RANCHI WOMEN'S COLLEGE RANCHI

Constituent Unit

of

Ranchi University, Ranchi

(B.Sc. with Clinical Nutrition and Dietetics)

Undergraduate Programmed: A Template

2023

SUBMITTED BY

CND DEPARTMENT (UG & PG)

Preamble

Over the past decades the higher education system of our country has undergone substantial structural and functional changes resulting in both quantitative and qualitative development of the beneficiaries. Such changes have gained momentum with the introduction of Choice Based Credit System (CBCS) which further expects learning outcome-based curriculum in order to maximize the benefits of the newly designed curriculum. The learning outcome-based curriculum in CND in particular will definitely help the lecturers of the discipline to visualize the curriculum more specifically in terms of the learning outcomes expected from the students at the end of the instructional process. It is pertinent to mention here that the purpose of education is to develop an integrated personality of the individual and the educational system provides all knowledge and skills to the learner for this.

The Learning outcome-based curriculum framework (LOCF) has been prepared to support designing uniform, advanced and effective CND curriculum for undergraduate studies in CND. The recommendations related to curriculum development is applicable for college/university education system which includes coordinator/departments lecturers, guest faculties, parents, professionals from related fields or related bodies and representatives from university/college examinations authorities. The LOCF guides are based on the consultation documents on curriculum framework of University Grants Commission and MOOCs. The concerns, needs and interests of students, teachers as well as societal expectations has been taken into consideration while developing these framework

structure. Each subject content aims to present a curriculum framework, specifying the curriculum aims, learning targets and objectives, and thus providing suggestions regarding curriculum planning, learning and teaching strategies, assessment and resources. In addition, the curriculum framework also provides examples of effective learning, teaching and assessment

practices. A coherent understanding of the whole-undergraduate CND curriculum planning and the planning of student learning ability at subject levels can be established. Curriculum development is a collaborative and an on-going enhancement process, therefore, the same shall be updated and improved from time to time to meet new needs of students, teachers and society at large. The template as developed has the provision of ensuring the integrated personality of the students in terms of providing opportunity for exposure to the students towards core courses, discipline specific courses, generic elective courses, ability enhancement courses and skill enhancement courses with special focus on technical, communication and subject specific skills through practical and other innovative transactional modes to develop their employability skills.

The template of learning outcome based curriculum has categorically mentioned very well defined expected outcomes for the programme like core competency, communication skills, critical thinking, affective skills, problem-solving, analytical, reasoning, research-skills, teamwork, digital literacy, moral and ethical awareness, leadership readiness and entrepreneurship on along with very specific learning course outcomes at the starting of each course. Therefore, this template on Learning Outcomes based Curriculum Framework (LOCF) for B.Sc. with CND honours will definitely be a landmark in the field of outcome based curriculum construction.

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2. Learning Outcome Based Curriculum Vis- A -Vis Objective Based Curriculum:

Curriculum is the heart of any educational system. It can be focused either to achieve the objectives of each course of the programme or on the expected learning outcomes from each course. The objective based curriculum refers to the overall targets to be achieved through curriculum which may be long term or immediate. On the other hand, the learning outcomebased curriculum is very specific in nature in terms of changes in the cognitive, affective and psychomotor behavior of the students as a result of their exposure to the curriculum. The outcome-based curriculum provides the teacher very specific targets which he can achieve through the selected instructional process as compared to the objective based curriculum which provides general outcomes.

The learning outcome-based curriculum has very close relationship with the learning of the students whereas objective based curriculum focusses on only providing knowledge to the students. In other words, higher cognitive skills are developed through learning outcome-based curriculum. Hence, it is preferred to develop learning outcome-based curriculum which will provide specific directions to the teacher with respect to the transaction process and expected changes in the behavior of the students as well.

1. Nature of the B.Sc. CND

B.Sc. in Clinical Nutrition Dietetics is a 3-year undergraduate Nutrition and Dietetics program. The course involves nutrition and diet-related reviews, clinical research, case studies, and other tools of specialized nutritional support.

Clinical nutrition Dietetics is concerned with therapeutic uses for nutrition, usually in medical settings, as part of a complete health care program. Clinical Nutritionists create effective nutrition plans aimed at disease prevention and treatment, strengthening of the immune system, and nourishment of the body. Course work can include anatomy, physiology, chemistry, biochemistry, bio

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statistics, epidemiology, psychology, and microbiology. Because nutrition serves many needs and deals with many cultures and food types, the courses specifically related to nutrition are varied and might include micro- and macronutrients, sensory analysis, oncology, wellness, global studies, or community nutrition, to name just a few.

