SEMESTER –I

HUMAN NUTRITION

1. Course Description:

Programme: M.Sc **Max. Hours: 60**

Course Code: P26/NUT/DSC/101 **Hours per week:4**

Course Type: Discipline Specific Core **Max. Marks: 100**

No. of credits: 4

2. Course objectives:

1. To understand nutritional needs and diet planning across different stages of life.
2. To apply dietary guidelines and analyze physiological changes during pregnancy, lactation and later life

3. Course outcomes:

After the successful completion of the course, the student will be able to:

CO 1: Remember the recommend daily allowances required for diet planning of various age groups and activity involved in meal planning.(LI)

CO 2: Analyze the physiological changes occurring in pregnancy and lactation and effect of nutrition on the growth and development of children. (LIV)

CO 3: Apply the guidelines and modifications of the diet during adolescence. (LIII)

CO 4: Remember the nutritional requirement of geriatric groups and understand the role of nutrition and lifestyle in promoting healthy conception. (LI, II)

Expected Level of Output: Conceptual level

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

4. Course Inputs:

MODULE 1: PRINCIPLES OF NUTRITION **(15 Hours)**

1.1. Energy Balance: Energy value of foods, Estimation of energy value of foods by Bomb Calorimeter and by Benedict's oxy Calorimeter, Factors affecting energy requirements; Factors affecting BMR, SDA, RDA, and derivation of RDA.,Physical activity.

1.2. Balanced Diet - Basic five food groups, Nutritional contribution from each group, Balanced diet, Food Pyramid,Basic principles of meal planning,Steps in meal planning, food cost.

1.3. Adults -Reference man, Reference woman,Nutritional requirements of adult man, Nutritional requirements of adult woman

MODULE 2: PREGNANCY, LACTATION AND INFANCY **(15 Hours)**

2.1 Pregnancy: Physiological changes, Growth of fetus from conception till term, Maternal weight gain and complications of pregnancy, Increase in Nutritional requirements during pregnancy

2.2 Lactation: Development of breast, physiology of lactation, Nutritional component of colostrum and mature milk, Increase in Nutritional requirements during lactation, Lactogogues

2.3 Infancy: Growth and development during infancy, Immunization Schedule, Composition of different types of milk – cow, buffalo, goat and camel, formula milk , Breast feeding Vs bottle feeding, Feeding of Low birth weight and premature infants, Human Milk Banks, Weaning: Homemade foods Vs commercial foods.

MODULE 3: PRE-SCHOOLERS, SCHOOL GOING CHILDREN AND ADOLESCENTS **(15 Hours)**

3.1. Preschoolers: Milestones and Growth Chart, Nutritionalrequirements, Factors to be considered while planning diet for the preschool children

3.2. School going children: Nutritional requirements, Packed lunch, Factors to be considered while planning diet for school going children, Influence of television on eating habits of school going children.

3.3. Adolescents: Sequence of developmental changes, Role of hormones on growth, development and maturation, Nutritional requirements during adolescence, Challenges

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

inadolescence: weight control, skipping meals, anorexia, fast foods,smoking, alcohol and drug abuse, teenage pregnancy.

MODULE 4: GERIATRIC AND DELAYED PARENTHOOD **(15 Hours)**

4.1 Geriatric: Physiological changes in aging, Nutritional requirements and dietary modification, Common diseases affecting geriatric groups, Common disabilities affecting geriatric groups

4.2 Delayed parenthood: Age-related changes in reproductive physiology in men and women (reduced sperm quality, diminished ovarian reserve), Nutritional requirements for fertility and healthy conception (folic acid, antioxidants, vitamin D, zinc, omega-3 fatty acids). Common health concerns and risks (gestational diabetes, hypertension, miscarriage,) Lifestyle and preventive strategies (balanced diet, exercise, stress management, medical interventions).

5. Recommended books

1. Mary Kay Mitchell.(2015). Nutrition across the life span. MEDTECH, Scientific international Pvt ltd.
2. Nnakwe, N. (2012). Community nutrition: planning health promotion and diseas prevention. Jones & Bartlett Publishers.
3. Paul Insel, Don Ross et al.,(2013). Discovery nutrition, Library of congress cataloging Jones and Bratlett Publisher
4. Nutrition and the Developing Brain, edited by Victoria Hall Moran, Nicola M. Lowe, CRC Press
5. Sari Edelstein and Judith Sharlin (2009). Essential of life cycle nutrition evidence base approach Jones and Bratlett Publisher.
6. Mahan, L. K., & Raymond, J. L. (2016). Krause's food & the nutrition care process. Elsevier Health Sciences.
7. Shills ME, Olson JA, Shike M & Ross AC. 1999 Modern Nutrition in Health and Disease. Williams & Wilkins
8. Human Nutrition, Elsevier, 13th Edition (2017).
9. Williams Obstetrics, McGraw-Hill Education, 26th Edition (2022).
10. Nutrition Through the Life Cycle, Cengage Learning, 7th Edition (2021).

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

6. **Syllabus Focus:**

a. RelevancetoLocal,Regional,NationalandGlobalDevelopmentNeeds

Local/Regional/National /Global Development Needs	Relevance
National	Sound nutritional status of different age groups, contributing to the overall well-being and development of the nation.

b. ComponentsonSkillDevelopment/Entrepreneurship Development/Employability

Skill Development / Entrepreneurship Development / Employability	Syllabus Content	Descriptionof Activity
Employability	Module I, II, III and IV	Knowledge on physiology, physiological changes and need for different nutrient demands at different age groups.

c. IKS components

IKS	Syllabus Content	Module
IKS	Introduction to functional foods for better feeding practices for infants (lactogogues)	II

d.Aligned with SDG 3 (Good Health and well- being)

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

7. Pedagogy

S. No	Student Centric Methods Adopted	Type / Description of Activity
1.	Seminar Presentation	Participative Learning
2.	Quiz / Cross word	Experiential Learning
3.	Group discussion	Participative learning

a. Continuous Internal Assessments andEnd Semester Examination

Maximum Marks: 20M		**Maximum Marks: 20M**	
CIA 1 **Subjective**	**CIA 1** **Subjective**	**CIA 2** **Skill Based Test: 10M**	**CIA 2** **Assignment: 10M**
Section A: 1x10=10M Essay question: Answer any 1 out of 2 **Section B: 2x5=10M** Short questions: Answer any 2 out of 3	**Section A: 1x10=10M** Essay question: Answer any 1 out of 2 **Section B: 2x5=10M** Short questions: Answer any 2 out of 3	Discretion of the faculty	Discretion of the faculty

External QP Pattern		
4 Credits 4 Modules **(CORE)**	SECTION A - Internal Choice	**4 Q X 10 M = 40M**
	SECTION B – Answer any 5 out of 8 (To compulsorily have ONE question from each module)	**5 Q X 4 M = 20M**

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

b) Aligning COs with Continuous Internal Assessments

Cos	Continuous Internal Assessments - CIA (40%)	End Semester Examination - (60%)
CO1	CIA-1	End Semester examination
CO2	CIA-1	
CO3	CIA-2 preparation of breakfast food, finger foods	
CO4	CIA-2 skill test (quiz)	

b. Question Paper Pattern:

HUMAN NUTRITION
Model Question Paper – Theory

Subject Code: P26 /NUT/DSC/101/L
Time: 2½ h **Max marks: 60**

Section – A

Answer all questions **(4X10=40 M)**

1.
(or)
2.
(or)
3.
(or)
4.
(or)
5.
(or)
6.
(or)
7.
(or)
8.

