seminar  3 Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video s  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video s  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video s  Selenium, Vanadium  3 Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video s  Black Board, PPT	2.4	requirements	3	Lecture	· '
UNIT-3  UNIT-3  MINERALS  3.1 Introduction, Calcium  3 Lecture, Group Discussion  3.2 Phosphorus, Magnesium  3 Chalk & Talk, Lecture, Seminar  4.1 Vitamin A,D  3 Chalk & Talk, Lecture, Seminar  3 Chalk & Talk, Lecture, Seminar  3 Chalk & Talk, Lecture, Seminar  4 Chalk & Talk, Lecture, Seminar  5 Chalk & Talk, Lecture, Seminar  8 Black Board, PPT, Video S  8 Black Board, PPT, Video S  8 Chalk & Talk, Lecture, Seminar  9 Black Board, PPT, Video S  9 Chalk & Talk, Lecture, Seminar  10 Selenium, Vanadium  10 Chalk & Talk, Lecture, Seminar  11 Selenium, Selenium, Seminar  12 Chalk & Talk, Black Board, PPT, Video S  13 Chalk & Talk, Black Board, PPT, Video S  14 Vitamin A,D  15 Selenium, Seminar  16 Selenium, Seminar  17 Selenium, Seminar  18 Black Board, PPT, Video S  18 Selenium, Seminar  18 Seleni	2.5		3	· ·	1 '
3.1 Introduction, Calcium  3 Lecture, Group Discussion  PPT & White board  3.2 Phosphorus, Magnesium  3 Chalk & Talk, Lecture, Seminar  3 Chalk & Talk, Lecture, Seminar  Black Board, PPT  3.3 Chalk & Talk, Lecture, Seminar  Black Board, PPT, Videos  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  Chalk & Talk, Lecture, Seminar  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  UNIT - 4 VITAMINS  4.1 Vitamin A,D  3 Lecture, Seminar  Black Board, PPT, Video S  UNIT - 4 VITAMINS  4.1 Vitamin A,D  Black Board, PPT	2.6		3	· · · · · · · · · · · · · · · · · · ·	1 '
3.1 Calcium  3 Discussion  Dis			UNIT-3	MINERALS	
3.2 Magnesium  3 Lecture, seminar  Board, PPT  3.3 Sodium, Potassium  3 Chalk & Talk, Lecture, Seminar  Black Board, PPT, Videos  Black Board, PPT, Videos  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Videos  Black Board, PPT, Video S  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  Chalk & Talk, Lecture, Seminar  Black Board, PPT, Video S  UNIT - 4 VITAMINS  4.1 Vitamin A,D  3 Lecture, Seminar  Black Board, PPT, Video S  UNIT - 4 VITAMINS  4.1 Vitamin A,D  3 Lecture, Seminar  Black Board, PPT	3.1	·	3	· •	
3.3 Potassium  3 Chalk & Talk, Lecture, Seminar  3.4 Iron, Iodine  3 Chalk & Talk, Lecture, Seminar  4.1 Vitamin A,D  3 Chalk & Talk, Lecture, Seminar  3 Chalk & Talk, Lecture, Seminar  4.1 Vitamin A,D  3 Chalk & Talk, Lecture, Seminar  4.1 Vitamin A,D  3 Lecture, Seminar  4 Data Dotata, PPT, Videos  Black Board, PPT, Video  8 VITAMINS  4.1 Vitamin A,D  3 Lecture, Seminar  Black Board, PPT	3.2		3	· · · · · · · · · · · · · · · · · · ·	1 ' 1
3.4 Iron, Iodine  3 Chalk & Talk, Lecture, Seminar  3.5 Fluorine, Zinc  3 Chalk & Talk, Lecture, Seminar  3 Chalk & Talk, Lecture, Seminar  3 Chalk & Talk, Lecture, Seminar  4.1 Vitamin A,D  3 Chalk & Talk, Lecture, Seminar  4.1 Vitamin A,D  3 Chalk & Talk, Lecture, Seminar  4.1 Vitamin A,D  3 Lecture, Seminar  4.1 Black Board, PPT, Video s  4.1 Vitamin A,D  3 Lecture, Seminar  4.1 Black Board, PPT	3.3	,	3	· · · · · · · · · · · · · · · · · · ·	1 ' 1
3.5 Zinc 3 Chalk & Talk, Lecture, Seminar Board, PPT, Video s  3.6 Selenium, Vanadium 3 Chalk & Talk, Lecture, Seminar Black Board, PPT, Video s  UNIT - 4 VITAMINS  4.1 Vitamin A,D 3 Lecture, Seminar Black Board, PPT	3.4	·	3	<b>'</b>	Board,PPT,Video
3.6 Vanadium  3 Chalk & Talk, Lecture, Seminar  UNIT - 4 VITAMINS  4.1 Vitamin A,D  3 Lecture, Seminar  Board,PPT,Video s  Board,PPT,Video s	3.5	,	3	· ·	Board,PPT,Video
4.1 Vitamin A,D 3 Lecture, Seminar Black Board,PPT	3.6	ŕ	3	· ·	Board,PPT,Video
			UNIT – 4	VITAMINS	
4.2 Vitamin E,K 3 Lecture, Seminar Black Board,PPT	4.1	Vitamin A,D	3	Lecture, Seminar	Black Board,PPT
	4.2	Vitamin E,K	3	Lecture, Seminar	Black Board,PPT

4.3	Vitamin B1,B2	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT,Video
4.4	Niacin,B12	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT,Video
4.5	Pyridoxine, Pantothenic acid	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT,Video
4.6	Biotin,Folic acid, Vitamin C	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT,Vides
UNIT –	-		AND INTERDEPENDERUG INTERACTION	
5.1	Interrelationshi p between Macronutrients	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT
5.2	Vitamins and Vitamins	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT
5.3	Minerals and Minerals	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT
5.4	Vitamins and Minerals	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT
5.5	Macro and micro nutrients	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT
5.6	Nutrients & Drug Interaction	3	Chalk & Talk, Lecture, Seminar	Black Board,PPT

	C1	C2	С3	C4	C5	Total Scholastic Marks	Non Schola stic Marks C6	CIA Total
Levels	T1	Т2	Seminar	Assign ment	ОВТ/РРТ			
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.
K2	4	4	1	-	-	8	ı	8
К3	2	2	-	5	-	9	-	9
K4	2	2	-	-	5	9	-	9
K5	2	2	5	-	-	9	-	9
Non Scholastic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

CIA	
Scholastic	35
Non Scholastic	5
	40

- ✓ All the course outcomes are to be assessed in the various CIA components.
- ✓ The levels of CIA Assessment based on Revised Bloom's

**K2-**Understand, **K3-**Apply, **K4-**Analyze, **K5-** Evaluate

## **EVALUATION PATTERN**

	so	CHOLAST	ric	NON - SCHOLASTIC	МА	RKS
C1	C2	СЗ	C4	C6	CIA	ESE
10	10	5	5	5	40	60

- C1 Internal Test-1
- **C2** Internal Test-2
- C3 Seminar
- **C4** Assignment
- C5 OBT/PPT
- **C6** Non Scholastic

# COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Explain the functions, digestion, absorption, deficiency, sources & requirements of Macronutrients and water	K2	PSO1, PSO2,PSO3,PSO8 & PSO12
CO 2	Elaborate the energy value of foods by using different Calorimetric methods	K2	PSO1, PSO2,PSO3,PSO8 &PSO12
CO 3	Identify the functions, digestion, absorption, deficiency, sources & requirements of Minerals	КЗ	PSO1,PSO2, PSO3,PSO8 & PSO12
CO 4	Analyze the functions, digestion, absorption, deficiency,sources & requirements of Vitamins	K4	PSO1,PSO2, PSO3,PSO8 & PSO12
CO 5	Explain the knowledge on nutrient-nutrient and nutrient- drug interrelationship	K5	PSO1,PSO2, PSO3,PSO8 & PSO12

# Mapping of COs with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9	PSO	PSO	PSO	PSO	PSO	PSO 15
	•		)	•	)			)		10		1	10		
			3	1	1	1	1	3	1	1	1	3	1	1	1
CO1	3	3													
CO2	3	3	3	1	1	1	1	3	1	1	1	3	1	1	1
соз	3	3	3	1	1	1	1	3	1	1	1	3	1	1	1
CO4	3	3	3	1	1	1	1	3	1	1	1	3	1	1	1
CO5	3	3	3	1	1	1	1	3	1	1	1	3	1	1	1

# Mapping of COs with POs

CO/ PSO	PO1	PO2	РО3	PO4
CO1	2	2	1	1
CO2	2	2	1	1
соз	2	2	1	1
CO4	2	2	1	1
CO5	2	2	1	1

Note: Strongly Correlated – 3

" Moderately Correlated – 2 "

Weakly Correlated -1

**COURSE DESIGNER:** 

1. Dr. K.KARTHIGA

Forwarded By

(Dr. Vasantha Esther Rani)

Marante E Rain

# I M.Sc., HUMAN NUTRITION AND NUTRACEUTICALS SEMESTER -I

#### For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSNN	19PG1N3	Applied Physiology	Major Core	6	4

#### **COURSE DESCRIPTION**

The course provides a detailed insight on the anatomy and functions of the various systems of the human body.

#### **COURSE OBJECTIVES**

- Organs of the body and their functions
- Different systems of the body, their functions with special reference to the control and feedback mechanisms
- Physiological changes at different stages of life.

#### UNITS

#### UNIT -I BLOOD AND ENDOCRINE SYSTEM

(18 HRS.)

#### **Blood**

Composition and functions of blood and Plasma proteins, RBC – Structure and functions, Bone marrow – functions, Erythropoiesis, Haemoglobin, Life span ,fate, Anaemia, haemolysis, polycythemia, ESR, WBC – Classification and functions, Coagulation, Bleeding time, clotting time. Blood Groups. Blood indices, Use of blood for investigation and diagnosis of specific disorders.

#### **Endocrine system**

Structure, functions,role of hormones,regulation of hormonal secretion and disorders of pituitary gland, thryroid gland, parathyroid gland, pancreas and adrenal glands. Emphasis on physiology of Diabetes and stress hormones.

#### **UNIT -II CIRCULATORY SYSTEM**

(18 HRS.)

Anatomical considerations of heart, valves of heart and its action, layers of heart, blood vessels – arteries, arterioles, capillaries, veins, vasa vasorum.Blood pressure – factors and regulation.

Cardiac centre – heart rate – regulation, cardiac output, cardiac impulse, junctional tissues, cardiac cycle, heart sounds, ECG, coronary circulation, pulmonary circulation, cerebral circulation, hepatic circulation, renal circulation, cutaneous circulation and skeletal muscle circulation.

#### UNIT -III DIGESTIVE AND EXCRETORY SYSTEM

(18 HRS.)

#### **Digestive system**

Review of anatomy and functions- secretary, digestive and absorptive functions of the digestive tract – Buccal cavity, stomach, pancreas, liver, small intestine and large intestine. Role of enzymes and hormones in digestion and absorption of carbohydrate, protein and fat. Dysfunction of liver, pancreas and gallbladder.

#### **Excretory system**

Anatomy and functions of kidney and nephrons, juxta glomerular apparatus. Formation of urine, micturition. Role of kidney in maintaining pH of blood. Water, electrolyte and acid base balance, diuretics.

#### UNIT -IV MUSCULO -SKELETAL AND RESPIRATORY SYSTEM

(18 HRS.)

#### Musculo -Skeletal system

Structure and function of Bone tissue – osteocytes, osteoblasts, osteoclasts, structure of osseous tissue, section of femur bone. Types of muscles – structure and functions.