2. **Clinical Nutrition & Dietetics Eligibility Criteria Undergraduate Degree Courses:**

- Candidates can apply for undergraduate degree courses after passing class 12 board exams.
- Admission to 3-year degree programmes offered by college is done on the basis of entrance exam or marks based.
- For B.Sc. programmes, it is essential for students to study Physics, Chemistry, Biology till class 12.

3. **Aims of Bachelor's degree programme in CND**

The broad aims of bacheleors degree programme in CND are:
The aim of bachelor's degree programme in CND is intended to provide:

(i).Broad and balance knowledge in CND in addition to understanding of key clinical concepts, principles and theories.

(ii).To develop students' ability and skill to acquire expertise over solving both theoretical and Practice problems.

(iii). To provide knowledge and skill to the students' thus enabling them to undertake further

studies in CND in related areas or areas that can be helpful for hospitals self-employment/entrepreneurship.

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(iv).To provide an environment that ensures cognitive development of students in a holistic manner. A complete dialogue about nutrition and therapeutic diets.

(v).To provide the latest subject matter, both theoretical as well as practical, such

a way to foster their core competency and discovery learning. A CND graduate

as envisioned in this

Framework would be sufficiently competent in the field to undertake further discipline-specific studies, as well as to begin domain-related employment.

(vi).To mould a responsible citizen who is aware of most basic domain-

independent knowledge, including critical thinking and communication.

(vii).To enable the graduate prepare for national as well as international

competitive examinations, especially UGC-CSIR NET and RD examinations.

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SYLLABUS OF CND: Course Framework

Semester	Subject Code	Paper Name	Teach Hrs Per Week Credit	Total Marks.	Mid exam	End Sem.
SEM-1	CC – 1T	Basic Nutrition	4	75	15	60
	CC-2 T	Nutritional Biochemistry	4	75	15	60
	CC P1	Practical based on CC1 & CC2	4	50	-	50
	GE -1A T	Chemistry Theory	4	75	-	75
	GE – 1A P	Chemistry practical	2	25	-	25
	GE -1B T	Zoology Theory	4	75	-	75
	GE- 1B P	Zoology practical	2	25	-	25
	AECC-1	Language Hindi/Non Hindi (Hindi 50+ English 50)	2	100		100
SEM-2	CC – 3 T	Basic Human Physiology	4	75	15	60
	CC-4 T	Food Microbiology	4	75	15	60
	CC P2	Practical based on CC3 & CC4	4	50	-	50
	GE -2A T	Chemistry Theory	4	75	-	75
	GE – 2A P	Chemistry Practical	2	25	-	25
	GE -2B T	Zoology Theory	4	75	-	75
	GE – 2B P	Zoology Practical	2	25	-	25
	AECC-2	Environmental Science	2	100	-	100
SEM-3	CC – 5 T	Advance Human Physiology	4	75	15	60
	CC-6 T	Meal Management	4	75	15	60
	CC-7 T	Food Commodities	4	75	15	60
	CC-P3	Practical based on CC5 CC6 & CC7	6	75	-	75
	GE -3A T	Chemistry Theory	4	75	-	75
	GE – 3A P	Chemistry practical	2	25	-	25
	GE -3B T	Zoology Theory	4	75	-	75
	GE – 3B P	Zoology practical	2	25	-	25
	SEC-1	Computer Science	2	100	-	100
SEM-4	CC – 8 T	Basic Dietetics	4	75	15	60

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	CC-9 T	Community Nutrition	4	75	15	60
	CC-10 T	Sports Nutrition	4	75	15	60
	CC- P4	Practical based on paper 8,9 &10	6	75	-	75
	GE -4 A T	Chemistry Theory	4	75	-	75
	GE – 4 A P	Chemistry Practical	2	25	-	25
	GE -4 B T	Zoology Theory	4	75	-	75
	GE – 4 B P	Zoology Practical	2	25	-	25
	SEC-2	Entrepreneurship	2	100	-	100
SEM-5	CC –11 T	Quality Food Production & Food Preservation	4	75	15	60
	CC-12 T	Sanitation and Hygiene	4	75	15	60
	CC P5	Practical based on Paper 11&12	4	50	-	50
	DSE-1T	Advance Dietetics	4	75	15	60
	DSE-2	Job Training	4	75	-	75
	DSE-P1	Practical based on DSE-1&2	4	50	-	50
SEM-6	CC –13 T	Clinical nutrition	4	75	15	60
	CC-14 T	Neutraceuticals and functional food	4	75	15	60
	CC P6	Practical based on Paper 13&14	4	50	-	50
	DSE-3T	Catering Management & Food service equipment	4	75	15	60
	DSE-4	Job Training	4	75	-	75
	DSE-P2	Practical based on DSE-3&4	4	50	-	50
		Total	140	2400		

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Department of CND
Sanchi Women's College Ranchi

COURSE STRUCTURE OF CND(CBCS)