Section - B

Answer any 5 of the following questions **(5X4 =20 M)**

9.
10.
11.
12.
13.
14.
15.
16.

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Manoori Manjula, Ph.D
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Question Paper Format- Blooms Taxonomy Level

SECTION A - INTERNAL CHOICE			4Q X 10 M = 40M	
Question Number	**Module**	**Question (Model Questions)**	**CO**	**BTL (Blooms Taxonomy Level)**
1	**Module 1**	Explain how energy value of foods is estimated by Bomb Calorimeter and by Benedict's oxy Calorimeter	**CO1**	**Level II**
2	**Module 1**	What is the role of a Balanceddiet , what is meant by Food Pyramid and explain the Basic Principles of mean planning, steps in meal planning.	**CO1**	**Level I**
3	**Module 2**	Describe Physiological changes and importance of the increase in nutritional requirements during pregnancy	**CO2**	**Level II**
4	**Module 2**	What are the growth and development changes during infancy and discuss the composition of different types of milk – cow, buffalo, goat and camel, formula milk.	**CO2**	**Level I**
5	**Module 3**	Explain the Nutritional requirement, factors to be considered while planning diet for the preschool children.	**CO3**	**Level II**
6	**Module 3**	List thenutrient requirements during adolescence, explain the challenges in adolescence in feeding, such as skipping meals, anorexia	**CO3**	**Level I**
7	**Module 4**	Discuss the Physiological changes in aging-write about the nutritional requirements and dietary modification in this age group	**CO4**	**Level II**
8	**Module 4**	Discuss the age-related changes in reproductive physiology in men and women after 35 years. Explain how these changes influence fertility outcomes.	**CO4**	**Level IV**
SECTION B - ANSWER ANY 5 OUT OF 85 Q X 4M = 20M (To compulsorily have **ONE** question from **each** module)				
9	**Module 1**	Describe the factors affecting BMR	**CO 1**	**Level I**
10	**Module 1**	Define the basic five food groups	**CO 1**	**Level II**
11	**Module 2**	Explain complications of pregnancy	**CO 2**	**Level II**
12	**Module 2**	What is the importance of weaning	**CO 2**	**Level I**

Prof. Bhanoori Manjula Bhatt
Department of Biochemistry
University College of Science
Osmania University

Head
Dept. of Nutrition
St. Francis College for Wome
Begumpet, Hyderabad-16.

13	Module 3	What the role of packed lunch for school children	CO 3	Level I
14	Module 3	Explain the factors to consider while planning a diet for preschool children	CO 3	Level II
15	Module 4	Explain the common ailments in elderly	CO4	Level II
16	Module 4	Explain the role of nutrition and lifestyle in promoting healthy conception after 35 years	CO4	Level II

d) QuestionPaper Blueprint

Modules	Hours Allotted in the Syllabus	COs Addressed	Section A (No. of Questions)	Total Marks	Section B (No. of Questions)	Total Marks
1	15	CO-1	2	10	2	4
2	15	CO-2	2	10	2	4
3	15	CO-3	2	10	2	4
4	15	CO-4	2	10	2	4

9. CO-POMapping

CO	PO	Cognitive Level	Classroom sessions (hrs)
1	1,4	Remember	15
2	1,4	Analyze	15
3	1,4	Apply	15
4	1,4	Remember	15

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007. TS

SEMESTER – I

HUMAN NUTRITION– PRACTICAL

1. **Course Description:**
   Course Code: P26/NUT/DSC/101/P
   Type of course: DSC
   No. of credits: 2

Max. Hours: 60
Hours per week: 4
Max. Marks: 50

Course Objectives

1. To familiarize students with the raw and cooked quantities of food and
2. Plan diet for various age groups.

Course Outcomes

CO 1: To apply skills to standardize raw and cooked foods to prepare a day's diet

CO 2: To analyze the RDA to Calculate Nutritive value, cost

List of practical experiments:

1. **To standardize raw and cooked foods**

Cereal and Pulse- Rice, Upma,Phulka,Chapathi, Kichidi, Idli, Dosa, Dhal with Green Leafy Vegetable Beverages and Desserts - Tea, Soup, Juices, Milk Shakes, Porridges, Plain Custard Vegetable and fruits- Vegetable curries and salads

2. **Plan, Calculate Nutritive value, cost and Prepare a Day's diet for the following**

Adult man/ woman Pregnant woman/ Lactating woman Children- Preschooler/ School going Adolescent Girl/ Boy Geriatric Woman / Man

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

ST. FRANCIS COLLEGE FOR WOMEN, BEGUMPET
(An Autonomous College of Osmania University)
FACULTY OF SCIENCE-NUTRITION
SEMESTER – I CORE COURSE 1–HUMAN NUTRITION

Model Paper

Subject Code: P26/NUT/DSC/101/P

Time: 3h **Max.Marks:50**

1. Plan a day's diet for the given age group (A, B,C). **15M**

A. Pregnant Mother
B. School Going Child
C. Elderly woman (geriatrics)

a)Write the RDA for the above mentioned age group 5 M

c) Menu for the day 10 M

2.Calculate the nutritive value for the planned diet **20M**

a) Calculations 10M

b)Prepare and display the given recipe 10M

3. Record **5M**

Prepared by Course Teacher [Name &Signature]	Checked &Verified by HoD/ Programme Coordinator [Name &Signature]	Approved by the Principal
Ms. Patricia Michael	Dr. Tabitha Ramona	Prof. Uma Joseph

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

SEMESTER - I

NUTRITIONAL BIOCHEMISTRY - I

1. Course Description

Programme: M. Sc
Course Code: P26/ NUT/ DSC/102
Course Type: Discipline Specific Core
No. of Credits: 4

Max. Hours: 60
Hours per week: 4
Max. Marks: 100

2. Course Objectives

1. To enable students to understand the role of nutrients in the body.
2. To know the classification, functions and metabolism of carbohydrates, amino acids, proteins and nucleic acids.

3. Course Outcomes

After the successful completion of the course, the student will be able to:

CO1: Understand the functions of carbohydrates and estimation of energy values of food. (L2)

CO2: Remember types and structure of amino acids, proteins and nucleic acids.(L1)

CO3: Remember the role of different amino acid metabolism Deficiency and toxicity. (L1)

CO4: Understand and learn protein and nucleic acid synthesis and metabolism in human body.(L2)

Expected Level of Output: Conceptual level

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

4. Course content

MODULEI: CARBOHYDRATES AND THEIR METABOLISM (15 Hours)

1.1. Introduction: Classification, sources, functions and requirements, Digestion and absorption, Transport- Types of transporters and their mechanism, utilization and storage.