#### Respiratory system

Review of structure and functions of the respiratory tract, lung unit. Mechanism of respiration, transport of oxygen and carbon dioxide. Regulation of respiration, lung volumes, pulmonary function tests, Cardio – respiratory response to exercise and physiological effects of training.

#### UNIT -V NERVOUS SYSTEM AND REPRODUCTIVE SYSTEM (18 HRS.)

#### **Nervous System**

Review of structure and function of nervous system –central or somatic nervous system - neuron –types, structure, properties, myelin sheath, nerve endings, synapse, neurotransmitters, reflex arc, receptors, brain –cerebrum-cerebral cortex-cerebral lobes-structure and functions, cerebellum, medulla oblongata, - thalamus, hypothalamus. The role of Hypothalamus in various body functions – obesity, sleep, memory.

Autonomic nervous system – sympathetic and parasympathetic – actions, functions of ANS. Blood Brain Barrier, CSF

#### **Reproductive System**

Primary and accessory sex organs, secondary sexual characteristics of male, female, Menstrual cycle, menopause and post menopausal changes. Transgender - Definition and characteristics.

#### **BOOK REFERENCES:**

- 1. Best and Taylor, The Living Body, Chapman and Hall ltd., London.
- 2. Chatterji (1999). Human Physiology, Roy Publications
- 3. Gitanjali Chatterjee (1999) Handbook of Food and Nutrition, Rajat Publications.
- 4. Guyton, A.C& Hall J.B (1996): *Textbook of Medical Physiology*, 9th edition W.B Sanders Company, Prism Books (Pvt) Ltd, Bangalore.
- 5. Kamala Krishnaswami (2000) *Nutrition Research-Current Scenerio and future trends*, Oxford and IBH Publishing Co.Pvt.ltd.,
- 6. Lraine M.Summerfield (2000). Nutrition , exercise and behaviour an integrated approach to Weight management, Thomson learning,
- 7. Mahtab S. Bamji, Pralhad & Rao Vinodhini Reddy.(1996) *Textbook of Human Nutrition*, Oxford, IBH publishing Co. pvt ltd.,
- 8. Margaret McWilliams (1994). *Experimental Food laboratory Manual*, Surject Publications,
- 9. Mickael J.Gibney, Ian A.Macdonald & Helen M.Roche (2004), *Nutrition and metabolism* Blackwell Publications,.
- 10. Mike Epsy (2001) *Nutrition Eating for good health*, Surbhi Publications, Jaipur,.
- 11. Sembulingam & Prema Sembulingam (2006), Essentials of Medical Physiology, Yaypee Brothers, Medical Publishers (p) Ltd, New Delhi.
- 12. Vijay Kamshik (2000). Food science and nutrition, Mangal Deep Publications. Jaipur

#### **JOURNAL REFERENCES:**

- 1. Journal of Applied Physiology
- 2. Journal of General Physiology
- 3. BMC Physiology
- 4. Physiological Reviews
- 5. International Journal of Basic & Applied Physiology

#### **Open Educational Resources**

- 1. <a href="https://journals.physiology.org/doi/full/10.1152/japplphysiol.00711.2011">https://journals.physiology.org/doi/full/10.1152/japplphysiol.00711.2011</a>
- 2. https://www.springer.com/journal/421

- 3. <a href="https://opentextbooks.concordia.ca/oerbydiscipline/chapter/kinesiology-2/">https://opentextbooks.concordia.ca/oerbydiscipline/chapter/kinesiology-2/</a>
- 4. <a href="https://publons.com/journal/39067/european-journal-of-applied-ph-ysiology-and-occupat/">https://publons.com/journal/39067/european-journal-of-applied-ph-ysiology-and-occupat/</a>
- 5. https://openstax.org/details/books/anatomy-and-physiology

## COURSE CONTENTS & LECTURE SCHEDULE:

Modul	mania.	No. of	Teaching	Teaching
e No.	Topic	Lecture s	Pedagogy	Aids
	UNIT -1 BLOC	DD AND EI	NDOCRINE SYST	EM
1.1	Composition and functions of blood	1	Chalk & Talk	Black Board
1.2	Plasma proteins; RBC – Structure and functions; WBC – Classification and functions	3	Chalk & Talk	Black Board
1.3	Bone marrow – functions, Erythropoiesis	2	Lecture	PPT & Videos
1.4	Haemoglobin, Life span, fate, Anaemia, haemolysis, polycythemia	2	Lecture	Black Board
1.5	Coagulation, bleeding time, clotting time, ESR, Blood Groups; Blood indices; Use of blood for investigation and diagnosis of specific disorders	3	Demonstration	Blood coagulation and grouping kits
1.6	Pituitary gland- Structure, functions, role of hormones,	2	Lecture	PPT

	secretion, regulation and disorders			
1.7	Thyroid gland- Structure, functions, role of hormones, secretion, regulation and disorders	2	Lecture	PPT
1.8	Parathyroid gland, pancreas and adrenal glands.	2	Chalk & Talk	Black Board
1.9	Physiology of diabetes and stress hormones	1	Group discussion	Black Board
	UNIT -2	CIRCULA	TORY SYSTEM	
2.1	Anatomical considerations of heart, valves of heart and its action, layers of heart	2	Lecture	Model
2.2	Blood vessel – arteries, arterioles, capillaries, veins, vasovasorum	2	Chalk & Talk	Black Board
2.3	Blood pressure factors and regulation	2	Lecture	PPT
2.5	Cardiac centre – heart rate – regulation	2	Lecture	Smart Board
2.6	Cardiac output, cardiac impulse, functional tissues	2	Lecture	Videos
2.7	Cardiac cycle, ECG, heart sounds	3	Discussion	Videos
2.8	Coronary circulation, Pulmonary circulation, Cerebral circulation, hepatic circulation	3	Chalk & Talk	Black Board

2.9	Renal circulation, cutaneous circulation, and skeletal muscle circulation	2	Chalk & Talk	Black Board
	UNIT -3 DIGES	TIVE AND	EXCRETORY SY	STEM
3.1	Anatomy of digestive system	2	Lecture	Model
3.2	Secretary, digestive, and absorptive functions of the digestive tract	2	Lecture	PPT
3.3	Buccal cavity, stomach, pancreas, liver	1	Chalk & Talk	Black Board
3.4	Small intestine and large intestine	3	Lecture	Smart class
3.5	Role of enzymes and hormones in digestion and absorption of carbohydrate, protein and fat	2	Discussion	Black Board
3.6	Dysfunction of liver, pancreas and gall bladder	2	Lecture	PPT
3.7	Anatomy and functions of kidney and nephrons, juxta glomerular apparatus	3	Lecture	Model
3.8	Formation of urine, micturition	1	Lecture	Smart class
3.9	Role of kidney in maintaining pH of blood. Water, electrolyte	1	Chalk & Talk	Black Board

3.10	Acid base balance, diuretics	1	Lecture	PPT
UNIT	-4 MUSCULO –S	KELETAL	AND RESPIRATO	DRY SYSTEM
4.1	Structure and function of Bone tissue	2	Lecture	Smart class
4.2	Osteocytes, osteoblasts, osteoclasts	2	Chalk & Talk	Black Board
4.3	Structure of osseous tissue	1	Lecture	PPT
4.4	Section of femur bone	1	Lecture	PPT
4.5	Muscles – Structure, types and functions	3	Lecture	Smart class
4.6	Structure and functions of the respiratory tract, lung unit	2	Lecture	Smart class
4.7	Mechanism of respiration	2	Lecture	PPT
4.8	Regulation of respiration, lung volumes	2	Chalk & Talk	Black Board
4.9	Pulmonary function tests, Cardio – respiratory response to exercise and physiological effects of training	3	Discussion	Black Board
UNI'	Γ-5 NERVOUS SY	STEM AN	D REPRODUCTIV	/E SYSTEM
5.1	Structure and function of nervous system –central or somatic nervous system	2	Chalk & Talk	Black Board

5.2	Neuron –types, structure, properties, myelin sheath, nerve endings, synapse, neurotransmitters, reflex arc, receptors	3	Lecture	PPT
5.3	Brain – cerebral cortex- cerebral lobes	2	Chalk & Talk	Black Board
5.4	Structure and functions - cerebellum, medulla oblongata, thalamus, hypothalamus	2	Lecture	Smart class
5.5	Role of hypothalamus in various body functions – obesity, sleep, memory	1	Discussion	Videos
5.6	Autonomic nervous system – sympathetic and para sympathetic – actions	2	Lecture	PPT
5.7	Functions of ANS. Blood Brain Barrier, CSF	2	Chalk & Talk	Black Board
5.8	Primary and accessory sex organs and secondary sex characters; Transgender- Definition and Characteristics	2	Lecture	Smart class
5.9	Menstrual cycle	1	Chalk & Talk	Black Board
5.10	Menopause and post-menopausal changes.	1	Discussion	Black Board

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Schola stic Marks C6	CIA Total
Levels	T1	Т2	Seminar	Assign ment	ОВТ/РРТ			
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.
K2	4	4	-	1	-	8	-	8
К3	2	2	-	5	-	9	-	9
K4	2	2	-	-	5	9	-	9
K5	2	2	5	-	-	9	-	9
Non Scholastic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

CIA

Scholastic 35

Non Scholastic **5** 

40

• All the course outcomes are to be assessed in the various CIA components.

# • The levels of CIA Assessment based on Revised Bloom's Taxonomy for PG are:

**K2**-Understand, **K3**-Apply, **K4**-Analyse, **K5**-Evaluate

## **EVALUATION PATTERN**

SCHOLASTIC				NON - SCHOLASTIC		MARK	s		
C1	C2	СЗ	C4	C5	С6	CIA	CIA ESE Total		
10	10	5	5	5	5	40	60	100	

- **C1** Internal Test-1
- **C2** Internal Test-2
- C3 Seminar
- C4 Assignment
- C5 OBT/PPT
- **C6** Non Scholastic

# COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSE D
CO 1	Describe the functions of blood and endocrine system	K2	PSO1
CO 2	Illustrate the anatomy and functions of circulatory system	K2	PSO1
со з	Identify the role of digestive and excretory systems	К3	PSO1
CO 4	Analyse the mechanism of musculoskeletal and respiratory systems	K4	PSO1
CO 5	Explain the structure and functions of nervous and reproductive systems	K5	PSO1

# Mapping of COs with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9	PSO 10	PSO	PSO 12	PSO 13	PSO 14	PSO 15
CO1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CO2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
соз	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CO4	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CO5	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1

## Mapping of COs with POs

/ D	PO1	PO2	РОЗ	PO4
Ю1	2	1	1	1
:02	1	1	1	1
юз	1	1	1	1
Ю4	1	1	1	1
<b>:</b> 05	2	1	1	1

Note: Strongly Correlated – 3

" Moderately Correlated – 2

" Weakly Correlated -1

#### **COURSE DESIGNER:**

- 1.Dr.Vasantha Esther Rani
- 2. Mrs.C.Helen

Forwarded By

(Dr. Vasantha Esther Rani)

Maranga E Rain

# I M.Sc., HUMAN NUTRITION AND NUTRACEUTICALS SEMESTER -I

## For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSNN	19PG1N3	Applied Physiology	Major Core	6	4

### **COURSE DESCRIPTION**

The course provides a detailed insight on the anatomy and functions of the various systems of the human body.

#### **COURSE OBJECTIVES**

- Organs of the body and their functions
- Different systems of the body, their functions with special reference to the control and feedback mechanisms
- Physiological changes at different stages of life.

#### UNITS

#### **UNIT -I BLOOD AND ENDOCRINE SYSTEM**

(18 HRS.)

#### Blood

Composition and functions of blood and Plasma proteins,RBC – Structure and functions, Bone marrow – functions, Erythropoiesis, Haemoglobin, Life span ,fate, Anaemia, haemolysis, polycythemia, ESR, WBC – Classification and functions, Coagulation, Bleeding time, clotting time.Blood Groups.Blood indices,Use of blood for investigation and diagnosis of specific disorders.