FIRST SEMESTER

Paper	SUBJECT CODE	NAME	NO OF CREDITS
1	CC1T	Basic Nutrition	4
2	CC2T	Nutritional Biochemistry	4
3	CCP1	Practical based on CC1 & CC2	4
4	GE 1A T	Chemistry	4
5	GE 1AP	Chemistry Practical	2
6	GE 1BT	Zoology	4
7	GT 1BP	Zoology Practical	2
8	AECC1	Hindi/Non Hindi	2

SECOND SEMESTER

PAPER	SUBJECT CODE	NAME	NO OF CREDITS
6	CC 3T	Basic Human physiology	4
7	CC 4T	Food microbiology	4
8	CC P2	Practical Based on CC3 & CC4	4
9	GE 2AT	Chemistry	4
10	GE 2AP	Chemistry practical	2
11	GE 2AT	Zoology	4
12	GE 2AP	Zoology practical	2
13	AECC2	Environmental Science	2

THIRD SEMESTER

PAPER	SUBJECT CODE	NAME	NO OF CREDITS
12	CC 5T	Advance Human Physiology	4
13	CC 6T	Meal Management	4
14	CC 7T	Food Commodities	4
15	CC P3	Practical Based on CC5 CC6 & CC7	6
16	GE 3 AT	Chemistry	4
17	GE 3A P	Chemistry practical	2
18	GE 3BT	Zoology	4
19	GE 3BP	Zoology practical	2
20	SEC1	Computer Science	2

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FOURTH SEMESTER

PAPER	SUBJECT CODE	NAME	NO OF CREDITS
19	CC 8T	Basic Dietetics	4
20	CC 9T	Community Nutrition	4
21	CC 10T	Sports Nutrition	4
22	CC P 4	Practical Based on CC8 CC9 & CC10	6
23	GE 4 AT	Chemistry	4
24	GE 4A P	Chemistry practical	2
25	GE 4BT	Zoology	4
26	GE 4BP	Zoology practical	2
27	SEC 2	Entrepreneurship	2

FIFTH SEMESTER

PAPER	SUBJECT CODE	NAME	NO OF CREDITS
26	CC11 T	Quality Food Production & Food Preservation	4
27	CC12 T	Sanitation and Hygiene	4
28	CC P5	Practical Based on CC11 & CC12	4
29	DSE 1T	Advance Dietetics	4
30	DSE 2	Job Training 1month(Hospital)	4
31	DSE P1	Practical Based on DSE 1 & 2 (Project report)	4

SIXTH SEMESTER

PAPER	SUBJECT CODE	NAME	NO OF CREDITS
32	CC13 T	Clinical nutrition	4
33	CC14 T	Neutraceuticals and Functional food	4
34	CC P6	Practical Based on CC13 & CC14	4
35	DSE 3T	Catering Management & Food service equipment	4
36	DSE 4T	Job Training 1month (Hotel/Industerial)	4
37	DSE P2	Practical Based on DSE 3 & 4(Project report)	4

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4. LEARNING CURRICULUM FRAME WORK

4.1 CORE COURSE

SEMESTER I TIME 3HOURS	**BASIC NUTRITION**	SUBJECT CODE CC1 CREDIT 4 CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives: -

- For CND students, providing information on the food and nutrition
- Student should know quality and safety of the food supply; the causes and consequences of nutritional disorders.
- Providing information on the nutritional value of foods; the components of an adequate diet.
- Encourage to practical work

Course outcome:

- Utilize knowledge from foundational sciences as a basis for understanding the role of food and nutrients in health and disease. (Domain 1)
- Integrate scientific information, research, and critical thinking into evidence-based practice.
- Apply basic principles of nutrition

Part of course

1. Introduction to nutrition, Food as a source of Nutrients, functions of food, definition of nutrition, adequate, optimum and good Nutrition, Malnutrition – PCM
2. Interrelationship between Nutrition and Health, visible signs of good health.
3. Food Guide – Basic five food groups – How to use food guide.
4. Water and electrotype Balance – As a nutrient – Function, source, Requirement, water Balance effect of deficiency.

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5. Acid base balance

6. Carbohydrates – composition, Food sources, functions, storage in the body, RDA.

7. Fat and oil – composition, saturated & unsaturated fatty acids, essential fatty acids classification, food sources, functions of fats, RDA.

8. Protein – composition, food sources, essential, non – essential amino acid functions of protein, RDA.

9. Energy – Unit of Energy, food as a source of energy, determination of energy value of food, Direct and indirect calorimetry, Energy metabolism, BMR, Food sources and body's need food energy, factors affecting - BMR.