1.2. Metabolism: Glycolysis, Lactic acidosis, TCA cycle, Pentose phosphate pathway, Glycogenesis, glycogenolysis, gluconeogenesis, Electron transport chain, Fermentation-Alcohol metabolism.Regulation of blood glucose level.

1.3. Inborn errors of Carbohydrate Metabolism: Glycogen storage diseases, Lactose intolerance, Galactosemia, Fructose intolerance.

MODULE II:AMINO ACIDS, PROTEINS AND NUCLEIC ACIDS (15 Hours)

2.1. Amino Acids: Classification, Physical and Chemical properties of amino acids, Functions, amino acid pool and utilization by the body.

2.2. Proteins: Classification-structural, nutritional & functional, sources and functions, Digestion and absorption, Transport and storage.

2.3. Nucleic acids: Genetic Coding, Types (DNA, RNA) and Functions, Structure of DNA (Double Helix), Structure of RNA, Types of RNA, Genetic Coding.

MODULE III:AMINO ACID METABOLISM (15 Hours)

3.1. Metabolism: Deamination-Oxidative, Non-oxidative, Metabolism of Ammonia, Urea Cycle.

3.2. Metabolism of amino acids: Phenylalanine and Tyrosine-synthesis of Melanin, Thyroid hormone, catecholamines. Tryptophan- correlation with sleep,Methionine, Cysteine, Leucine and Isoleucine.

3.3. Inborn errors of metabolism: Amino acids Balance, imbalance and toxicity, Inborn errors of amino acid metabolism, PKU, Tyrosinemia, Maple syrup urine disease, Homocystinuria, Alkaptonuria.

MODULE IV:PROTEIN AND NUCLEIC ACID METABOLISM (15 Hours)

4.1. Synthesis: Synthesis of purines and pyrimidines (flow chart), Degradation of purines and pyrimidines.

4.2. Protein synthesis: Components required for Translation and Transcription, post transcriptional and translational changes, Factors inhibiting protein synthesis.

4.3. Disorders of Nucleic Acid Metabolism: Hyperuricemia and hypouricemia, gout, oroticaciduria, Lesch-Nyhan Syndrome, AMP Deaminase Deficiency.

Prof. Bhanoori Manjula, Ph.D
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

5. Reference Books

1) Nutritional Biochemistry – Tom Brody, 2nd edition, Academic Press.
2) Text Book of Human Nutrition – Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy, 2nd edition, Oxford & IBH Publishing Co. Pvt. Ltd.
3) Textbook of Medical Biochemistry – S Ramakrishnan, K G Prasannan, R Rajan, 3rd edition, Orient Longman, Harper's Illustrated Biochemistry – Robert K. Murray, Daryl K. Granner,Peter A. Mayes, Victor W. Rodwell, 26th edition, Mc Graw Hills.
4) Experimental Biochemistry – A Student Companion – B Sashidhar Rao, Vijay Deshpande, IK, International Pvt. Ltd.
5) Biochemistry – U Satyanarayana, U Chakrapani, Books & Allied (P) Ltd.
6) Clinical Biochemistry – Nagini
7) Principles of Biochemistry – Leihninger A L, CBS Publishers and Distributors.
8) Textbook of Biochemistry (for Medical students) – DM Vasudevan and S Sreekumari, 4th edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.

6. Syllabus Focus

a)Relevance to Local, Regional, National and Global Development Needs

S. No	Student Centric Methods Adopted	Type/Description of Activity
1.	National	The syllabus equips students with biochemical knowledge to support national nutrition programs such as: Poshan Abhiyaan, National Nutrition Mission
2.	Global	Globally, understanding nutrient metabolism is essential for addressing: Non-communicable diseases, Nutritional deficiencies, Metabolic disorders

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

b) Components on Skill Development/Entrepreneurship Development/Employability

Skill Development /Entrepreneurship Development / Employability	Syllabus Content	Descriptionof Activity
Entrepreneurship Development (NSQF Level 3 or 4)	Biochemical estimation methods	Hands on practicals and field visits

c) IKS components

IKS	Syllabus Content	Module
IKS	Fermentation	I

d) Aligned with SDG 2(Zero Hunger), SDG 3 (Good Health and well- being) and SDG 4 (Quality Education).

7. Pedagogy

S. No	Student Centric Methods Adopted	Type / Description of Activity
1.	Interactive Classroom quiz	Experiential learning
2.	Presentation	Participative learning

8. Course Assessment Plan

a. Weightage of Marks in Continuous Internal Assessments andEnd Semester Examination

Maximum Marks: 20M		Maximum Marks: 20M	
CIA 1 **Subjective**	**CIA 1** **Subjective**	**CIA 2** **Skill Based Test: 10M**	**CIA 2** **Assignment: 10M**
Section A: 1x10=10M Essay question: Answer any 1 out of 2 **Section B: 2x5=10M** Short questions: Answer any 2 out of 3	**Section A: 1x10=10M** Essay question: Answer any 1 out of 2 **Section B: 2x5=10M** Short questions: Answer any 2 out of 3	Discretion of the faculty	Discretion of the faculty

External QP Pattern		
4 Credits 4 Modules (CORE)	SECTION A - Internal Choice	4 Q X 10 M = 40M
	SECTION B – Answer any 5 out of 8 (To compulsorily have ONE question from each module)	5 Q X 4 M = 20M

b) Aligning COs with Continuous Internal Assessments

Cos	Continuous Internal Assessments - CIA (40%)	End Semester Examination - (60%)
CO1	CIA-1	End Semester examination
CO2	CIA-1	
CO3	CIA-2 Presentation, Quiz, Crosswords,	
CO4	CIA-2 Assignment	

b. Question Paper Pattern:

Nutritional Biochemistry – I
Model Question Paper – Theory

Subject Code: P26 /NUT/DSC/102
Time: 2½ h **Max marks: 60**

Section – A

Answer all questions **(4X10=40 M)**

1.

(or)

2.

(or)

3.

(or)

4.

(or)

5.

(or)

6.

(or)

7.

(or)

8.

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Section - B

Answer any 5 of the following questions **(5X4 =20 M)**

9.
10.
11.
12.
13.
14.
15.
16.