#### **Endocrine system**

Structure, functions,role of hormones,regulation of hormonal secretion and disorders of pituitary gland, thryroid gland, parathyroid gland, pancreas and adrenal glands. Emphasis on physiology of Diabetes and stress hormones.

Anatomical considerations of heart, valves of heart and its action, layers of heart, blood vessels – arteries, arterioles, capillaries, veins, vasa vasorum.Blood pressure – factors and regulation.

Cardiac centre – heart rate – regulation, cardiac output, cardiac impulse, junctional tissues, cardiac cycle, heart sounds, ECG, coronary circulation, pulmonary circulation, cerebral circulation, hepatic circulation, renal circulation, cutaneous circulation and skeletal muscle circulation.

#### UNIT -III DIGESTIVE AND EXCRETORY SYSTEM

(18 HRS.)

#### **Digestive system**

Review of anatomy and functions- secretary, digestive and absorptive functions of the digestive tract – Buccal cavity, stomach, pancreas, liver, small intestine and large intestine. Role of enzymes and hormones in digestion and absorption of carbohydrate, protein and fat. Dysfunction of liver, pancreas and gallbladder.

#### **Excretory system**

Anatomy and functions of kidney and nephrons, juxta glomerular apparatus. Formation of urine, micturition. Role of kidney in maintaining pH of blood. Water, electrolyte and acid base balance, diuretics.

#### UNIT -IV MUSCULO -SKELETAL AND RESPIRATORY SYSTEM

(18 HRS.)

#### Musculo -Skeletal system

Structure and function of Bone tissue – osteocytes, osteoblasts, osteoclasts, structure of osseous tissue, section of femur bone. Types of muscles – structure and functions.

#### Respiratory system

Review of structure and functions of the respiratory tract, lung unit. Mechanism of respiration, transport of oxygen and carbon dioxide. Regulation of respiration, lung volumes, pulmonary function tests, Cardio – respiratory response to exercise and physiological effects of training.

#### UNIT -V NERVOUS SYSTEM AND REPRODUCTIVE SYSTEM (18 HRS.)

#### **Nervous System**

Review of structure and function of nervous system –central or somatic nervous system - neuron –types, structure, properties, myelin sheath, nerve endings, synapse, neurotransmitters, reflex arc, receptors, brain –cerebrum-cerebral cortex-cerebral lobes-structure and functions, cerebellum, medulla oblongata, - thalamus, hypothalamus. The role of

Hypothalamus in various body functions – obesity, sleep, memory. Autonomic nervous system – sympathetic and parasympathetic – actions, functions of ANS. Blood Brain Barrier, CSF

### **Reproductive System**

10%

Male reproductive system – Structure and functions; Female reproductive system – Structure and functions; Menstrual cycle - definition, duration, changes during menstrual cycle, premenstrual changes, abnormal menstruation; menopause and post-menopausal changes.

#### **BOOK REFERENCES:**

- 1. Best and Taylor, The Living Body, Chapman and Hall ltd., London.
- 2. Chatterji (1999). Human Physiology, Roy Publications
- 3. Gitanjali Chatterjee (1999) Handbook of Food and Nutrition, Rajat Publications.
- 4. Guyton, A.C& Hall J.B (1996): *Textbook of Medical Physiology*, 9th edition W.B Sanders Company, Prism Books (Pvt) Ltd, Bangalore.
- 5. Kamala Krishnaswami (2000) *Nutrition Research-Current Scenerio and future trends*, Oxford and IBH Publishing Co.Pvt.ltd.,
- 6. Lraine M.Summerfield (2000). *Nutrition* , exercise and behaviour an integrated approach to Weight management, Thomson learning,
- 7. Mahtab S. Bamji, Pralhad & Rao Vinodhini Reddy.(1996) *Textbook of Human Nutrition*, Oxford, IBH publishing Co. pvt ltd.,
- 8. Margaret McWilliams (1994). *Experimental Food laboratory Manual*, Surject Publications,
- 9. Mickael J.Gibney,Ian A.Macdonald & Helen M.Roche (2004), *Nutrition and metabolism* Blackwell Publications,.
- 10. Mike Epsy (2001) *Nutrition Eating for good health*, Surbhi Publications, Jaipur,.
- 11. Sembulingam & Prema Sembulingam (2006), Essentials of Medical Physiology, Yaypee Brothers, Medical Publishers (p) Ltd, New Delhi.
- 12. Vijay Kamshik (2000). Food science and nutrition, Mangal Deep Publications. Jaipur

#### **JOURNAL REFERENCES:**

- 1. Journal of Applied Physiology
- 2. Journal of General Physiology
- 3. BMC Physiology
- 4. Physiological Reviews
- 5. International Journal of Basic & Applied Physiology

#### **Open Educational Resources**

- 1.https://journals.physiology.org/doi/full/10.1152/japplphysiol.00711.2 011
- 2. https://www.springer.com/journal/421

- ${\tt 3.https://opentextbooks.concordia.ca/oerbydiscipline/chapter/kinesiolog} \\ \underline{{\tt y-2/}}$
- 4. <a href="https://publons.com/journal/39067/european-journal-of-applied-physiology-and-occupat/">https://publons.com/journal/39067/european-journal-of-applied-physiology-and-occupat/</a>
- 5. https://openstax.org/details/books/anatomy-and-physiology

## COURSE CONTENTS & LECTURE SCHEDULE:

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids
	UNIT -1 BLOC	DD AND EI	NDOCRINE SYST	ЕМ
1.1	Composition and functions of blood	1	Chalk & Talk	Black Board
1.2	Plasma proteins; RBC – Structure and functions; WBC – Classification and functions	3	Chalk & Talk	Black Board
1.3	Bone marrow – functions, Erythropoiesis	2	Lecture	PPT & Videos
1.4	Haemoglobin, Life span, fate, Anaemia, haemolysis, polycythemia	2	Lecture	Black Board
1.5	Coagulation, bleeding time, clotting time, ESR, Blood Groups; Blood indices; Use of blood for investigation and diagnosis of specific disorders	3	Demonstration	Blood coagulation and grouping kits
1.6	Pituitary gland- Structure, functions,	2	Lecture	PPT

	role of hormones, secretion, regulation and disorders			
1.7	Thyroid gland- Structure, functions, role of hormones, secretion, regulation and disorders	2	Lecture	PPT
1.8	Parathyroid gland, pancreas and adrenal glands.	2	Chalk & Talk	Black Board
1.9	Physiology of diabetes and stress hormones	1	Group discussion	Black Board
	UNIT -2	CIRCULA	TORY SYSTEM	
2.1	Anatomical considerations of heart, valves of heart and its action, layers of heart	2	Lecture	Model
2.2	Blood vessel – arteries, arterioles, capillaries, veins, vasovasorum	2	Chalk & Talk	Black Board
2.3	Blood pressure factors and regulation	2	Lecture	PPT
2.5	Cardiac centre – heart rate – regulation	2	Lecture	Smart Board
2.6	Cardiac output, cardiac impulse, functional tissues	2	Lecture	Videos
2.7	Cardiac cycle, ECG, heart sounds	3	Discussion	Videos
2.8	Coronary circulation, Pulmonary circulation, Cerebral circulation, hepatic circulation	3	Chalk & Talk	Black Board

2.9	Renal circulation, cutaneous circulation, and skeletal muscle circulation	2	Chalk & Talk	Black Board
	UNIT -3 DIGES	TIVE AND	EXCRETORY SY	STEM
3.1	Anatomy of digestive system	2	Lecture	Model
3.2	Secretary, digestive, and absorptive functions of the digestive tract	2	Lecture	PPT
3.3	Buccal cavity, stomach, pancreas, liver	1	Chalk & Talk	Black Board
3.4	Small intestine and large intestine	3	Lecture	Smart class
3.5	Role of enzymes and hormones in digestion and absorption of carbohydrate, protein and fat	2	Discussion	Black Board
3.6	Dysfunction of liver, pancreas and gall bladder	2	Lecture	PPT
3.7	Anatomy and functions of kidney and nephrons, juxta glomerular apparatus	3	Lecture	Model
3.8	Formation of urine, micturition	1	Lecture	Smart class
3.9	Role of kidney in maintaining pH of blood. Water, electrolyte	1	Chalk & Talk	Black Board

3.10	Acid base balance, diuretics	1	Lecture	PPT
UNIT	-4 MUSCULO –S	KELETAL	AND RESPIRATO	DRY SYSTEM
4.1	Structure and function of Bone tissue	2	Lecture	Smart class
4.2	Osteocytes, osteoblasts, osteoclasts	2	Chalk & Talk	Black Board
4.3	Structure of osseous tissue	1	Lecture	PPT
4.4	Section of femur bone	1	Lecture	PPT
4.5	Muscles – Structure, types and functions	3	Lecture	Smart class
4.6	Structure and functions of the respiratory tract, lung unit	2	Lecture	Smart class
4.7	Mechanism of respiration	2	Lecture	PPT
4.8	Regulation of respiration, lung volumes	2	Chalk & Talk	Black Board
4.9	Pulmonary function tests, Cardio – respiratory response to exercise and physiological effects of training	3	Discussion	Black Board
UNI	Γ-5 NERVOUS SY	STEM AN	D REPRODUCTIV	VE SYSTEM
5.1	Structure and function of nervous system –central or somatic nervous system	2	Chalk & Talk	Black Board

5.2	Neuron –types, structure, properties, myelin sheath, nerve endings, synapse, neurotransmitters, reflex arc, receptors	3	Lecture	PPT
5.3	Brain – cerebrum-cerebral cortex- cerebral lobes	2	Chalk & Talk	Black Board
5.4	Structure and functions - cerebellum, medulla oblongata, thalamus, hypothalamus	2	Lecture	Smart class
5.5	Role of hypothalamus in various body functions – obesity, sleep, memory	1	Discussion	Videos
5.6	Autonomic nervous system – sympathetic and para sympathetic – actions	2	Lecture	PPT
5.7	Functions of ANS. Blood Brain Barrier, CSF	2	Chalk & Talk	Black Board
5.8	Primary and accessory sex organs and secondary sex characters; Transgender- Definition and Characteristics	2	Lecture	Smart class
5.9	Menstrual cycle	1	Chalk & Talk	Black Board
5.10	Menopause and post-menopausal changes.	1	Discussion	Black Board

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Schola stic Marks C6	CIA Total
Levels	T1	T2	Seminar	Assign ment	ОВТ/РРТ			
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.
K2	4	4	-	-	-	8	1	8
К3	2	2	-	5	-	9	-	9
K4	2	2	-	-	5	9	-	9
K5	2	2	5	-	-	9	-	9
Non Scholastic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

CIA

Scholastic 35

Non Scholastic **5** 

- All the course outcomes are to be assessed in the various CIA components.
- The levels of CIA Assessment based on Revised Bloom's Taxonomy for PG are:

**K2**-Understand, **K3**-Apply, **K4**-Analyse, **K5**-Evaluate

### **EVALUATION PATTERN**

	SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	СЗ	C4	C5	С6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

C1 – Internal Test-1

**C2** – Internal Test-2

C3 - Seminar

C4 – Assignment

C5 - OBT/PPT

C6 - Non - Scholastic

#### **COURSE OUTCOMES**

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSE D
CO 1	Describe the functions of blood and endocrine system	K2	PSO1
CO 2	Illustrate the anatomy and functions of circulatory system	K2	PSO1
со з	Identify the role of digestive and excretory systems	K3	PSO1
CO 4	Analyse the mechanism of musculoskeletal and respiratory systems	K4	PSO1
CO 5	Explain the structure and functions of nervous and reproductive systems	K5	PSO1

# Mapping of COs with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9	PSO 10	PSO	PSO 12	PSO 13	PSO 14	PSO 15
CO1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CO2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
соз	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CO4	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CO5	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1

# Mapping of COs with POs

/	PO1	PO2	РО3	PO4
Э				
Ю1	2	1	1	1
:02	1	1	1	1
:ОЗ	1	1	1	1
<b>:</b> 04	1	1	1	1
:O5	2	1	1	1

Note: Strongly Correlated – 3 "Moderately Correlated – 2

" Weakly Correlated -1

#### **COURSE DESIGNER:**

- 1.Dr.Vasantha Esther Rani
- 3. Mrs.C.Helen

Forwarded By

(Dr. Vasantha Esther Rani)

Maranta E Rain

## II M.Sc., HUMAN NUTRITION & NUTRACEUTICALS

#### SEMESTER -III

## For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSNN	19PG3N11	Functional Foods & Nutraceuticals in Preventive Dietetics	Major Core	6	5

#### **COURSE DESCRIPTION:**

The course elicits the role of various bioactive components in the prevention and treatment of therapeutic conditions.