10. Minerals – Functions, sources, Bioavailability, RDA and deficiency of following minerals – Calcium,

Phosphorus and potassium. Iron, Iodine, Fluorine, Sodium

11. Vitamins – Classifications, sources, requirements, units of measurement, functions, deficiency about following vitamins

a) Fat soluble Vitamins – (i) Vitamin A (ii) D (iii) E (iv) K.

b) Water Soluble (i) Vitamin B Complex – Thiamine, Riboflavin, Niacin, Pyridoxine, Folic Acid,

Vitamin- B12 (ii) Ascorbic Acid

Practical (CC – 1) **Credit - 2**

Marks 25 CLASS 30

1. Qualitative test for carbohydrates.
2. Estimation of Protein and calcium in milk.
3. Determination of ash content and moisture content of food stuffs.
4. Identification of glycerol

Book Recommended

1.M. Swaminathan – Handbook of food & Nutrition

2. B. Srilakshmi – Nutrition Science

3. Shilpi Agarwal – Nutrition Science.

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4.2 CORE COURSE

SEMESTER I	**NUTRITIONAL BIOCHEMISTRY**	SUBJECT CODE CC2
TIME 3HOURS		CREDIT 4
		CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives: -

- The course is an introduction to nutritional biochemistry.
- The students will learn how nutrients effect biochemical processes and signal transduction pathways, and how this can lead to development nutritionally related diseases.
- The laboratory course will give insight in biochemical methods and analyses used in nutritional research.

Course outcome:

- Capable of describing biochemical pathways relevant in nutrient metabolism.
- Capable of describing biochemical techniques that are relevant for the investigation of the nutrient metabolism.
- Capable of using selected biochemical techniques relevant in nutritional biochemical research

Part of course

1. Molecular aspect of transport, passive diffusion, facilitated diffusion active transport, nutrients and energy needs. Coupled reactions.

2. Genetic control of metabolism: Nucleic acids components, structure, RNA components, types, structures, replication

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i. Genetic repair mechanisms

ii. Genetic code – protein biosynthesis

3. Major metabolic pathways:

a. Carbohydrate metabolism: classification of carbohydrate, Glucose, transport and Biological oxidation, glycolysis metabolism, citric-acid cycle, gluconeogenesis pentose phosphate pathway

b. Lipid metabolism: classification of lipids. Intestinal resynthesis of triglycerides transport, β -oxidation of fatty acids, biosynthesis of fatty acids, mobilization of fat, ketogenesis,

metabolism of phospholipids, glycolipids and cholesterol [in brief]

c. Amino acid metabolism: classification of proteins, general pathways biochemical transformation and metabolism.

Practicals (CC – 2) **Credit - 2**
Marks 25 **CLASS 30**

- Benedicts test for sugars.
- Biuret test for protein.
- Iodine test for starch

Book Recommended

1. A. L. Lehninger – Principal of Biochemistry
2. J. M. Berg, J. L. Tymoezko, L. Stryer - Biochemistry
3. Harpers Ithstrated Biochemistry
4. Dr. A. C. Deb – Fundamentals of Biochemistry
5. A.V.S.S Ramarao – A textbook of Biochemistry
6. U. Satyanarayan & U. Chakarpani – Biochemistry

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4.3 CORE COURSE

SEMESTER II TIME 3HOURS	**BASIC HUMAN PHYSIOLOGY**	SUBJECT CODE CC3 CREDIT 4 CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

4. Very short question(10 questions)10 marks
1. Short question (1 question) 5 marks
2. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives: -

- This course covers the physiology of humans, with emphasis on the major organs and the processes they govern, including Structure & function of cell, Cardiovascular system and composition of blood, muscle function and movement and the Digestive system
- Other topics will include nerve and circulation
- The course will also examine the consequences of genetic or environmental disruption of physiological processes and the consequences of these in human disease.

Course outcome:

- Describe the structure of major human organs and explain their role in the maintenance of healthy individuals.
- Explain the interplay between different organ systems and how organs and cells interact to maintain biological equilibrium in the face of a variable and changing environment.
- Use complex electronic equipment including Power labs and Bio amplifiers to record human physiological data, and responses to experimental stimuli.
- Interpret and draw inferences from experimental measures of physiological function including electrocardiograms and cell division read-outs.

Parts of course 1. Human cell

1. Cell composition, structure and function

Cell division

2. Tissue & Muscle

Formation and types of tissue Epithelial, Nervous muscular and connective tissue - structure and function

Common disorders and disease of tissue.