Question Paper Format- Blooms Taxonomy Level

SECTION A - INTERNAL CHOICE		**4Q X 10 M = 40M**		
Question Number	**Module**	**Question (Model Questions)**	**CO**	**BTL (Blooms Taxonomy Level)**
1	**Module 1**	Write in detail about the classification of carbohydrates with appropriate examples	**CO1**	**Level I**
2	**Module 1**	Explain in detail the Glycolysis cycle, along with the energetic	**CO1**	**Level II**
3	**Module 2**	Describe the digestion, absorption and transport of proteins.	**CO2**	**Level II**
4	**Module 2**	Describe types, structure and functions of RNA.	**CO2**	**Level I, II**
5	**Module 3**	Write an essay on PKU and Alkaptonuria	**CO3**	**Level IV**
6	**Module 3**	Describe the deamination of amino acids, with appropriate examples.	**CO3**	**Level II**
7	**Module 4**	Explain the synthesis of Purines with the help of a flow chart.	**CO4**	**Level II**
8	**Module 4**	Explain process of peptide chain synthesis	**CO4**	**Level II**
SECTION B - ANSWER ANY 5 OUT OF 8 5 Q X 4M = 20M (To compulsorily have **ONE** question from **each** module)				
9	**Module 1**	Describe Electron transport chain	**CO 1**	**Level II**
10	**Module 1**	Describe Alcohol metabolism	**CO 1**	**Level II**
11	**Module 2**	Explain amino acid pool and utilization	**CO 2**	**Level II**

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

		by the body		
12	**Module 2**	Describe the Functions of nucleic acids	**CO 2**	**Level II**
13	**Module 3**	Describe the factors inhibitingtranslation	**CO 3**	**Level II**
14	**Module 3**	Explain Urea Cycle	**CO 3**	**Level II**
15	**Module 4**	Differentiate between Hyperuricemia and hypouricemia	**CO4**	**Level IV**
16	**Module 4**	Explain Gout	**CO4**	**Level II**

d. QuestionPaper Blueprint

Modules	Hours Allotted in the Syllabus	COs Addressed	Section A (No. of Questions)	Total Marks	Section B (No. of Questions)	Total Marks
1	15	CO-1	2	10	2	4
2	15	CO-2	2	10	2	4
3	15	CO-3	2	10	2	4
4	15	CO - 4	2	10	2	4

9. CO-POMapping

CO	PO	Cognitive Level	Classroomsessions (hrs)
1	1	Understand	15
2	2	Understand	15
3	1	Apply	15
4	1	Apply	15

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

SEMESTER – I
NUTRITIONAL BIOCHEMISTRY-I
PRACTICAL

1. Course Description:

Course Code: P26/NUT/DSC/102/P
Type of course: DSC -2
No. of credits: 2

Max. Hours: 60
Hours per week: 4
Max. Marks: 50

Course Objectives

1. To acquaint the students with principles, techniques and application of differentmethods of food analysis
2. Ability to apply basic principles of chemistry to biological systems

Course Outcomes

CO1: To apply the protocol of chemistry to asses macronutrients

CO2:To analyze pigments in blood and urine

List of practicals

1. Qualitative analysis of Carbohydrate
2. Qualitative analysis of protein
3. Separation of fatty acid by paper chromatography
4. Separation of Amino acid by paper chromatography
5. Estimation of Total Sugar by DNS method
6. Estimation of Bile Pigment in urine
7. Estimation of Protein by Biuret method

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

ST. FRANCIS COLLEGE FOR WOMEN, BEGUMPET
(An Autonomous College of Osmania University)
FACULTY OF SCIENCE-NUTRITION
SEMESTER – I CORE COURSE 2–NUTRITIONAL BIOCHEMISTRY - I

Model Paper

Subject Code: P26/NUT/DSC/102/P

Time: 3h **Max.Marks:50**

I. Write down the principles, procedure involved in major experiments	**[10 M]**
II. MAJOR	**[20M]**
III. MINOR	**[10 M]**
IV. Record	**[05 M]**
V. Viva	**[05 M]**

Prepared by Course Teacher [Name &Signature]	Checked &Verified by HoD/ Programme Coordinator [Name &Signature]	Approved by the Principal
Indu Bhargavi K	Dr. Tabitha Ramona	Prof. Uma Joseph

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS.

SEMESTER – I
HUMAN PHYSIOLOGY

1. Course Description

Programme: M.Sc. **Max. Hours : 60**

Course Code: P26/NUT/DSC/103 **Hours per week : 4**

Course Type: Discipline Specific Core **Max. Marks : 100**

No. of credits: 4

2. Course Objectives:

1. To enable students to understand the role of different body systems.
2. To know anatomy and function of the different organ systems in the utilization of nutrients in the body.

3. Course Outcomes

After the successful completion of the course, the student will beable to:

CO 1: Remember anatomy and functioning and digestive and excretory system.(L1)

CO 2: Remember structure, role and abnormalities of respiratory and nervous system.(L1)

CO 3: Analyze the general composition, structure, and functions of blood and cardiovascular system.(L4)

CO 4: Remember the role of endocrine system in maintaining homeostasis,integrating growth and development.(L1)

Expected Level of Output: Conceptual level

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

4. Course Content

MODULE 1 :DIGESTIVE AND EXCRETORY SYSTEM **(15 Hours)**

1.1. Digestive System: Structure and functions of gastrointestinal tract, Structure and functions of liver, Functions of gastrointestinal secretions, Role of enzymes in digestion

1.2. Gut flora: Role of prebiotics and probiotics in the maintenance of health of digestive system

1.3. Structure and functions of kidney: Urine formation, Organic constituents of urine, Inorganic constituents of urine, Water and electrolyte balance.

MODULE 2: RESPIRATORY AND NERVOUS SYSTEM **(15 Hours)**

2.1. Respiratory System: Structure and functions of nose and nasal cavity, pharynx, larynx, trachea, bronchi and lungs, Mechanism of respiration, Oxygen transport, Carbondioxide transport.

2.2. Respiratory rate: Air volume in lung in different situations, Respiratory abnormalities; Hypoxia, Hypercapnia, carbon monoxide poisoning, Asphyxia, Cyanosis, High altitude sickness, Emphysema, Asthma, COPD.

2.3. Nervous System: Structure of nerve cell, nerve impulses, Classification of nervous system, Structure and functions of brain, spinal cord, Peripheral nervous system, Cerebrospinal fluid, Blood Brain Barrier, Neurotransmitters, Alzheimer's disease, Parkinson's disease.

MODULE 3: BLOOD AND CIRCULATORY SYSTEM **(15 Hours)**

3.1. Heart: Structure and functions of heart and blood vessels, Pulmonary, Systemic and Portal circulation, Blood pressure, Heart rate, Factors affecting BP and heart rate, Regulation of Cardiac output.

3.2.Composition of blood: Plasma proteins; Functions, role in fluid balance. Organic and Inorganic compounds in plasma.

3.3 Blood Lipids – Chylomicrons, VLDL, LDL, HDL, Cholesterol, Triglycerides. Enzymes in blood, Blood Coagulation-Intrinsic and extrinsic pathways.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

MODULE 4: ENDOCRINE SYSTEM **(15 Hours)**

4.1. Endocrine glands: Formation and secretion of hormones, Control of hormone secretion, mechanism of hormone action, Pituitary gland: Hormones secreted and their functions, abnormalities.

4.2. Thyroid gland: Structure of thyroid gland, formation of thyroid hormones, functions of thyroid hormones, hypothyroidism, hyperthyroidism,Adrenal gland: Structure of adrenal gland, secretions of adrenal cortex and their functions, hypoadrenalism, hyperadrenalism, Secretions of adrenal medulla and their functions, Parathyroid gland: Structure of parathyroid gland, functions of parathormone, hypo and hyper secretion of parathormone

4.3. Islets of Langarhans: Structure of islets of Langarhans, functions of Insulin, deficiency of insulin, functions of glucagon, Testes: Structure of testes, functions of testosterone, deficiency of testosterone,Ovaries: Structure of ovaries, functions of estrogens and progesterone.