#### **COURSE OBJECTIVES**

The students will be able to

- Identify the role of functional foods and nutraceuticals in oral, gut and renal health.
- Describe the importance of functional foods in weight management and CVD
- Categorize the functional foods for bone health and diabetes.
- Summarize the effect of functional foods and Nutraceuticals in cancer
- Choose the functional foods for the management of nervous and respiratory disorders.

UNIT-I	FFN IN ORAL / GUT & RENAL HEALTH	[18 HRS]
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#### FFN in Oral health

Dietary strategies for oral health

Functional Foods for promoting oral health – xylitol

Relationship between dental caries and dietary carbohydrates

#### FFN in Gut health

Colonic functional foods -Prebiotic, Probiotic and Symbiotic

Host microbe interaction

Improving the effectiveness of probiotics and prebiotics in optimizing gut health.

Dietary fiber and gut health

#### FFN in Renal health

Role of functional foods in prevention and treatment of renal disorders – urinary infection, glomerulonephritis, nephrosis, acute renal failure.

UNIT-II	FFN FOR OBESITY, CARDIOVASCULAR	[18 HRS]
	DISEASES & DIABETES MELLITUS	

#### FFN in Obesity

Role of hormones in obesity.

Role of functional foods in the management of obesity.

#### FFN in CVD

Role of Functional foods in the management of CVD

#### **FFN** in Diabetes Mellitus

Role of Functional Foods and nutraceuticals in blood sugar support

UNIT-III	FFN FOR BONE AND REPRODUCTIVE HEALTH	[18 HRS]
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#### FFN in Bone Health

Bone growth and factors affecting bone mass

Role of functional foods in bone health - Osteoporosis.

#### FFN in Reproductive Health

Role of FFN in reproductive health

Female infertility-types, role of FFN in managing infertility

Functional foods for menopausal health

#### **FFN** in Cancer

Types of Cancer

Risk factors - Endogenous and exogenous risk factors

Role of functional foods in the prevention of cancer – Symbiotics, Glucosinolates, Phytoesterogens, Dietary fiber and vitamins, Antioxidants.

#### FFN in AIDS

Role of functional foods in the prevention and treatment of AIDS

UNIT-V FFN IN NERVOUS & RESPIRATORY SYSTEM	[18 HRS]
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Brain mechanisms involved in mood
Role of functional foods in Mood and memory
Alzheimers and Parkinsons diseases – Definition,
causes, symptoms symptoms, role of functional foods
Role of functional foods in the prevention and treatment of respiratory disorders.

#### REFERENCES:

#### **BOOK REFERENCES:**

- 1. Chatwick R et al. (2003), *Functional Foods*, Springer, Culinary and Hospitality Industry Publications Services.
- 2. David H Watson, (2001), *Performance Functional Foods*, Culinary and Hospitality Industry Publications.
- 3. Hari Niwas Mishra et.al., *Functional Foods*, New India Publishing Agency, New Delhi.
- 4. Israel Goldberg, (2001), Functional Foods Designer Foods, Pharma Food, Nutraceuticals Culinary and Hospitality Industry Publications.
- 5. Mary K. Schimdl and Theodore P Labuza, (2000), Essential of Functional Foods, Culinary and Hospitality Industry Publications Services.
- 6. Mazza G. (1998), Functional Foods Biochemical Processing Aspects, Culinary and Hospitality Industry Publications
- 7. Robert E C, (2001), Wildman *Handbook of Nutraceuticals and functional Foods*, Culinary and Hospitality Industry Publications.

#### **JOURNAL REFERENCES:**

- 1. Journal of Functional Foods
- 2. Nutraceuticals World Magazine Exclusives, Markts, Health, Jobs, Events
- 3. The American Journal of Clinical Nutrition, Waverfy Press, USA.
- 4. The Indian Journal of Medical Research, The Indian Council of Medical Research, New Delhi.
- 5. International Journal of Food Safety, Nutrition and Public Health

#### **OPEN EDUCATIONAL RESOURCES:**

- 1. http://medcraveonline.com/JNHFE/JNHFE-07-00247.pdf
- 2. <a href="http://ssu.ac.ir/cms/fileadmin/user_upload/Daneshkadaha/dbehda">http://ssu.ac.ir/cms/fileadmin/user_upload/Daneshkadaha/dbehda</a> sht/behdasht_imani/book/Functional_Foods.pdf
- 3. <a href="https://www.researchgate.net/publication/283076818">https://www.researchgate.net/publication/283076818</a> Food is Med icine An introduction to Nutraceuticals
- 4. <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3257668/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3257668/</a>
- 5. <a href="https://ijpsr.com/bft-article/therapeutic-and-preventive-role-of-functional-foods-in-process-of-neurodegeneration/?view=fulltext">https://ijpsr.com/bft-article/therapeutic-and-preventive-role-of-functional-foods-in-process-of-neurodegeneration/?view=fulltext</a>
- 6. <a href="http://www.ijrpc.com/files/17-382.pdf">http://www.ijrpc.com/files/17-382.pdf</a>
- 7. <a href="https://westminsterresearch.westminster.ac.uk/item/q5494/nutriti-">https://westminsterresearch.westminster.ac.uk/item/q5494/nutriti-</a>
  onal-management-in-polycystic-ovary-syndrome-challenges-and-opp
  ortunities

#### COURSE CONTENTS & LECTURE SCHEDULE:

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids
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UNIT	1 FFN IN ORAL / GUT 8	RENAL H	IEALTH [18	HRS]
1.1	FFN in oral health	1	Chalk & Talk	Black Board
1.2	Dietary strategies for oral health	2	Chalk & Talk	LCD
1.3	Functional Foods for promoting oral health – xylitol.	2	Lecture	PPT & White board
1.4	Relationship between dental caries and dietary carbohydrates	1	Lecture	Smart Board
1.5	FFN in gut health	1	Lecture	Black Board
1.6	Colonic functional foods  –Prebiotic, Probiotic and Symbiotic	2	Discussio n	Google classroom
1.7	Host microbe interaction	2	Specimen	Green Board
1.8	Improving the effectiveness of probiotics and prebiotics in optimizing gut health.	2	Discussio n	Black Board
1.9	Dietary fiber and gut health	1	Lecture	LCD
1.10	FFN in renal health	1	Lecture	Smart Board
1.11	Role of functional foods in prevention and treatment of renal disorders – urinary infection, glomerulone phritis, nephrosis, acute renal failure.	3	Lecture	PPT

	FFN FOR OBESITY, CARDIOVA ETES MELLITUS	SCULAR I	DISEASES	[18 HRS]
2.1	FFN in Obesity	1	Lecture	Green Board PPT
2.2	Role of hormones in obesity.	2	Chalk & Talk	Green Board
2.3	Role of functional foods in the management of obesity.	3	Lecture	PPT
2.4	FFN in CVD	3	Chalk & Talk	Video
2.5	Role of Functional foods in the management of CVD	3	Lecture	PPT
2.6	FFN in Diabetes Mellitus	3	Lecture	PPT
2.7	Role of Functional Foods and nutraceuticals in blood sugar support	3	Lecture	PPT
UNIT 3	FFN FOR BONE AND REPRODU	UCTIVE HI	EALTH	[18 HRS]
3.1	FFN in Bone Health	2	Lecture	Green Board Charts
3.2	Bone growth and factors affecting bone mass	2	Chalk & Talk	Green Board
3.3	Role of functional foods in bone health - Osteoporosis.	3	Lecture	Black Board
3.4	FFN in Reproductive Health	2	Lecture	LCD

3.5	Role of FFN in reproductive health	3	Lecture	Smart Board
3.6	Female infertility-types, role of FFN in managing infertility	3	Lecture	PPT
3.7	Functional foods for menopausal health	3	Lecture	Black Board
	UNIT 4 FFN IN CANCE	R & AIDS	[18HR	s]
4.1	Types of Cancer	1	Lecture	Green Board
4.2	Risk factors – Endogenous and exogenous risk factors	2	Chalk & Talk	Black Board
4.3	Role of functional foods in the prevention of cancer – Symbiotics, Glucosinolates,	3	Lecture	LCD
4.4	Role of functional foods in the prevention of cancer – Phytoesterogens, Dietary fiber	3	Lecture	LCD
4.5	Role of functional foods in the prevention of cancer –Vitamins, Antioxidants.	3	Lecture	Black Board
4.6	Role of functional foods in the prevention of AIDS	3	Lecture	PPT
4.7	Role of functional foods in the treatment of AIDS	3	Lecture	PPT
UN	IT 5 FFN IN NERVOUS & RESP	IRATORY :	SYSTEM [18	BHRS]

5.1	Brain mechanisms involved in mood	2	Lecture	PPT
5.2	Role of functional foods in Mood and memory	4	Lecture	PPT
5.3	Alzheimers- Definition, causes, symptoms,role of functional foods in treating Alzheimers	4	Lecture	PPT
5.4	Parkinsons disease-Definition, causes, symptoms,role of functional foods in treating Parkinsons diseases	4	Lecture	PPT
5.5	Role of functional foods in the prevention and treatment of respiratory disorders.	4	Lecture	PPT

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Schola stic Marks C6	CIA Total
Levels	Т1	Т2	Seminar	Assign ment	ОВТ/РРТ			
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.
K2	4	4	ı	1	ı	8	ı	8
К3	2	2	-	5	-	9	_	9
K4	2	2	-	-	5	9	-	9

K5	2	2	5	-	-	9	-	9
Non Scholastic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

CIA								
Scholastic	35							
Non Scholastic	5							
	40							

- ✓ All the course outcomes are to be assessed in the various CIA components.
- ✓ The levels of CIA Assessment based on Revised Bloom's

  Taxonomy for PG are:

**K2**-Understand, **K3**-Apply, **K4**-Analyse, **K5**-Evaluate

### **EVALUATION PATTERN**

		SCHOL	NON - SCHO LASTI C	MA	RKS		
C1	C2	СЗ	C6	CIA	ESE		
10	10	5	5	5	5	40	60

C1 – Internal Test-1

**C2** – Internal Test-2

C3 - Seminar

**C4** – Assignment

C5 - OBT/PPT

**C6** – Non – Scholastic

#### **COURSE OUTCOMES**

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSE D
CO 1	Explain the role of functional foods and nutraceuticals in oral, gut and renal health.	K2	PSO2 & PSO4

CO 2	Describe the importance of functional foods in weight management and CVD	K2	PSO2 & PSO4
со з	Identify the functional foods for bone health and diabetes	K3	PSO2 & PSO4
CO 4	Analyze the effect of functional foods and Nutraceuticals in cancer	K4	PSO2 & PSO4
CO 5	Choose the functional foods for the management of nervous and respiratory disorders	<b>K</b> 5	PSO2 & PSO4

## Mapping of COs with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8		PSO 10		PSO 12	PSO 13	PSO 14	PSO 15
CO1	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2
CO2	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2
соз	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2
CO4	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2
CO5	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2

### Mapping of COs with POs

CO/ PSO	PO1	PO2	РО3	PO4
CO1	3	3	2	1
CO2	3	3	2	1
соз	3	3	2	1
CO4	3	3	2	1
CO5	3	3	2	1

Note: Strongly Correlated – 3

" Moderately Correlated – 2

Weakly Correlated -1

#### **COURSE DESIGNER:**

1. Dr. Vasantha Esther Rani

2. Ms. D.Mouna

Forwarded By

Maranta E Rain

(Dr. Vasantha Esther Rani)

### II M.Sc., HUMAN NUTRITION & NUTRACEUTICALS

#### **SEMESTER -III**

### For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSNN	19PG3N11	Functional Foods & Nutraceuticals in Preventive Dietetics	Major Core	6	5

#### **COURSE DESCRIPTION:**

The course elicits the role of various bioactive components in the prevention and treatment of therapeutic conditions.