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Structure and types of muscle, Chemical and thermal changes in muscle

3. Blood composition & Circulatory system – functions, clotting, blood groups –

Blood Vessel Artery, Vein, capillary, structure of heart, cardiac cycle, cardiac output , circulation ECG and its significance, blood pressure – pulse, systolic, diastolic, Anemia, leukemia, varicose veins, atherosclerosis, Angina pectoris

4. Lymphatic system

Lymph glands types, structure and its function

Formation of lymph and disorder & disease related lymphatic system

5. Digestive System

Organs, structures, functions– Teeth, tongue, salivary glands, saliva, composition and function. Esophagus, Stomach, Small intestine, Large intestine, Pancreas, Liver, Gallbladder. Diabetes Mellitus, diarrhea, peptic & duodenal ulcers

PRACTICAL (CC – 3) **Credit -2**

Marks 25 **Class 30**

1. Microscope and its use.
2. Cell division – Resting stage, prophase, metaphase, anaphase, telophase. Examine and draw the tissues.
3. Blood: a) Microscopic examination of prepared slides –

i) Stained blood smear.

a) Testing of blood groups using typed sera.

c) Hemoglobin estimation using haemometer.

d) R.B.C. count & W.B.C. count.

4. Blood pressure: Determination using a sphygmomanometer.

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4.4 CORE COURSE

SEMESTER II	**FOOD MICROBIOLOGY**	SUBJECT CODE CC4
TIME 3HOURS		CREDIT 4
		CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives: -

- To provide knowledge of microorganisms (pro-technological, probiotic, pathogens and spoilage) associated with **foods** and their origin and role.
- Knowledge of the factors that determine the presence, growth and survival of microorganisms in food.
- Compare various physical and chemical methods used in the control of microorganisms.
- The microbiology of food preservation and food commodities; fermented and microbial foods; principles and methods for the microbiological examination of foods; micro biological quality control, and quality schemes.

Course outcome:

- Explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival.
- Explain the significance and activities of microorganisms in food.
- Describe the characteristics of foodborne, waterborne and spoilage microorganisms, and methods for their isolation, detection and identification.
- Explain why microbiological quality control programmes are necessary in food production.
- Discuss the microbiology of different types of food commodities.

Parts of course

1. Introduction to microbiology and its relevance to everyday life. General characteristics of bacteria, fungi, virus, protozoa, algae.
2. Growth curve- effect of environmental factors on growth of microorganisms – pH, water activity, oxygen availability, temps & others.
3. Microbiology of different foods – Spoilage and contamination – sources, types, effects on the following:

a) Cereals and cereal products b) Sugar and sugar products.

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c) Vegetables and fruits. d) Meat and meat products.
e) Fish and other sea foods. f) Eggs and poultry
g) Milk and milk products. h) Canned foods

4. Microbial intoxication and infections sources of contamination of foods, toxin production and physiological action, sources of infection of foods by pathogenic organisms, symptoms and method of control.
6. Beneficial effect of micro – organisms.
7. Environmental microbiology - water, air, sort and sewage.
8. Relevance of microbiology standards for food safety.

Book Recommended

1. William C. Frazier – Food Microbiology
2. M. R. Adams & M. O. Moss – Food Microbiology
3. M. J. Pelczar, E. C. S Chan, N. E. Krieg – Microbiology
4. J. M. Jay – Modern Food Microbiology

Practical (CC – 4) **Credit 2**
Marks 25 **Class 30**

1. Identification of Instruments used in microbiology.
2. Steam sterilization of laboratory
3. Staining techniques
4. Preparation of agar media

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4.5 CORE COURSE

SEMESTER III TIME 3HOURS	**ADVANCE HUMAN PHYSIOLOGY**	SUBJECT CODE CC5 CREDIT 4 CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- To impart knowledge and develop capacities of the students through higher education in the area of **Human Physiology**.
- Develop higher cognitive skills, cultivate the virtues, Develop focus and depth in one or more disciplines, Develop leadership skills, and develop a global perspective, Prepare for lifelong learning.
- The program promotes personal scholarship and academic growth, lifelong learning skills, and mastery of core knowledge in nutrition and life sciences.

Course outcome:

- Students will be able to demonstrate critical thinking skills and analytical abilities to identify disease and disorders.
- Students will be able to assess signs and symptoms of individuals in various disease -related conditions and function of organs by applying knowledge of metabolism and physiologic systems.
- Students will be able to critique and effectively communicate physiology information.

Parts of course

1. **Respiratory system:** Organs of respiration – Nose, larynx, Trachea, bronchi, lungs and its capacity – structures and functions, mechanism of respiration – chemical respiration – Tissue respiration. Common disease like TB, Asthma, Pleurisy, cough, hiccups.
2. **Excretory system:** Organs, structure and functions of kidney, Ureter, Urinary bladder.

Formation of Urine, composition of normal urine

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Common disease symptoms, metabolic and Nutritional implications – Nephritis, Nephritic Syndrome, Renal failure, renal calculi.

3. **Nervous system** – structure of a nerve cell, nerve fibers & an outline classification of nervous system. Conduction of nerve impulse, synapse, Reflex action. Disease related to nervous system-meningitis, epilepsy and Alzheimer's

4. **Endocrine System**: Hormones – Endocrine glands – their structure and functions (a) Pituitary (b) Thyroid (c) Parathyroid (d) Adrenal (e) Hormones of reproduction.