5. Reference Books:

1. Textbook of Medical Physiology – Guyton, 8th edition, HBJ International Edition, WB Sanders.
2. Essentials of Medical Physiology – Anil Baran Singha Mahapatra, 2nd edition, Current Books International.
3. Human Physiology – An Integrated Approach – DU Silverthorne, Prentice Hall.
4. Human Physiology – from cells to system – L Sherwood, 6th edition.
5. Textbook of Biochemistry (for Medical Students) – DM Vasudevan and S Sree Kumari, 4th edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

6. Syllabus Focus

a) Relevance to Local, Regional, National and Global Development Needs

Local /Regional/National /Global Development Needs	Relevance
National	Case studies and discussions on lifestyle diseases such as diabetes, hypertension, and cardiovascular disorders relevant to national public health priorities.
Regional	Classroom discussions and presentations on respiratory disorders, thyroid problems, and kidney diseases prevalent in the regional population.
Global	Human physiology is a study of the various systems of the Body including the digestive, respiratory, nervous, endocrine, excretory also involving the study of tissues, organs etc. This understanding is required for an in-depth knowledge of Nutrition course and developing diet plan for individuals.

b) Components on Skill Development/Entrepreneurship Development/Employability

SD/ED/EMP	Syllabus Content	Description of Activity
SD (NSQF Level 3 to 4)	All the modules	The skill development can be employed by performing the Experiments: Hands-on Practicals

c) IKS components

IKS	Syllabus Content	Module
IKS	Fermentation	I

Prof. Bhanoori Sambasiva Rao
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

d)Aligned with SDG 3 (Good Health and well- being) and SDG 4 (Quality Education).

7. Pedagogy

S. No	Student Centric Methods Adopted	Type / Description of Activity
1.	Seminar Presentation	Participative Learning
2.	Clinical tests with samples	Experiential Learning
3.	Group Discussion	Participative Learning

8. Course Assessment Plan

a) Weightage of Marks in Continuous Internal Assessments and End Semester Examination

Maximum Marks: 20M		**Maximum Marks: 20M**	
CIA 1 **Subjective**	**CIA 1** **Subjective**	**CIA 2** **Skill Based Test: 10M**	**CIA 2** **Assignment: 10M**
Section A: 1x10=10M Essay question: Answer any 1 out of 2 **Section B: 2x5=10M** Short questions: Answer any 2 out of 3	**Section A: 1x10=10M** Essay question: Answer any 1 out of 2 **Section B: 2x5=10M** Short questions: Answer any 2 out of 3	Discretion of the faculty	Discretion of the faculty

External QP Pattern		
4 Credits 4 Modules (CORE)	SECTION A - Internal Choice	**4 Q X 10 M = 40M**
	SECTION B – Answer any 5 out of 8 (To compulsorily have ONE question from each module)	**5 Q X 4 M = 20M**

b) Aligning COs with Continuous Internal Assessments

Cos	Continuous Internal Assessments - CIA (40%)	End Semester Examination - (60%)
CO1	CIA-1	End Semester examination
CO2	CIA-1	
CO3	CIA-2 Presentation, Quiz, Crosswords,	
CO4	CIA-2 Assignment	

c) Model Question Paper – End Semester Exam Theory

HUMAN PHYSIOLOGY

Course Code: P26/NUT/DSC/103 **Max Marks: 60**

Credits:4 **Time:2 1/2 Hrs**

Note: This question paper consists of Section A and B. The answer to Section A & B must be written in the answer book given.

SECTION – A(Long Essay Type)

Answer ALL questions: **Marks: 4 x 10 =40**

1.

OR

2.

3.

OR

4.

5.

OR

6.

7.

OR

8.

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

SECTION – B

II. Answer any FIVE of the following 5x4 =20 M

9.

10.

11.

12.

13.

14.

15.

16.

Question Paper format – Blooms Taxonomy Level

SECTION A - INTERNAL CHOICE				4Q X 10 M = 40 M
Question Number	**Module Covered**	**Question**	**CO**	**BTL (Blooms Taxonomy Level)**
1	Module 1	Summarize the gastric secretions and discuss the mechanism of gastric secretions.	CO 1	Level II
2	Module 1	Compile the structure and functions of the kidney and discuss the urine formation.	CO 1	Level VI
3	Module 2	Outline the mechanism of respiration along with discussing the oxygen transport.	CO 2	Level II
4	Module 2	Show the structure and functions of the brain.	CO 2	Level I
5	Module 3	Mark the structure and function of the heart and blood vessels.	CO 3	Level V
6	Module 3	Elaborate the composition of blood plasma and classification of the elements of blood.	CO 3	Level VI

7	Module 4	Identify the structure of thyroid gland, explain the formation of thyroid hormone along with functions of thyroid hormones.	CO 4	Level III
8	Module 4	Discuss the structure of islets of langerhans, mechanism of actions of insulin and glucagon along with regulatory functions.	CO 4	Level VI
SECTION B - ANSWER ANY 4 OUT OF 6 (To compulsorily have ONE question from each module)				**5Q X 4M = 20 M**
9	Module 1	Mark Role of enzymes in digestion.	CO 1	Level V
10	Module 1	Summarize the organic constituents for urine	CO 1	Level II
11	Module 2	Explain Emphysema	CO 2	Level II
12	Module 2	What is Hypercapnia?	CO 2	Level I
13	Module 3	Interpret Blood pressure and abnormalities.		Level II
14	Module 3	Illustrate the Composition of Blood	CO 3	Level II
15	Module 4	List the Functions of estrogen	CO 4	Level IV
16	Module 4	Summarizethe Hyposecretion of parathormone	CO 4	Level IIA

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

e) Question Paper Blueprint

Modules	Hours Allotted in the Syllabus	COs Addressed	Section A(No. of Questions)	Total Marks	Section B(No. of Questions)	Total Marks
1	15	CO-1	2	4x10=40	6 (By taking at least one question from each Module)	4x5=20
2	15	CO-2	2			
3	15	CO-3	2			
4	15	CO-4	2			

9. CO - PO Mapping:

CO	PO	Cognitive Level	Classroom sessions (hrs)
1	1	Remember	15
2	4	Remember	15
3	1	Analyze	15
4	2	Remember	15

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

HUMAN PHYSIOLOGY

Practical Syllabus

Programme: M.Sc. **Max.Hours : 30**

Course Code: P26/NUT/DSC/103/P **Hours per week: 4**

Type of course: DSC 3 **Max.Marks: 50**

No. of credits : 2

Course Objectives:

1. To acquaint the students with principles of human physiology
2. To provide an insight on techniques for analyzing blood and urine

Course Outcomes:

CO 1: To be able to apply techniques for Microscopic Examination of various tissues and blood vessels