#### **COURSE OBJECTIVES**

The students will be able to

- Identify the role of functional foods and nutraceuticals in oral, gut and renal health.
- Describe the importance of functional foods in weight management and CVD
- Categorize the functional foods for bone health and diabetes.
- Summarize the effect of functional foods and Nutraceuticals in cancer
- Choose the functional foods for the management of nervous and respiratory disorders.

UNIT-I	FFN IN ORAL / GUT & RENAL HEALTH	[18 HRS]
UNIT-I	FFN IN ORAL / GUT & RENAL HEALTH	[18 HRS]

#### FFN in Oral health

Dietary strategies for oral health

Functional Foods for promoting oral health – xylitol Relationship between dental caries and dietary carbohydrates

#### FFN in Gut health

Colonic functional foods -Prebiotic, Probiotic and Symbiotic

Host microbe interaction

Improving the effectiveness of probiotics and prebiotics in optimizing gut health.

Dietary fiber and gut health

#### FFN in Renal health

Role of functional foods in prevention and treatment of renal disorders – urinary infection, glomerulonephritis, nephrosis, acute renal failure.

UNIT-II	FFN FOR OBESITY, CARDIOVASCULAR	[18 HRS]
	DISEASES & DIABETES MELLITUS	

#### FFN in Obesity

Role of hormones in obesity.

Role of functional foods in the management of obesity.

#### FFN in CVD

Role of Functional foods in the management of CVD

#### FFN in Diabetes Mellitus

Role of Functional Foods and nutraceuticals in blood sugar support

UNIT-III FFN FOR BONE AND REPRODUCTIVE HEALTH [18	HRS]
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#### FFN in Bone Health

Bone growth and factors affecting bone mass

Role of functional foods in bone health - Osteoporosis.

#### FFN in Reproductive Health

Role of FFN in reproductive health

Female infertility-types, role of FFN in managing infertility

Functional foods for menopausal health

#### FFN IN PCOS

Etiology/Pre-disposing factors

Symptoms of PCOS

Role of Functional foods in the management of PCOS

UNIT-IV	FFN IN CANCER & AIDS	[18 HRS]
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#### FFN in Cancer

Types of Cancer

Risk factors – Endogenous and exogenous risk factors

Role of functional foods in the prevention of cancer – Symbiotics, Glucosinolates, Phytoesterogens, Dietary fiber and vitamins, Antioxidants.

#### FFN in AIDS

Role of functional foods in the prevention and treatment of AIDS

TIT-V FFN IN NERVOUS & RESI	IRATORY SYSTEM [18 HRS]
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Brain mechanisms involved in mood

Role of functional foods in Mood and memory

Alzheimers and Parkinsons diseases – Definition,

causes, symptoms symptoms, role of functional foods

Role of functional foods in the prevention and treatment of respiratory disorders.

#### REFERENCES:

#### **BOOK REFERENCES**

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- 2. David H Watson, (2001), *Performance Functional Foods*, Culinary and Hospitality Industry Publications.

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- 5. <a href="https://ijpsr.com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventive-role-of-function-com/bft-article/therapeutic-and-preventi
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  <a href="mailto:ties">ties</a>

### COURSE CONTENTS & LECTURE SCHEDULE:

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids			
UNIT	1 FFN IN ORAL / GUT & RENAL HEALTH [18 HRS]						
1.1	FFN in oral health	1	Chalk & Talk	Black Board			
1.2	Dietary strategies for oral health	2	Chalk & Talk	LCD			
1.3	Functional Foods for promoting oral health – xylitol.	2	Lecture	PPT & White board			
1.4	Relationship between dental caries and dietary carbohydrates	1	Lecture	Smart Board			
1.5	FFN in gut health	1	Lecture	Black Board			
1.6	Colonic functional foods  –Prebiotic, Probiotic and Symbiotic	2	Discussio n	Google classroom			
1.7	Host microbe interaction	2	Specimen	Green Board			
1.8	Improving the effectiveness of probiotics and prebiotics in optimizing gut health.	2	Discussio n	Black Board			

in the second of							
Role of functional foods in prevention and treatment of renal disorders – urinary infection, glomerulonephritis, nephrosis, acute renal failure.  UNIT 2 FFN FOR OBESITY, CARDIOVASCULAR DISEASES IN THE PPT  2.1 FFN in Obesity  1 Lecture Green Board PPT  2.2 Role of hormones in obesity.  2 Chalk & Green Board PPT  2.3 Role of functional foods in the management of obesity.  3 Lecture PPT  2.4 FFN in CVD  3 Chalk & Talk Video  Talk  2.5 Role of Functional foods in the management of CVD  3 Lecture PPT  2.6 FFN in Diabetes Mellitus  3 Lecture PPT  Role of Functional Foods and nutraceuticals in blood sugar  3 Lecture PPT	1.9	Dietary fiber and gut health	1	Lecture	LCD		
prevention and treatment of renal disorders – urinary infection, glomerulonephritis, nephrosis, acute renal failure.  UNIT 2 FFN FOR OBESITY, CARDIOVASCULAR DISEASES DIABETES MELLITUS  2.1 FFN in Obesity  1 Lecture Green Board PPT  2.2 Role of hormones in obesity.  2 Chalk & Green Board PPT  2.3 Role of functional foods in the management of obesity.  3 Lecture PPT  2.4 FFN in CVD  3 Chalk & Talk  Video  2.5 Role of Functional foods in the management of CVD  3 Lecture PPT  2.6 FFN in Diabetes Mellitus  3 Lecture PPT  Role of Functional Foods and nutraceuticals in blood sugar  3 Lecture PPT	1.10	FFN in renal health	1	Lecture			
2.1 FFN in Obesity  2.2 Role of hormones in obesity.  2.3 Role of functional foods in the management of obesity.  2.4 FFN in CVD  2.5 Role of Functional foods in the management of CVD  2.6 FFN in Diabetes Mellitus  3 Lecture  PPT  2.7 Role of Functional Foods and nutraceuticals in blood sugar  3 Lecture  PPT  2.7 PPT	1.11	prevention and treatment of renal disorders – urinary infection,glomerulonephritis,	3	Lecture	PPT		
FFN in Obesity  2.2 Role of hormones in obesity.  2 Chalk & Green Board PPT  2.3 Role of functional foods in the management of obesity.  3 Lecture PPT  2.4 FFN in CVD  3 Chalk & Talk Video  2.5 Role of Functional foods in the management of CVD  3 Lecture PPT  2.6 FFN in Diabetes Mellitus  3 Lecture PPT  Role of Functional Foods and nutraceuticals in blood sugar  3 Lecture PPT	UNIT 2 FFN FOR OBESITY, CARDIOVASCULAR DISEASES [18 HRS] & DIABETES MELLITUS						
2.2 Role of hormones in obesity.  2 Talk Board  2.3 Role of functional foods in the management of obesity.  3 Lecture PPT  2.4 FFN in CVD  3 Chalk & Talk Video  7 Talk Video  7 Talk Board  2.5 Role of Functional foods in the management of CVD  3 Lecture PPT  7 Role of Functional Foods and nutraceuticals in blood sugar  3 Lecture PPT	2.1	FFN in Obesity	1	Lecture	Board		
2.3 management of obesity.  2.4 FFN in CVD  3 Chalk & Video Talk  Video  2.5 Role of Functional foods in the management of CVD  3 Lecture  PPT  2.6 FFN in Diabetes Mellitus  3 Lecture  PPT  Role of Functional Foods and nutraceuticals in blood sugar  3 Lecture  PPT	2.2	Role of hormones in obesity.	2				
2.4 FFN in CVD  2.5 Role of Functional foods in the management of CVD  2.6 FFN in Diabetes Mellitus  3 Lecture  PPT  Role of Functional Foods and nutraceuticals in blood sugar  3 Lecture  PPT	2.3		3	Lecture	PPT		
2.5 management of CVD  2.6 FFN in Diabetes Mellitus  3 Lecture PPT  Role of Functional Foods and nutraceuticals in blood sugar  3 Lecture PPT  Lecture PPT	2.4	FFN in CVD	3		Video		
Role of Functional Foods and nutraceuticals in blood sugar 3 Lecture PPT	2.5		3	Lecture	PPT		
2.7 nutraceuticals in blood sugar 3 Lecture PPT	2.6	FFN in Diabetes Mellitus	3	Lecture	PPT		
	2.7	nutraceuticals in blood sugar	3	Lecture	PPT		
UNIT 3 FFN FOR BONE AND REPRODUCTIVE HEALTH [18 HRS]							

]

3.1	FFN in Bone Health	2	Lecture	Green Board Charts
3.2	Bone growth and factors affecting bone mass	2	Chalk & Talk	Green Board
3.3	Role of functional foods in bone health - Osteoporosis.	3	Lecture	Black Board
3.4	FFN in Reproductive Health	2	Lecture	LCD
3.5	Role of FFN in reproductive health	3	Lecture	Smart Board
3.6	Female infertility-types, role of FFN in managing infertility	3	Lecture	PPT
3.7	Functional foods for menopausal health	3	Lecture	Black Board
	UNIT 4 FFN IN CANCE	R & AIDS	[18HR	s]
4.1	Types of Cancer	1	Lecture	Green Board
4.2	Risk factors – Endogenous and exogenous risk factors	2	Chalk & Talk	Black Board
4.3	Role of functional foods in the prevention of cancer – Symbiotics, Glucosinolates,	3	Lecture	LCD
4.4	Role of functional foods in the prevention of cancer – Phytoesterogens, Dietary fiber	3	Lecture	LCD

4.5	Role of functional foods in the prevention of cancer –Vitamins, Antioxidants.	Black Board		
4.6	Role of functional foods in the prevention of AIDS	3	Lecture	PPT
4.7	Role of functional foods in the treatment of AIDS	3	PPT	
UN	IT 5 FFN IN NERVOUS & RESP	IRATORY	SYSTEM [1	8HRS]
5.1	Brain mechanisms involved in mood	2	Lecture	PPT
5.2	Role of functional foods in Mood and memory	4	Lecture	PPT
5.3	Alzheimers- Definition, causes, symptoms,role of functional foods in treating Alzheimers	4	Lecture	PPT
5.4	Parkinsons disease-Definition, causes, symptoms,role of functional foods in treating Parkinsons diseases	4	Lecture	PPT
5.5	Role of functional foods in the prevention and treatment of respiratory disorders.	4	Lecture	PPT

	C1	C2	С3	C4	C5	Total Scholastic Marks	Non Schola stic Marks C6	CIA Total
Levels	T1	Т2	Seminar	Assign ment	ОВТ/РРТ			
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.
K2	4	4	ı	-	-	8	1	8
К3	2	2	-	5	-	9	-	9
K4	2	2	-	-	5	9	-	9
K5	2	2	5	-	-	9	-	9
Non Scholastic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

CIA	
Scholastic	35
Non Scholastic	5
	40

All the course outcomes are to be assessed in the various CIA components.