Endocrine system – disorders of over and under secretion.

5. Reproductive system

Female reproductive organ; main organ and accessory organ structure and function

Menstruation, puberty, menopause

Male reproductive organ: main organ and accessory organ structure and function Fertilization and parturition

Disease related to reproductive system- PCOS, fibroids, testicular cancer and prostate disease.

Practical (CC – 5) **Credit 2**

Marks 25 **Class 30**

1. Study the fundamental concept of structure and function of following system - urine formation
   - Physiology of respiration
   - mensturation cycle
2. Different types of disease, identification and symptoms

Book Recommended

1. Michael J.Gibney, Maninos Elia, Olle Ljungqvist & julic Dowsett – Clinical Nutrition 2. J.S.Garrow, WPT James & A.ralph – Human Nutrition and Dietetics

3. F.P.Antia & Philip Abraham – Clinical Dietetics & Nutrition.

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4.6 CORE COURSE

SEMESTER III TIME 3HOURS	**MEAL MANAGEMENT**	SUBJECT CODE CC6 CREDIT 4 CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- **To learn principles of meal planning.**
- **To understand the role of nutrition in different stages of life cycle.**
- **Use and importance of Food value Tables in meal planning Concept of nutritionally adequate diet and meal planning.**
- **Gain knowledge of dietary modification for weight management.**

Course outcome:

- Students will be able to demonstrate critical thinking skills and analytical abilities to identify and solve problems in the family meal management.
- Students will be able to assess nutritional status of individuals Family members various life-cycle stages and determine nutrition-related conditions and diseases by applying knowledge of metabolism and nutrient functions, food sources, and physiologic systems.
- Students will be able to calorie calculation.
- Students will be able to planned a diet chart.

Parts of course

1. Introduction to meal management – Balanced diet – food guide- basic 5 food groups. Food Exchange list.

2. Basic principles of meal planning- objectives – steps in meal planning – food cost.

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3. Nutrition in Pregnancy – Physiological stages of pregnancy nutritional requirements – food selection. Complications of pregnancy.

4. Nutrition in lactation - Physiology of lactation – Nutritional requirements, special foods given during lactation

5. Nutrition during infancy – growth and developments – nutritional requirements – Breast feeding – infant formula – introduction of supplementary foods.

6. Nutrition during Early Childhood (Toddler / Pre – School) growth and nutrient needs – Nutrition related problems- Feeding patterns.

7. Nutrition of school children – nutritional requirement importance of snacks – school lunch.

8. Nutrition during Adolescence - growth and nutrient needs, food choice, eating habits - factors
Influencing them.

9. Nutrition in adults – Calorie requirements of sedentary moderate & heavy workers.

10. Geriatric nutrition – factors affecting food intake and nutrient use – nutrient needs – nutrition related problems.

Book Recommended

1. Corinne H.Robinson, M.R.Lawter, W.L.Chenoweth, & Anon.E.Garwick – Normal and Therapeutic Nuttrition.

2. I.C.M.R 2010 – Nutrient Requirements and Recommended Dietary Allowances for Indians.

3. B.Srilakshmi – Dietetics

4. Kumod Khanna - Textbook of Nutrition & Dietetics

PRACTICAL (CC – 6) **Credit -2**

Marks 25 **Class 30**

1. Elementary idea of weight measurement of foods

2. Planning for adult man and woman during different physical activities – Sedentary, moderate, heavy worker, preparation of above diet.

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3. Planning and preparation of a balanced diet for nursing mother lactation
4. Planning and preparation of a balanced diet for pregnant women
5. Supplementary feeding – preparation of weaning foods.
6. Planning and preparation of diet for a toddler, Pre – School child.
7. Planning and preparation of meal/packed lunch for school children.
8. Planning preparation of meal for Adolescents.
9. Planning a diet for senior citizen preparation of meals.
10. Nutritional survey for various age groups.

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4.7 CORE COURSE

SEMESTER III TIME 3HOURS	**FOOD COMMODITIES**	SUBJECT CODE CC7 CREDIT 4 CLASS 30

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- To help individuals recognize the basic seven food groups.
- To help individuals develop an understanding of the underlying scientific principles upon which current issues in nutrition are based.
- To inform about methods of food production and processing in domestic and commercial situations.
- To encourage an awareness of social, economic and cultural aspects of food choice.
- To enable individuals to demonstrate and apply appropriate knowledge of concepts and principles when planning and preparing meals and when making food choices.

Course outcome:

- Evaluate the acceptability of food products.
- Formulate cereal and pulse based products.
- Develop vegetable and fruit preserves.
- Design and create novel instant and value added products.
- Choose appropriate packaging materials and interpret labeling information.