CO 2: To analyze abnormalities in blood and urine

Practical Sessions

1. Microscopic Examination of various tissues and blood vessels
   a) Epithelial
   b) Muscular
   c) Connective
   d) Bone
   e) Artery
   f) Vein (Specimens)
2. Spotters- ECG, Thermometer, sphygmomanometer, pulse oxymeter
3. Estimation of RBC Count
4. Enumeration of WBC count
4. Determination of blood group and Rh factor.
5. Estimation of WBC- Differential Leucocyte count
6. Blood glucose by glucometer method
7. Blood Hemoglobin by Cyanmethhaemoglobin method.
8. Blood Hemoglobin by Sahli's method.
9. Estimation of Urine sample for:

a) Sugar
b) Albumin

DEPARTMENT OF NUTRITION, ST. FRANCIS COLLEGE FOR WOMEN, HYDERABAD-16

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

CBCS-2026 HUMAN PHYSIOLOGY

MODEL QUESTION PAPER PRACTICAL

Course Code: P26/NUT/DSC/103/P **Marks : 50**

No. of credits: 2 **Time: 3Hrs**

1.	Identify the given two spotters and write its significance	**10M**
2.	Major	**20M**
3.	Minor	**10M**
4.	Viva	**05M**
5.	Record	**05M**

Prepared by	Checked &verified by	Approved by
Dr. Durga Nandini **Teaching faculty**	**Dr. Tabitha Ramona**	**Prof. Uma Joseph** **Principal**

DEPARTMENT OF NUTRITION, ST. FRANCIS COLLEGE FOR WOMEN, HYDERABAD-16.

Prof. Bhanoori Manjula, Ph.D
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

SEMESTER - I

MEDICAL NUTRITION THERAPY-I

1. Course Description:

Programme: M.Sc **Max. Hours: 60**

Course Code: P26/NUT/DSC/104 **Hours per week:4**

Course Type: Discipline Specific Core **Max. Marks: 100**

No. of credits: 4

2. Course objectives:

1. To impart in depth knowledge regarding prevalence, etiology, diagnosis, diet and lifestyle management in different diseases.
2. To gain knowledge on the methods of assessment of nutritional status among hospitalized patients.

3.Course outcomes:

After the successful completion of course, the student will be able to:

CO 1: Assess nutrition, plan and modify diets, and provide nutrition care and counseling.(L II)

CO 2: Understand and apply diet and lifestyle interventions for obesity, leanness, eating disorders, and fever-related condition.(LII, III)

CO 3: Create an understanding about the aetiology, risk factors, clinical features and dietary management of various gastrointestinal disorders .(L II,VI)

CO 4: Understand, plan, and apply specialized nutritional support for surgical and burn patients while evaluating outcomes and managing complications.(L II,III)

Expected Level of Output: Conceptual level

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

4.Course Inputs:

MODULE 1: INTRODUCTION TO MEDICAL NUTRITION THERAPY (15 Hours)

1.1 Introduction to Dietetics and Therapeutic Nutrition: Introduction of Medical NutritionTherapy, Principles of Diet Therapy, Types of Dietitians, Role and responsibilities of Dietitian, Competencies required, Interpersonal Relationship with the patient.

1.2 Therapeutic and Hospital Diets : Therapeutic modification of normal diets, Types of Hospital Diets- Clear-fluid, full fluid and soft diet, Specially modified therapeutic diets, High calorie low calorie, high and low protein, low fat, bland, sodium restricted high and low residue diets, Emerging trends in Nutrition

1.3 Nutritional Assessment of Hospitalized Patients: Nutritional Care Process: Definition, steps, In diseased condition - Nutritional screening/ assessment and identification of nutritional problem - Nutritional Intervention and Diet Modification based on interpretation of - Patient data- Anthropometric (height, weight, BMI) clinical methods(SGA, MNA, MUST), biochemical method (Serum albumin, serum transferrin, albumin/globulin ratio) and other relevant data -Nutrition Education and Counseling - Evaluation of Nutritional care SGA, MNA, MUST

MODULE 2: ENERGY IMBALANCE AND FEBRILE CONDITIONS (15 Hours)

2.1. Obesity: Definition, types, aetiology, Theories- Fat cell theory and set pointtheory. Assessment and complications. Management of obesity – Exercise,Diet,Behaviour, modification, Pharmacotherapy and Surgery.

2.2 Leanness: Pathophysiology, Causes and assessment,Health risks and effect on nutritional status, Dietary Management, Psychological Eating disorders AnorexiaNervosaand Bulimia.

2.3. Febrile conditions: Host defence mechanism, Metabolic changes during fever. Short duration -Typhoid- Causes, Clinical features and Dietary management. Long duration – Tuberculosis - Causes, Clinical features and Dietary Management.

MODULE 3 : GASTROINTESTINAL DISORDERS (15 Hours)

3.1. Gastrointestinal Disorders: Aetiology, Mechanism of Ulcer formation,symptoms, diagnosis, treatment and dietary management of Peptic ulcer, Diarrhoea- Aetiology, Symptoms, types, treatment-ORS, dietary management. Constipation-Aetiology, symptoms, types, dietary management.

3.2. Inflammatory Bowel Disease: Ulcerative colitis, Crohn's disease, Irritable bowel disease etiology, symptoms, diagnosis, treatment and dietary management.

3.3. Malabsorption Syndrome: Lactose intolerance, Coeliac disease and Diverticular diseases etiology, symptoms, diagnosis, treatment and dietary management.

Prof. Bhanoori Mamidi, Ph.D.
Department of Biochemistry
University College of Science
Osmania University

Head
Dept. of Nutrition
St. Francis College for Wome
Begumpet, Hyderabad-16.

MODULE 4 : NUTRITION IN CRITICAL CARE **(15 Hours)**

4.1. Specialized Feeding Methods : Enteral Nutrition- Types – Short term feedingmethods, Long term feeding methods, Methods of delivery, Formula feeds. Advantages, Disadvantages and complications. **Parenteral Nutrition:** Types, Composition,advantages, disadvantages and Complications of Parenteral nutrition.

4.2. Surgery: Physiological response, endocrine and metabolic changes . Nutritional care inPre and Post -operative conditions

4.3. Burns: Types and severity of burns, Rule of Nine, Metabolic changes in burns, Nutritional support in burns.

5.Recommended books

1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10thEdition, W.B. Saunders Ltd.
2. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health andDisease, 9th Edition, Williams and Wilkins
3. Escott-Stump, S. (1998): Nutrition and Diagnosis Related Care, 4th Edition, Williams andWilkins.
4. Garrow,J.S.,James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition,Churchill Livingstone.
5. Williams, S.R. (1993): Nutrition and Diet Therapy, 7th Edition, Times Mirror/Mosby CollegePublishing.
6. Davis, J. and Sherer, K. (1994): Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, 7. W.B. Saunders Co. Walker, W.A. and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown &Co..
7. Foods – Nutrition and Health – Dr.VijayaKhader, Kalyani Publishers.
8. Clinical Dietetics and Nutrition – F P Antia and Philip Abraham.
9. Kumud Khanna (1997): Textbook of Nutrition and Dietetics, 2nd Edition, Elite Publishing House

Reference Textbooks:

1. Krause's Food, Nutrition, and Diet Therapy – L. Kathleen Mahan & Janice L. Raymond.
2. Clinical Dietetics and Nutrition – F. P. Antia & Philip Abraham.
3. Dietetics – B. Srilakshmi

Prof. Khanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Wom
Begumpet, Hyderabad-16.