# ✓ The levels of CIA Assessment based on Revised Bloom's Taxonomy for PG are:

**K2**-Understand, **K3**-Apply, **K4**-Analyse, **K5**-Evaluate

### **EVALUATION PATTERN**

		SCHOL	ASTIC		NON - SCHO LASTI C	MA	RKS
C1	C2	СЗ	C4	C5	C6	CIA	ESE
10	10	5	5	5	5	40	60

C1 – Internal Test-1

**C2** – Internal Test-2

C3 - Seminar

**C4** – Assignment

C5 - OBT/PPT

C6 - Non - Scholastic

#### **COURSE OUTCOMES**

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSE D
CO 1	Explain the role of functional foods and nutraceuticals in oral, gut and renal health.	K2	PSO2 & PSO4

CO 2	Describe the importance of functional foods in weight management and CVD	K2	PSO2 & PSO4
со з	Identify the functional foods for bone health and diabetes	К3	PSO2 & PSO4
CO 4	Analyze the effect of functional foods and Nutraceuticals in cancer	K4	PSO2 & PSO4
CO 5	Choose the functional foods for the management of nervous and respiratory disorders	K5	PSO2 & PSO4

## Mapping of COs with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9	PSO 10	PSO 11	PSO 12	PSO 13	PSO 14	PSO 15
CO1	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2
CO2	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2
соз	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2
CO4	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2
CO5	1	3	2	3	1	2	1	1	2	1	1	1	1	1	2

### Mapping of COs with POs

CO/	PO1	PO2	PO3	PO4
PSO				
CO1	3	3	2	1
CO2	3	3	2	1
соз	3	3	2	1
CO4	3	3	2	1
CO5	3	3	2	1

Note: Strongly Correlated – 3

" Moderately Correlated – 2

Weakly Correlated -1

#### **COURSE DESIGNER:**

1. Dr. Vasantha Esther Rani

2. Ms. D.Mouna

**Forwarded By** 

Marante E Rain

(Dr. Vasantha Esther Rani)

# II M.Sc., HUMAN NUTRITION AND NUTRACEUTICALS SEMESTER -III

### For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSNN	19PG3N1 2	Community Nutrition	PG Core	6	5

#### **COURSE DESCRIPTION**

The course imparts the knowledge on various national nutritional problems and its implications, nutrition awareness among various sections of the population.

#### **COURSE OBJECTIVES**

- To understand national nutritional problems and their implications.
- To become familiar with the national and international contributions towards improvement of nutrition in India.
- To impart skills in the planning and execution of nutrition awareness programmes among various sections of the population.

#### UNITS

## UNIT -I NUTRITION AND NATIONAL DEVELOPMENT, NATIONAL NUTRITIONAL PROBLEMS (18 HRS.)

Relation of nutrition to national development in terms of socio-economic, industrial and agricultural development.

National nutritional problems – prevalence, causes, consequences and prevention of PEM, vitamin A deficiency, anaemia, iodine deficiency, and fluorosis

## UNIT -II MALNUTRITION, STRATEGIES TO OVERCOME MALNUTRITION (18 HRS.)

Malnutrition - Definition, etiology and consequences

Strategies to overcome malnutrition: Food based strategies – Dietary diversification, Horticulture intervention, Food fortification, Nutrition & Health education, Nutrition based strategies – Supplementation, Concepts of Selecting / implementing and intervention strategy.

#### UNIT-III NUTRITION INTERVENTION PROGRAMMES - NATIONAL,

INTERNATIONAL (18 HRS.)

Genesis, objectives and operation of nutrition intervention programmes in India – School lunch programme, CMNMP, ICDS organized by government for vulnerable sections of the population.

National organizations – ICMR, CSWB, SSWB, NIN, NNMB, CFTRI, DFRL, NIPCCD.

International organization: FAO, WHO, UNICEF, KGNMT, CARE.

## UNIT-IV NATIONAL NUTRITION POLICY, NUTRITIONAL SURVEILLANCE (18 HRS.)

National Nutrition policy – aim, nutrition policy instruments and its implementation; Health indicators.

Nutrition Surveillance System- definition, objectives, uses, infrastructure, Health indicators for successful nutrition surveillance programme.

## UNIT -V NUTRITION EDUCATION, ASSESSMENT OF NUTRITIONAL STATUS OF COMMUNITY

Nutrition Education - Definition, importance, Process of nutrition education and communication - components of communication process, phases of nutrition education - conceptualization, formulation, implementation and evaluation, Methods of Nutrition education - face to face, mass media, traditional media, and criteria for selecting methods.

Assessment of nutritional status – Direct and indirect methods of assessment- Anthropometric measurements, Biochemical assessment, Clinical assessment, Dietary assessment

#### REFERENCES:

- 1. Davidson, S.S. Passmore, P. Brack, J.F. (1993) .*Human Nutrition and Dietetics*, *9th Edition*, F&S, Lingstone Ltd., Edinburgh and London.
- 2. Gupta J.P. & Indra Murali (1989) *National Review of Immunisation Programme in India*, National Institute of Health and Family Welfare, New Delhi.
- 3. Jose M. Conon (1988). Food Toxicology Part A Principles and Concepts, Marceldebber, Inc., New York.
- 4. King F.S. & Burgess, A. (1992). *Nutrition for Developing Countries, 2nd edition*, Oxford, Oxford University Press, London.
- 5. Rajammal P. Devadas (1980) *Nutrition and Nutritional Development*, Saradalaya Press, Coimbatore, Tamil Nadu.
- 6. Sach Dev. H.P.S. & Choudhury, P. (1994). *Nutrition in Children Developing Country Concerns*, Cambridge Press, New Delhi.
- 7. Shanthi Ghosh, (1992) . The Feeding and care of Infants and Young Children, Voluntary Health Association of India, New Delhi.

- 8. Shanthi Ghossh (1997) *Nutrition and Child Care, A Practical Guide*, Jay Pee Brothers, Medical Publishers (P) Ltd., New Delhi.
- 9. UNICEF (1990). Children and Women in India, Situation Analysis, New Delhi.

#### **JOURNAL REFERENCES:**

- 1. Journal of Community Health.
- 2. Journals of Nutrition Education and Behavior.
- 3. Asia Pacific Journal of Public Health.
- 4. Indian Journal of Nutrition and Dietetics
- 5. Journal of Nutrition and Health Sciences

#### **WEB REFERENCES:**

- 1 www.nutritionsociety.org
- 2. www.who.int
- 3. www.nin.res.in
- 4. www.publichealth.org
- 5. www.fda.gov

#### COURSE CONTENTS & LECTURE SCHEDULE:

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids
UNI	T -1 NUTRITION AND NA NUTRITIONAL PROBLE		DEVELOPMENT,	NATIONAL
1.1	Relation of nutrition to national development in terms of socio-economic, industrial and agricultural development	2	Chalk & Talk	Black Board
1.2	Prevalence, causes, consequences and prevention of PEM	4	Lecture	PPT
1.3	Prevalence, causes, consequences and prevention of vitamin A deficiency	4	Lecture	PPT
1.4	Prevalence, causes,	4	Lecture	Videos

	consequences and prevention of anaemia			
1.5	Prevalence, causes, consequences and prevention of iodine deficiency	2	Chalk & Talk	Black Board
1.6	Prevalence, causes, consequences and prevention of iodine deficiency of fluorosis	2	Lecture	PPT
UNIT -2	MALNUTRITION, STRAT	regies to	O OVERCOME M	ALNUTRITION
2.1	Malnutrition Definition, etiology and consequences	3	Chalk & Talk	Black Board
2.2	Food based strategies to overcome malnutrition		Chalk & Talk	Black Board
2.3	Dietary diversification, Horticulture intervention	3	Lecture	PPT
2.4	Food fortification, Nutrition & Health education	4	Lecture	Smart Board
2.5	Nutrition based strategies – Supplementation	3	Lecture	Videos
2.6	Concepts of Selecting / implementing and intervention strategy	3	Case study Discussion	Videos
UNIT	-3 NUTRITION INTER	VENTION	PROGRAMMES -	NATIONAL,
	INTE	ERNATION	AL	
3.1	Genesis, objectives and operation School lunch programme	2	Chalk & Talk	Black Board
3.2	Genesis, objectives and operation CMNMP	2	Chalk & Talk	Black Board

3.3	Genesis, objectives and operation ICDS	3	Case study Chalk & Talk	Black Board	
3.4	ICMR, NIN, CSWB, SSWB	3	Lecture	Smart class	
3.5	NNMB, CFTRI, DFRL, NIPCCD	2	Discussion	Black Board	
3.6	FAO, WHO	2	Lecture	PPT	
3.7	UNICEF, KGNMT, CARE	4	Lecture	PPT	
UNIT -4	NATIONAL NUTRITION	POLICY, N	IUTRITIONAL SU	RVEILLANCE	
4.1	National Nutrition policy	4	Chalk & Talk	Black Board	
4.2	Nutrition policy instruments and its implementation	5	Chalk & Talk	Black Board	
4.3	Nutrition Surveillance System- definition, objectives, uses, infrastructure	5	Lecture	PPT	
4.4	Health indicators for successful nutrition surveillance programme	4	Discussion	Black Board	
UNIT -5	NUTRITION EDUCATIO	N, ASSESS	MENT OF NUTR	ITIONAL	
STATUS	OF COMMUNITY				
5.1	Nutrition Education - Definition, importance	2	Chalk & Talk	Black Board	
5.2	Process and components of nutrition education and communication	4	Lecture	PPT	
5.3	Phases of nutrition education – conceptualization, formulation, implementation and evaluation	4	Chalk & Talk	Black Board	

5.4	Methods of Nutrition education – face to face, mass media, traditional media, and criteria for selecting methods	4	Discussion	Videos
5.5	Assessment of nutritional status-Direct methods	2	Lecture	PPT
5.6	Assessment of nutritional status- Indirect methods	2	Lecture	PPT

	C1	C2	C3	C4	C5	Total Scholasti c Marks	Non Scholasti c Marks C6	CIA Total
Levels	T1	T2	Semina r	Assignme nt	OBT/PP T			
	10 Mks	10 Mks	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks
K2	4	4	ı	1	1	8	ı	8
К3	2	2	-	5		9	-	9
K4	2	2	-	-	5	9	-	9
K5	2	2	5	-	-	9	-	9
Non Scholasti c	-	-	-	-	-		5	5
Total	10	10	_ 5	5	5	35	5	40

CIA

Scholastic 35

Non Scholastic **5** 

40

All the course outcomes are to be assessed in the various CIA components.