30.10.23

Parts of course

1. Cereals and Pulses: Cereals and millets, breakfast cereals, cereal products, fast foods – structure, processing, use in variety of preparations, selection, variety, storage, nutritional aspects and dextrinization, gelatinization, gluten, formation. Pulses and legumes – productions (in brief) selection and variety, storage, processing, use in variety of preparations, nutritional aspect and toxic substances. 2. Milk and milk products: (Introduction), Composition, classification, quality processing, storage, spoilage, uses, nutritional aspects, milk, curds, butter milk, paneer, khoa, cheese, ice – cream, kulfi and various kinds of processing milk.

3. Eggs: Production, grade, quality, selection storage, spoilage, uses, and nutritional aspects.

4. Fish Poultry and Meat: Selection, purchase, storage, uses, and Nutritional aspects spoilage of fish, poultry and meat.

5. Vegetables and Fruits: Classification, Selection, purchase, storage and availability, use and nutritional aspects of raw and processed vegetables and fruits.

6. Sugar and Sugar Products: Different forms, of sugar (sugar, Jaggery, Honey Syrup), manufacture
selection storage and use as preventives.

7. Fats and Oils: Types and sources of fats and oils (animal and vegetables) processing, uses, storage, and nutritional aspects.

8. Raising Agents: Types, Constituents, use in cookery and bakery.

9. Food Adjuncts: Spices, condiments, herbs, extracts conscription, uses, specifications procurements and storage.

10. Convenience Foods: Role, types, advantages, uses, cost and contribution to diet.

11. Salt: Types, uses in the diet.

30.10.23

12. Tea, Coffee, Chocolate and Cocoa Powder: Growth, Cultivation, processing, and nutritional aspects. 13. Organic food, Nutraceutical (Introduction)

Book Recommended

1. B.Srilakshmi – Food Science

2. V.A.Vaclark & E.W.Christian – Essentials of Food Science

3. N.N.Polten, J.H.Hotchkiss – Food Science

4. N.Shakuntala Manay, M.Shadaksharaswarry – Food Facts and Principal

5. S.R.Mudambi, S.M.Rao & M.V.Rajagopal – Food Science

Practical (CC- 7) **Credit-2**

MARKS 25 **Class 30**

a. Cookery: Different preparations of rice, pulses, Vegetables, fruits, fleshy foods eggs etc.

b. Experimental foods:

i. Microscopic study of different starches

ii. ii. Study of effects of moist heat on starch.

iii. iii. Gluten formation.

c. Comparison of smoking temperature of some fats and oils.

30.10.23

5.1 SKILL ENHANCEMENT COURSE

SEMESTER III	**COMPUTER SCIENCE**	SUBJECT CODE SEC1
TIME 3HOURS		CREDIT 2
		CLASS 30

Pattern of exam
Final term

Marks distribution
Final marks 100

Objective

- Basic computer courses are focused on the basics of computers including computer types, **Computer Applications**, hardware systems, and more.
- Basic computer courses are suitable for those who want to learn computer basics, for various purposes; jobs, personal, and business purposes.
- Having a basic knowledge of computers can help you land a better job, advance your career, and put yourself above other employees.

Course Outcomes

- Identify, analyze, develop, implement, verify and document the requirements for a computing environment.
- Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools. □ To the specific knowledge, skills, and attitudes learners will gain at the completion of a course.

Unit 1: Parts of course Unit 1: Basic computer concept

Introduction to Computer, History, Characteristics, Types, Application, Basic Components, Computer Architecture, etc.

Unit 2: Number Systems

Introduction to Number System, Classification and Types of Number System, Base Conversion, using Shortcut Method, etc.

Unit 3: Hardware and Software

Introduction, Computer Memory, Peripherals, Output Devices, Software, and Requirements, etc.

Unit 4: Windows XP

30.10.23

Features, Comparison, Windows XP installation, Activating and Security features, User Accounts, Getting Help, etc.

Unit 5: MS Word

Introduction, Windows Interface, Word Application, Viewing Documents, Basic and Advanced Formatting, Navigating through a Word Document, Printing Documents, Preview, etc.

Unit 6: Excel 2007

Introduction to Excel, Workbook, Worksheet, Formatting, Advanced formatting, Printing worksheets, etc

Unit 7: MS PowerPoint

MS PowerPoint Introduction, Creating Presentations, Basic and Advanced Formatting, Using Templates, Inserting charts and tables, etc.