4. Nutrition and Diet Therapy – Linda Kelley DeBruyne, Kathryn Pinna & Eleanor Noss Whitney.
5. Medical Nutrition Therapy: A Case-Study Approach – Marcia Nelms et al.
6. Williams' Basic Nutrition and Diet Therapy – Staci Nix.

6.Syllabus Focus:

a. RelevancetoLocal,Regional,NationalandGlobalDevelopmentNeeds

Local/Regional/National /Global Development Needs	Relevance
Global	Focuses on assessing the individual's nutritional status and providing an individualized nutrition plan for their health condition

b. ComponentsonSkillDevelopment/Entrepreneurship Development/Employability

Skill Development /Entrepreneurship Development / Employability	**Syllabus Content**	**Descriptionof Activity**
Employability (NSQF Level 4)	Module I,II,III,IV	Practical activities to apply clinical nutrition knowledge and skills.

c. IKS components

IKS	**Syllabus Content**	**Module**
IKS	Principles of Ayurvedic dietetics (Ahara) and the relationship between food and health. Use of traditional therapeutic foods such as rice gruel, fermented foods, and herbal preparations in disease management. Concept of balanced diet and seasonal eating practices in Indian dietary traditions.	II,III,

d.Alligned with SDG 2 (Zero Hunger), SDG 3 (Good Health and well- being), SDG 4 (QualityEducation) and SDG 12 Responsible Consumption and Production)

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

7. Pedagogy

S. No	Student Centric Methods Adopted	Type / Description of Activity
1.	Interactive Classroom quiz	Experiential learning
2.	Presentation	Participative learning

8.Course Assessment Plan

a. Weightage of Marks in Continuous Internal Assessments andEnd Semester Examination

Maximum Marks: 20M		**Maximum Marks: 20M**	
CIA 1 **Subjective**	**CIA 1** **Subjective**	**CIA 2** **Skill Based Test: 10M**	**CIA 2** **Assignment: 10M**
Section A: 1x10=10M Essay question: Answer any 1 out of 2 **Section B: 2x5=10M** Short questions: Answer any 2 out of 3	**Section A: 1x10=10M** Essay question: Answer any 1 out of 2 **Section B: 2x5=10M** Short questions: Answer any 2 out of 3	Discretion of the faculty	Discretion of the faculty

External QP Pattern		
4 Credits 4 Modules (CORE)	SECTION A - Internal Choice	**4 Q X 10 M = 40M**
	SECTION B – Answer any 5 out of 8 (To compulsorily have ONE question from each module)	**5 Q X 4 M = 20M**

b. Aligning COs with Continuous Internal Assessments

Cos	Continuous Internal Assessments - CIA (40%)	End Semester Examination - (60%)
CO1	CIA-1	End Semester examination
CO2	CIA-1	
CO3	CIA-2 Presentation, Quiz	
CO4	CIA-2 Assignment	

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

c. Question Paper Pattern:

MEDICAL NUTRITION THERAPY-II
Model Question Paper – Theory

Subject Code: P26 /NUT/DSC/204
Time: 2½ h **Max marks: 60**

Section – A

Answer all questions **(4X10=40 M)**

1.

(or)

2.

(or)

3.

(or)

4.

(or)

5.

(or)

6.

(or)

7.

(or)

8.

Section - B

Answer any 5 of the following questions **(5X4 =20 M)**

9.
10.
11.
12.
13.
14.
15.
16.

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

d. Question Paper Format -Blooms Taxonomy Level

SECTION A - INTERNAL CHOICE				4 Q X 10 M = 40 M
Question Number	**Question**	**Question**	**CO**	**BTL(Blooms Taxonomy Level)**
1	Module 1	Write about the need for diet modification and describe the modification of normal diets and the types of hospital diets	CO 1	II
2	Module 1	Discuss the roles and responsibilities of a dietician in various steps. Add a note on dietician's interpersonal relationship with the patient and its importance in nutritional counseling	CO 1	I
3	Module 2	Give the types, and complications and the dietary management of obesity.	CO 2	I
4	Module 2	What are the metabolic changes seen in fever. Give the symptoms and dietary management of long duration fever	CO 2	I
5	Module 3	Write about the symptoms and dietary management for a patient suffering from diarrhea	CO 3	II
6	Module 3	Explain the role of diet in the treatment of Peptic Ulcer	CO 3	II
7	Module 4	What are the various types of feeding methods used in enteral nutrition? Add a note on advantages and disadvantages of enteral nutrition.	CO 4	I
8	Module 4	Explain the physiological response, endocrine and metabolic changes in surgery?	CO 4	II
SECTION B - ANSWER ANY 5 OUT OF 85Q X4 M = 20 M (To compulsorily have **ONE** question from **each** module)				
9	Module 1	Role of Dietician	CO 1	I
10	Module 1	Hospital Diets	CO 1	I
11	Module 2	Theories of Obesity	CO 2	II
12	Module 2	Typhoid	CO 2	IV
13	Module 3	Constipation	CO 3	IV
14	Module 3	Coeliac Disease	CO 3	IV
15	Module 4	Parenteral Nutrition	CO4	IV
16	Module 4	Metabolic changes in burns	CO4	II

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

e. QuestionPaper Blueprint

Modules	Hours Allotted in the Syllabus	COs Addressed	Section A (No. of Questions)	Total Marks	Section B (No. of Questions)	Total Marks
1	15	CO-1	2	10	2	4
2	15	CO-2	2	10	2	4
3	15	CO-3	2	10	2	4
4	15	CO - 4	2	10	2	4

9. CO-POMapping

CO	PO	Cognitive Level	Classroomsessions (hrs)
1	1	Understand	15
2	2	Understand	15
3	1	Apply	15
4	1	Apply	15

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

SEMESTER – I

MEDICAL NUTRITION THERAPY-I

PRACTICAL SYLLABUS

1. Course Description:

Course Code: P26/NUT/DSC/104/P **Max. Hours: 60**

Type of course: DSC **Hours per week: 4**

No. of credits: 2 **Max. Marks: 50**

Course Objectives

1. To familiarize the students with newer concepts in dietary management of various disorders and diseases.

2. To be able to plan therapeutic diets using Dietary Prescription

Course Outcomes

After the successful completion of the course the student will be able to

CO 1: To apply concepts of therapeutic condition to plan and calculate nutritive value

CO 2: To create and prepare a menu based on various dietary disorder.