• The levels of CIA Assessment based on Revised Bloom's Taxonomy for PG are:

**K2**-Understand, **K3**-Apply, **K4**-Analyse, **K5**-Evaluate

### **EVALUATION PATTERN**

SCHOLASTIC				NON - SCHOLASTIC	MARKS			
C1	C2	СЗ	C4	C5	С6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

C1 – Internal Test-1

**C2** – Internal Test-2

C3 - Seminar

**C4** – Assignment

C5 - OBT/PPT

C6 - Non - Scholastic

#### **COURSE OUTCOMES**

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSE D
CO 1	Associate Nutrition and National development	K2	PSO6
CO 2	Describe the strategies to overcome malnutrition	K2	PSO6
со з	Identify the Nutrition intervention programs and organization	К3	PSO6
CO 4	Analyze the National nutrition policy and Nutrition surveillance system	K4	PSO6
CO 5	Explain Nutrition assessment and Nutrition education	K5	PSO6

## Mapping of COs with PSOs

CO / PSO	PS O	PS O 2	PS O	PS O 4	PS O 5	PS O 6	PS O 7	PS O 8	PS O 9	PS O 10	PS 0	PS O 12	PS O 13	PS 0	PS 0 15
CO1	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
CO2	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
соз	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
CO4	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
CO5	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
C06	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1

### Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	3	2	111
CO2	3	3	2	111
соз	3	3	2	2
1CO4	3	3	111	2
CO5	3	3	3	111
C06	3	3	3	2

Note: Strongly Correlated – 3

#### **COURSE DESIGNER:**

1. Mrs. C.Helen

Forwarded By

(Dr. Vasantha Esther Rani)

Maranten & Rain

[&]quot; Moderately Correlated – 2

[&]quot; Weakly Correlated -1

# II M.Sc., HUMAN NUTRITION AND NUTRACEUTICALS SEMESTER -III

### For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSNN	19PG3N1 2	Community Nutrition	PG Core	6	5

#### COURSE DESCRIPTION

The course imparts the knowledge on various national nutritional problems and its implications, nutrition awareness among various sections of the population.

#### **COURSE OBJECTIVES**

- To understand national nutritional problems and their implications.
- To become familiar with the national and international contributions towards improvement of nutrition in India.
- To impart skills in the planning and execution of nutrition awareness programmes among various sections of the population.

#### UNITS

## UNIT -I NUTRITION AND NATIONAL DEVELOPMENT, NATIONAL NUTRITIONAL PROBLEMS (18 HRS.)

Relation of nutrition to national development in terms of socio-economic, industrial and agricultural development.

National nutritional problems – prevalence, causes, consequences and prevention of PEM, vitamin A deficiency, anaemia, iodine deficiency, and fluorosis

## UNIT -II MALNUTRITION, STRATEGIES TO OVERCOME MALNUTRITION (18 HRS.)

Malnutrition - Definition, etiology and consequences

Strategies to overcome malnutrition: Food based strategies – Dietary diversification, Horticulture intervention, Food fortification, Nutrition & Health education, Nutrition based strategies – Supplementation, Concepts of Selecting / implementing and intervention 50/100/100.

UNIT-III NUTRITION INTERVENTION PROGRAMMES - NATIONAL,

INTERNATIONAL (18 HRS.)

Genesis, objectives and operation of nutrition intervention programmes in India – School lunch programme, CMNMP, ICDS, National programmes for prevention of Anaemia, Vitamin A deficiency, Iodine Deficiency Disorders.

National organizations – ICMR, CSWB, SSWB, NIN, NNMB, CFTRI, DFRL, NIPCCD.

International organization: FAO, WHO, UNICEF, KGNMT, CARE.

## UNIT-IV NATIONAL NUTRITION POLICY, NUTRITIONAL SURVEILLANCE (18 HRS.)

National Nutrition policy – aim, nutrition policy instruments and its implementation; Health indicators.

Nutrition Surveillance System- definition, objectives, uses, infrastructure, Health indicators for successful nutrition surveillance programme.

## UNIT -V NUTRITION EDUCATION, ASSESSMENT OF NUTRITIONAL STATUS OF COMMUNITY

Nutrition Education - Definition, importance, Process of nutrition education and communication - components of communication process, phases of nutrition education - conceptualization, formulation, implementation and evaluation, Methods of Nutrition education - face to face, mass media, traditional media, and criteria for selecting methods.

Assessment of nutritional status – Direct methods - Anthropometric, Biochemical & Biophysical, Clinical assessment Indirect methods - Dietary assessment and Vital Health Statistics

#### **REFERENCES:**

- 1. Davidson, S.S. Passmore, P. Brack, J.F. (1993) . *Human Nutrition and Dietetics*, 9th Edition, F&S, Lingstone Ltd., Edinburgh and London.
- 2.Gupta J.P. & Indra Murali (1989) *National Review of Immunisation Programme in India*, National Institute of Health and Family Welfare, New Delhi.
- 10. Jose M. Conon (1988). Food Toxicology Part A Principles and Concepts, Marceldebber, Inc., New York.
- 11. King F.S. & Burgess, A. (1992). *Nutrition for Developing Countries, 2nd edition*, Oxford, Oxford University Press, London.
- 12. Rajammal P. Devadas (1980) *Nutrition and Nutritional Development*, Saradalaya Press, Coimbatore, Tamil Nadu.
- 13. Sach Dev. H.P.S. & Choudhury, P. (1994). *Nutrition in Children Developing Country Concerns*, Cambridge Press, New Delhi.
- 14. Shanthi Ghosh, (1992) . The Feeding and care of Infants and Young j|Children, Voluntary Health Association of India, New Delhi.
- 15. Shanthi Ghossh (1997) *Nutrition and Child Care, A Practical Guide*, Jay Pee Brothers, Medical Publishers (P) Ltd., New Delhi.

16. UNICEF (1990). Children and Women in India, Situation Analysis, New Delhi.

#### **JOURNAL REFERENCES:**

- 6. Journal of Community Health.
- 7. Journals of Nutrition Education and Behavior.
- 8. Asia Pacific Journal of Public Health.
- 9. Indian Journal of Nutrition and Dietetics
- 10. Journal of Nutrition and Health Sciences

#### **WEB REFERENCES:**

- 6. www.nutritionsociety.org
- 7. www.who.int
- 8. www.nin.res.in
- 9. www.publichealth.org
- 10. www.fda.gov

#### **COURSE CONTENTS & LECTURE SCHEDULE:**

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids						
UNIT -1 NUTRITION AND NATIONAL DEVELOPMENT, NATIONAL NUTRITIONAL PROBLEMS										
	NUIRIIIONAL PROBLE	'IATO								
1.1	Relation of nutrition to national development in terms of socio-economic, industrial and agricultural development	2	Chalk & Talk	Black Board						
1.2	Prevalence, causes, consequences and prevention of PEM	4	Lecture	PPT						
1.3	Prevalence, causes, consequences and prevention of vitamin A deficiency	4	Lecture	PPT						

1.4	Prevalence, causes, consequences and prevention of anaemia	4	Lecture	Videos				
1.5	Prevalence, causes, consequences and prevention of iodine deficiency	2	Chalk & Talk	Black Board				
1.6	Prevalence, causes, consequences and prevention of iodine deficiency of fluorosis	2	Lecture	PPT				
UNIT -2	MALNUTRITION, STRA	regies to	O OVERCOME M	ALNUTRITION				
2.1	Malnutrition Definition, etiology and consequences	3	Chalk & Talk	Black Board				
2.2	Food based strategies to overcome malnutrition	2	Chalk & Talk	Black Board				
2.3	Dietary diversification, Horticulture intervention	3	Lecture	PPT				
2.4	Food fortification, Nutrition & Health education	4	Lecture	Smart Board				
2.5	Nutrition based strategies – Supplementation	3	Lecture	Videos				
2.6	Concepts of Selecting / implementing and intervention strategy	3	Case study Discussion	Videos				
UNIT	-3 NUTRITION INTER	VENTION	PROGRAMMES -	NATIONAL,				
INTERNATIONAL								
3.1	Genesis, objectives and operation School lunch programme	2	Chalk & Talk	Black Board				
3.2	Genesis, objectives and	2	Chalk & Talk	Black Board				

	operation CMNMP								
3.3	Genesis, objectives and operation ICDS	3	Case study Chalk & Talk	Black Board					
3.4	ICMR, NIN, CSWB, SSWB	3	Lecture	Smart class					
3.5	NNMB, CFTRI, DFRL, NIPCCD	2	Discussion	Black Board					
3.6	FAO, WHO	2	Lecture	PPT					
3.7	UNICEF, KGNMT, CARE	4	Lecture	PPT					
UNIT -4	NATIONAL NUTRITION	POLICY, N	UTRITIONAL SU	RVEILLANCE					
4.1	National Nutrition policy	4	Chalk & Talk	Black Board					
4.2	Nutrition policy instruments and its implementation	5	Chalk & Talk	Black Board					
4.3	Nutrition Surveillance System- definition, objectives, uses, infrastructure	5	Lecture	PPT					
4.4	Health indicators for successful nutrition surveillance programme	4	Discussion	Black Board					
	UNIT -5 NUTRITION EDUCATION, ASSESSMENT OF NUTRITIONAL STATUS OF COMMUNITY								
5.1	Nutrition Education - Definition, importance	2	Chalk & Talk	Black Board					
5.2	Process and components of nutrition education and communication	4	Lecture	PPT					
5.3	Phases of nutrition education – conceptualization, formulation, implementation and	4	Chalk & Talk	Black Board					

	evaluation			
5.4	Methods of Nutrition education – face to face, mass media, traditional media, and criteria for selecting methods	4	Discussion	Videos
5.5	Assessment of nutritional status-Direct methods	2	Lecture	PPT
5.6	Assessment of nutritional status- Indirect methods	2	Lecture	PPT

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Schola stic Marks C6	CIA Total
Levels	T1	T2	Seminar	Assign ment	ОВТ/РРТ			
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.
K2	4	4	-	-	-	8	-	8
К3	2	2	-	5	-	9	-	9
K4	2	2	-	-	5	9	-	9
K5	2	2	5	-	-	9	-	9
Non Scholastic	-	-	-	-	-		5	5
Total	10	10	5	5	5	35	5	40

CIA

Scholastic 35

Non Scholastic **5** 

40

- All the course outcomes are to be assessed in the various CIA components.
- The levels of CIA Assessment based on Revised Bloom's Taxonomy for PG are:

**K2**-Understand, **K3**-Apply, **K4**-Analyse, **K5**-Evaluate

### **EVALUATION PATTERN**

	sc	HOLAS	TIC		NON - SCHOLASTIC		MARK	S
C1	C2	СЗ	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

C1 – Internal Test-1

**C2** – Internal Test-2

C3 - Seminar

C4 – Assignment

C5 - OBT/PPT

C6 - Non - Scholastic

# COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSE D
CO 1	Associate Nutrition and National development	K2	PSO6
CO 2	Describe the strategies to overcome malnutrition	K2	PSO6
со з	Identify the Nutrition intervention programs and organization	КЗ	PSO6
CO 4	Analyze the National nutrition policy and Nutrition surveillance system	K4	PSO6
CO 5	Explain Nutrition assessment and Nutrition education	K5	PSO6

# Mapping of COs with PSOs

CO / PSO	PS O 1	PS O 2	PS O 3	PS O 4	PS O 5	PS O 6	PS O 7	PS O 8	PS O 9	PS O 10	PS O 11	PS O 12	PS O 13	PS O 14	PS O 15
CO1	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
CO2	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
соз	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
CO4	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
CO5	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1
C06	1	1	2	1	1	3	1	1	1	1	1	1	1	1	1

# Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	3	2	111
CO2	3	3	2	111
соз	3	3	2	2
1CO4	3	3	111	2
CO5	3	3	3	111
C06	3	3	3	2

Note: Strongly Correlated – 3

**COURSE DESIGNER:** 

1. Mrs. C.Helen

Forwarded By

(Dr. Vasantha Esther Rani)

Marantez E Rain

[&]quot; Moderately Correlated – 2

[&]quot; Weakly Correlated -1

10%

# II M.Sc., HUMAN NUTRITION AND NUTRACEUTICALS SEMESTER -III

### For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSNN	19 PG3NE2	INSTITUTIONAL MANAGEMENT	Major Elective	4	4

#### **COURSE DESCRIPTION**

The course will describe the concepts of organization and management approaches of food service establishment.

### **COURSE OBJECTIVES**

- To develop a knowledge base in key areas of institutional food administration.
- To impart necessary expertise to function as a food service manager.
- To understand the basic principles of organization and management in food service units.