List of practicals

1. Plan a day's diet , Calculate Nutritive value for Surgery
2. Preparation of the planned diet for Surgery
3. Plan a day's diet , Calculate Nutritive value for Obesity
4. Preparation of the planned diet for Obesity
5. Plan a day's diet , Calculate Nutritive value for Leanness
6. Preparation of the planned diet for Leanness
7. Plan a day's diet, Calculate Nutritive value for Peptic Ulcer
8. Preparation of the planned diet for Peptic Ulcer
9. Plan a day's diet , Calculate Nutritive value for Ulcerative colitis
10. Preparation of the planned diet for Ulcerative colitis
11. Plan a day's diet, Calculate Nutritive value for Typhoid
12. Preparation of the planned diet for Typhoid
13. Plan a day's diet, Calculate Nutritive value for Tuberculosis
14. Preparation of the planned diet for Tuberculosis
15. Plan a day's diet and Calculate Nutritive value for Burns
16. Preparation of the planned diet for Burns

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Model Question paper – End Semester Exam Practical

ST. FRANCIS COLLEGE FOR WOMEN, BEGUMPET
(An Autonomous College of Osmania University)
FACULTY OF SCIENCE-NUTRITION
SEMESTER – I CORE COURSE 4
MEDICAL NUTRITION THERAPY- I

Course Code: P26/NUT/DSC/104/P **Marks:50**
No. of credits : 2 **Time:3 Hrs**
Answer the following

1. **Plan a therapeutic diet with dietary prescription for the condition (A, B,C) (15 M)**
A. Obesity (1500 kcal)
B. Peptic ulcer (1800 kcal)
C. Ulcerative Colitis(1600 kcal)
2. Calculate the nutritive value for the planned diet (20M)
3. Viva **(10M)**
4. Record **(05 M)**

Prepared by Course Teacher [Name &Signature]	Checked &Verified by HOD [Name &Signature]	Approved by the Principal
Dr. Tabitha Ramona	Dr. Tabitha Ramona	Prof. Uma Joseph

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

SEMESTER – I

HOLISTIC LIFESTYLE & NUTRITION

1. **Course Description**

Programme: M.Sc. **Max. Hours:** 30

Course Code: P26/NUT/GE/101 **Hours per week:** 2

Type of course: GE **Max. Marks:** 50

No. of credits: 2

2. **Course Objective:**

- To enable the student to have a holistic approach for a better lifestyle.

3. **Course Outcomes:**

CO1: To understand the role of foods in preventive care.

CO2: To remember the importance of food substitutes for special conditions.

Prof. Bhancori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

4. Course Content:

MODULE 1: DIET AND DISEASES **(15 Hours)**

1.1 Antioxidants and free radicals: Functional foods, Foods rich in antioxidants, causes of free radicals,Cardiovasculardisease and fats—lipoproteins, trans fats, n-3, n-6 fatty acids, triglycerides.

1.2 Obesity: Causes and Types, BMI, Management of obesity (surgery), Pseudo grains, PCOS, Eating disorders, roughage.

1.3Salt intake: High blood pressure-causes, ranges, restriction of salt and dietary management.

MODULE 2: FOOD ALTERNATIVES **(15 Hours)**

2.1Allergies and allergens: Foods rich in allergens, food allergies, Food toxins, school lunch (programs), Eat the rainbow.

2.2Fermented foods: Introduction, types of fermented foods, importance, principles involved. Probiotics and role of Probiotics.

2.3Food Alternatives: Types of artificial sweeteners, Milk alternatives, Gestational diet, intermittent fasting, Beverages (types).

5. Reference Books:

1. Apollo Clinical nutrition Handbook- Anita Jatana.
2. Food Science- B Sri Lakshmi, New Age International Publishers.
3. Textbook of Human Nutriion- Mahtab S Bamji, N PrahladRao, Vinodini Reddy, 2nd edition, Oxford & IBH Publishing Co. Pvt Ltd.

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

1. Syllabus Focus

a) Relevance to Local, Regional, National and Global Development Needs

S. No	Student Centric Methods Adopted	Type/Description of Activity
1	National	Aligned with the "Fit India Movement" and national health goals to reduce the burden of lifestyle diseases like hypertension and obesity.
2	Global	Addresses global health trends regarding preventive nutrition, dietary diversity ("Eat the Rainbow"), and sustainable lifestyle choices.

b) Components on Skill Development/Entrepreneurship Development/Employability

Skill Development / Entrepreneurship Development / Employability	Syllabus Content	Description of Activity
Skill Development (NSQF Level 5)	Food Alternatives and Lifestyle Management	Planning personalized meal interventions for weight management and allergen-free diets.

c) IKS Components

IKS	Syllabus Content	Module
IKS	Traditional Fermented Foods and Ahara (Ancient Dietetics)	II

d) Aligned with SDG 3 (Good Health and Well-being).

Prof. Bhanoori Manjula, Ph.D.
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

7. Pedagogy

S. No	Student Centric Methods Adopted	Type / Description of Activity
1	Group Discussion	Participative Learning (Case studies on lifestyle management)
2	Presentations	Participative Learning (Emerging food alternatives)
3	Quiz	Experiential Learning

8. Course Assessment Plan

Weightage of Marks in Continuous Internal Assessments and End Semester Examination

Maximum Marks: 10M	**Maximum Marks: 10M**
Assignment -1 × 10 M= 10 M	Skill Test-1 × 10 M= 10 M

External QP Pattern		
2 Credits 2 Modules (GENERAL ELECTIVE)	SECTION A - Internal Choice – Answer any 6 out of 8 (To compulsorily have FOUR questions from each module)	**6 Q X 5 M = 30M**

b) Aligning COs with Continuous Internal Assessments

COs	Continuous Internal Assessments - CIA (40%)	End Semester Examination - (60%)
CO1	CIA-1 (Objective/Subjective)	End Semester examination
CO2	CIA-2 (Skill Test/Assignment/Presentation)	

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

b. Question Paper Pattern:

Holistic Lifestyle and Nutrition
Model Question Paper – Theory

Course Code:P26/NUT/OE/101 **Max Marks: 30M**
No. of credits: 2 **Time : 1 Hr**

Answer any 6 of the following questions **(6X5 =30 M)**

1.
2.
3.
4.
5.
6.
7.
8.

SECTION A - INTERNAL CHOICE			4Q X 10 M = 40M	
Question Number	**Module**	**Question (Model Questions)**	**CO**	**BTL (Blooms Taxonomy Level)**
1	Module 1	Antioxidants	CO1	Level I
2	Module 1	Omega 3 Fatty Acids	CO1	Level II
3	Module 1	BMI	CO1	Level II
4	Module 2	Beverages	CO2	Level I, II
5	Module 2	Food Allergens	CO2	Level III
6	Module 2	Probiotics	CO2	Level II, III
7	Module 2	MDM	CO2	Level II
8	Module 1	Intermittent Fasting	CO1	Level II

Question Paper Blueprint

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula Devi
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

	Modules	Hours Allotted	COs Addressed	Section A (No. of Qs)	Total Marks
1	1	15	CO-1	4	15
2	2	15	CO-2	4	15

8. CO - PO Mapping:

CO	PO	Cognitive Level	Class room sessions (hrs)
1	1	Remember, Understand	15
2	2	Remember, Understand, Apply	15

Prepared by Course Teacher [Name &Signature]	Checked &Verified by HoD/ Programme Coordinator [Name &Signature]	Approved by the Principal
Ms. Vinya Tejashvi	Dr. Tabitha Ramona	Prof. Uma Joseph

DEPARTMENT OF NUTRITION, ST FRANCIS COLLEGE FOR WOMEN.

Head
Dept. of Nutrition
St. Francis College for Women
Begumpet, Hyderabad-16.

Prof. Bhanoori Manjula, Ph.D.
Osmania University
Hyderabad - 500 007, TS