UNIT –I [12 HRS]

#### INTRODUCTION TO FOOD SERVICE INSTITUTIONS

Definition of food service institutions, Evolution of food service systems, Characteristics of the various types of food service units.

Kinds of food service systems - Conventional, commissary, ready prepared, assembly/serve

UNIT –II [12 HRS]

### INSTIUTUTIONAL MANAGEMENT

Theories - Classical, Scientific, Behavioral, Systems approach, Contingency approach, Management By Objective(MBO), Just-in- Time(JIT), Total Quality Management (TQM). Functions of management, Principles of management, management tools

UNIT –III [12 HRS]

### PERSONNEL MANAGEMENT

Personnel management -Definition, scope, concept of personnel management, approaches of personnel management, personnel policies, Functions of personnel manager.

Selection- Definition, Steps. Induction- Definition, Methods, Check list

Staff welfare provisions- Physical needs, Physiological needs, Psychosocial Needs

Training- Need for training, Katz and Kahn point about change in an organization, Training programmes, Areas of training. Staff development-Principles of development, Process of development.

UNIT –IV [12 HRS]

#### FOOD COST MANAGEMENT

Costing-Definition of costing, Definition of Cost, Cost components, Behaviour of cost,

Cost control-Definition, Factors responsible for losses, Methods of controlling food cost

Food cost analysis. Pricing-Definition, Methods of pricing- Cost plus pricing, Rate of return pricing.

### UNIT -V

# LAWS GOVERNING FOOD SERVICE ESTABLISHMENTS [12 HRS]

Labour laws- The Indian Contract Act, Workmen's Compensation Act, The Trade Unions Act, Payment of Wages Act, Industrial Disputes Act, The Factories Act, The Minimum Wages Act, Employees State Insurance (ESI) Act, Employees Pension Scheme, Shops and Establishments Act, Hostel Scheme, Annapurna Scheme.

#### REFERENCES:

- 1. Knosotz, H.O Donnel C (1968) *Principles of Management*, McGraw Hill Book Company.
- 2. Kotas Richard & Jayawardardene.C (1994): *Profitable food and Beverage Management*, Hodder & Sloughton Publication.

- 3. Sethi Mohini (2000), *Catering Management An integrated Approach*, 2nd Ed Wiley Publication.
- **4.** West, B Bessie & Wood, Levelle (1986) *Food Service in Institutions* 6th Ed, Macmillian Publication Company, New York.

#### **JOURNAL REFERENCES:**

- 1. Journal of Foodservice Management & Education.
- 2. Journal of Foodservice.

### **OPEN EDUCATION RESOURCES:**

- 1. <a href="http://oer.nios.ac.in/wiki/index.php/Tourism and Hospitality">http://oer.nios.ac.in/wiki/index.php/Tourism and Hospitality</a>
  Management
- 2. <a href="https://open.umn.edu/opentextbooks/textbooks/71">https://open.umn.edu/opentextbooks/textbooks/71</a>
- 3. https://openstax.org/details/books/principles-management
- 4. <a href="https://link.springer.com/referenceworkentry/10.1007%2F97">https://link.springer.com/referenceworkentry/10.1007%2F97</a> 8-94-007-0929-4 80
- 5. <a href="https://digitalcommons.fiu.edu/cgi/viewcontent.cgi?referer="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&httpsredir=1&article=1190&context="https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.google.com/&https://www.g
- 6. <a href="https://tygroupa.files.wordpress.com/2010/03/chapter-29-food-cost-control.pdf">https://tygroupa.files.wordpress.com/2010/03/chapter-29-food-cost-control.pdf</a>
- 7. https://www.oracle.com/webfolder/s/delivery_production/docs/FY16h1/doc29/Cost-Control-F-B-Report.pdf

## COURSE CONTENTS & LECTURE SCHEDULE:

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teachin g Aids
	UNIT -1 INTRODUCTION TO FO	DD SERVIC	CE INSTITUTIO	vs
1.1	Definition of food service institutions, Evolution of food service systems.	4	Chalk & Talk	Black Board
1.2	Characteristics of the various types of food service units.	4	Chalk & Talk	Black Board
1.3	Kinds of food service systems - Conventional, commissary, ready prepared, assembly/serve.	4	PPT	
	UNIT -2 INSTITUTIO	NAL MAN	AGEMENT	
2.1	Theories - Classical, Scientific, Behavioral, Systems approach, Contingency approach, Management By Objective(MBO), Just-in-Time(JIT), Total Quality Management (TQM).	4	Lecture	PPT
2.2	Functions and Principles of management.	4	Lecture	PPT
2.3	Management tools	4	Lecture	PPT
	UNIT -3 PERSONNEL	, MANAGE	MENT	

3.1	Personnel management -Definition, scope, concept of personnel management, approaches of personnel management.	3	Chalk & Talk	Black Board
3.2	Personnel policies, Functions of personnel manager.	2	Chalk & Talk	Black Board
3.3	Selection- Definition, Steps. Induction- Definition, Methods, Check list.	2	Chalk & Talk	Black Board
3.4	Staff welfare provisions- Physical needs, Physiological needs, Psychosocial Needs	2	Chalk & Talk	Black Board
3.5	Training- Need for training, Katz and Kahn point about change in an organization, Training programmes, Areas of training. Staff development- Principles of development, Process of development.	3	Lecture	РРТ
	UNIT -4 FOOD COST	MANAGE	MENT	
4.1	Costing-Definition of costing, Definition of Cost, Cost components, Behaviour of cost.	4	Lecture	РРТ

4.2	Cost control-Definition, Factors responsible for losses, Methods of controlling food cost.	4	Chalk & Talk	Black Board
4.3	Food cost analysis. Pricing-Definition, Methods of pricing- Cost plus pricing, Rate of return pricing.	4	Chalk & Talk	Black Board
UI	NIT -5 LAWS GOVERNING FOOD	SERVICE	ESTABLISHME	NTS
5.1	Labour laws- The Indian Contract Act, Workmen's Compensation Act, The Trade Unions Act, Payment of Wages Act, Industrial Disputes Act, The Factories Act.	6	Lecture	PPT
5.2	The Minimum Wages Act, Employees State Insurance (ESI) Act, Employees Pension Scheme, Shops and Establishments Act, Hostel Scheme, Annapurna Scheme.	6	Lecture	PPT

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Schola stic Marks C6	CIA Total
Levels	T1	Т2	Seminar	Assign ment	ОВТ/РРТ			
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.
K2	4	4	-	-	-	8	-	8
К3	2	2	-	5	-	9	-	9
K4	2	2	-	-	5	9	-	9
K5	2	2	5	-	-	9	-	9
Non Scholastic	-	-	-		-		5	5
Total	10	10	5	5	5	35	5	40

CIA

Scholastic 35

Non Scholastic **5** 

40

- All the course outcomes are to be assessed in the various CIA components.
- The levels of CIA Assessment based on Revised Bloom's Taxonomy for PG are:

**K2**-Understand, **K3**-Apply, **K4**-Analyse, **K5**-Evaluate

### **EVALUATION PATTERN**

	sc	HOLAS'	гіс		NON - SCHOLASTIC		MARK	s
C1	C2	СЗ	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

**C1** – Internal Test-1

**C2** – Internal Test-2

C3 - Seminar

C4 – Assignment

C5 - OBT/PPT

C6 - Non - Scholastic

# COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSE D
CO 1	Outline the key areas of food service institutions.	K2	PSO14
CO 2	Discuss the theories and concepts of institutional management.	K2	PSO14
со з	Determine the scope and theories of personnel management.	К3	PSO14
CO 4	Examine the aspects of food cost management.	K4	PSO14
CO 5	Explain the different laws governing food service establishment.	K5	PSO14

# Mapping of COs with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9	PSO 10	PSO 11	PSO 12	PSO 13	PSO 14	
CO1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1
CO2	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1

CO3	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1
CO4	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1
CO5	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1

# Mapping of COs with POs

CO/	PO1	PO2	PO3	PO4
PSO				
CO1	2	1	1	1
CO2	2	1	1	1
соз	2	1	1	1
CO4	2	1	1	1
CO5	2	1	1	1

Note: Strongly Correlated – 3

" Moderately Correlated – 2 "

Weakly Correlated -1

**COURSE DESIGNER:** 

Mrs. P.Madalene Virjini

Forwarded By

(Dr. Vasantha Esther Rani)

Marantea & Rain

### II M.Sc., HUMAN NUTRITION AND NUTRACEUTICALS SEMESTER -III

### For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSNN	19 PG3NE2	INSTITUTIONAL MANAGEMENT	PG Elective	4	4

### **COURSE DESCRIPTION**

The course will describe the concepts of organization and management approaches of food service establishment.

### **COURSE OBJECTIVES**

- To develop a knowledge base in key areas of institutional food administration.
- To impart necessary expertise to function as a food service manager.
- To understand the basic principles of organization and management in food service units.

UNIT –I [12 HRS]

### INTRODUCTION TO FOOD SERVICE INSTITUTIONS

Definition of food service institutions, Characteristics of the various types of food service units.

Kinds of food service systems - Conventional, commissary, Ready prepared, Assembly/serve

UNIT –II

### INSTIUTUTIONAL MANAGEMENT

10% [12 HRS]

Principles of management- Division of work, Authority and Responsibility, Discipline, Unitary command, Unitary Direction, Individual goal subordinate to Establishment goal, Remuneration, Hierarchy, Orderliness, Loyalty and Devotion, Work stability, Initiative, Unity, Control; Functions of management

Management tools- Tangible tools, Intangible tools

Theories - Classical, Scientific, Behavioral, Systems approach, Contingency approach, Management By Objective(MBO), Just-in- Time(JIT), Total Quality Management (TQM).

Functions of management, Principles of management, management tools

UNIT –III [12 HRS]

#### PERSONNEL MANAGEMENT

Personnel management -Definition, Scope, Concept of personnel management, Approaches of personnel management, Personnel policies, Functions of personnel manager.

Selection- Definition, Steps. Induction- Definition, Methods, Check list

Staff welfare provisions- Physical needs, Physiological needs, Psychosocial Needs

Training- Need for training, Katz and Kahn point about change in an organization, Training programmes, Areas of training. Staff development-Principles of development, Process of development.

UNIT -IV [12 HRS]

### FOOD COST MANAGEMENT

Costing-Definition of costing, Definition of Cost, Cost components, Behaviour of cost,

Cost control-Definition, Factors responsible for losses, Methods of controlling food cost

Food cost analysis. Pricing-Definition, Methods of pricing- Cost plus pricing, Rate of return pricing.

### UNIT -V

### LAWS GOVERNING FOOD SERVICE ESTABLISHMENTS

Labour laws- The Indian Contract Act, Workmen's Compensation Act, The Trade Unions Act, Payment of Wages Act, Industrial Disputes Act, The Factories Act, The Minimum Wages Act, Employees State Insurance (ESI) Act, Employees Pension Scheme, Shops and Establishments Act, Hostel Scheme, Annapurna Scheme.

[12 HRS]

### REFERENCES:

- 1. Knosotz, H.O Donnel C (1968) *Principles of Management*, McGraw Hill Book Company.
- 2. Kotas Richard & Jayawardardene.C (1994): *Profitable food and Beverage Management*, Hodder & Sloughton Publication.
- 3. Sethi Mohini (2000), *Catering Management An integrated Approach*, 2nd Ed Wiley Publication.
- **4.** West, B Bessie & Wood, Levelle (1986) *Food Service in Institutions* 6th Ed, Macmillian Publication Company, New York.

### **WEB REFERENCES:**

- 1. https://www.setupmyuhotel.com
- 2. www.tutorialspoint.com
- 3. https://careertrend.com
- 4. https://www.ecpi.edu

## COURSE CONTENTS & LECTURE SCHEDULE:

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