Unit 8: internet and its uses

Basic of Computer Networks, Internet, World Wide Web (WWW), Web Browsing Software, Search Engines, Understanding URLs, Surfing the Web

Book recommendation

- **Computer Fundamentals**
  Goel, Anita Pearson
- **Computer Fundamentals: Architecture & Organization**
  Ram, B. 4th ed New Age
  Computer Fundamentals: Concepts, Systems & Applications Sinha, P. K. BPB
- **Computer Fundamentals: Concepts, Systems & Applications** Sinha, P. K/ Sinha, P. 3rd ed BPB
- **Computer Fundamentals: Concepts, Systems & Applications**
  Sinha, P. K/ Sinha, P. 4th ed BPB

30.10.25

4.8 CORE COURSE

SEMESTER IV TIME 3HOURS	**BASIC DIETETICS**	SUBJECT CODE CC8 CREDIT 4 CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- Fundamental knowledge and skills needed by nutrition professionals of the future.
- Develop higher cognitive skills, Cultivate the virtues, Develop focus and depth in one or more disciplines, Develop leadership skills, Develop a global perspective, Prepare for lifelong learning).
- The nutrition curriculum prepares students to be leaders in the next generation of nutrition scientists, public health and clinical nutrition practitioners.
- The program promotes personal scholarship and academic growth, lifelong learning skills, and mastery of core knowledge in nutrition and life sciences.

Course outcome:

- Students will be able to demonstrate critical thinking skills and analytical abilities to identify and solve problems in the nutritional sciences.
- Students will be able to assess nutritional status of individuals in various life-cycle stages and determine nutrition-related conditions and diseases by applying knowledge of metabolism and nutrient functions, food sources, and physiologic systems.
- Students will be able to critique and effectively communicate nutrition information.
- Students will be able to describe social, multiethnic, and environmental dimensions within nutrition and the life sciences.

Parts of course

1. Growth and source of Dietetics.

Role of Dietician – The Hospital and community

30.10.25

2. Basic concepts of Diet therapy

a.) Therapeutic Adaptation of Normal Diet.

b.) Routine Hospital Diet

Enteral Nutrition –Normal diet, Soft diet, liquid diet and Tube feeding.

Parenteral Nutrition – Peripheral Nutrition and Total Parenteral Nutrition (TPN).

3. Diet and drug interaction.

4. Obesity and leanness – Cause, complication and health effect, Dietary treatment and other recommendation.

5. A) Fever – Type, metabolism, General dietary consideration.

- Typhoid
- Influenza
- Tuberculosis
- Malaria

B) Cancer and Burns.

6. Diet in Gastro – intestinal disorders –

Etiology, Symptoms, Dietary modifications and feeding pattern.

a) Diarrhoea (Child and Adult) – Classification.

b) Malabsorption symptoms

c) Ulcerative colitis

d) Flatulence & Constipation

e) Gastritis and peptic ulcer (gastric and duodenal ulcer).

7. Diet in allergy reaction

Book Recommended

1. B. Srilakshmi – Dietetics

2. M. Swaminathan – Food and Nutrition

3. Staci Nix – Willian's Basic Nutrition and Diet Therapy.

4. Subhangi A. Joshi – Nutrition and Dietetics

5. C. Gopalan – Nutritive value of Indian Foods

30.10.13

PRACTICAL (CC – 8) **Credit -2**

Marks 25 Class 30

1. Standardization of common food preparation.
2. Planning and preparation of full or normal diet.
3. Planning and preparation of liquid diet
4. Planning and preparation of soft diet
5. Planning and preparation of bland diet for peptic ulcer
6. Planning of diet for viral fever
7. Planning and preparation of diet for obesity.
8. Planning and preparation of underweight.

30.10.23

4.9 CORE COURSE

SEMESTER IV TIME 3HOURS	**COMMUNITY NUTRITION**	SUBJECT CODE CC9 CREDIT 4 CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- Introduction to the practice of public health nutrition, discussion of significant public health nutrition problems today, and an overview of food and nutrition programs available to the community.
- In addition, students in the Coordinated Program in Dietetics will integrate course information with their current community clinical placement experiences.
- Discuss and understand the various nutrition monitoring and surveillance methodologies and how they are used.
- Understand beliefs, customs and food practices of various cultural groups and apply this knowledge in planning nutrition education and intervention programs.

Course outcome:

- Gain knowledge on the national effort in combating malnutrition
- Appreciate the National and International contributor towards national improvement in alleviating nutrition problems.
- Learn about the terms related to health and fitness
- Comprehend the interaction between fitness and nutrition
- Employability scope for Government services and sanitary inspectors.

Parts of course

1. a) Nutrition and health in national development

b) Nutritional problems confronting our country the causes of malnutrition in India – balance between food production and population growth.

30.10.23

2. Methods of assessment of nutritional status.
- Sampling techniques.
- Identification of risk groups.
- Direct assessment diet surveys
- Anthropometry, Clinical and Biochemical estimation.
- Indirect assessment food balance sheets and agricultural data. Ecological parameters and vital statistics
- Use of growth charts.

3. National and international agencies in community nutrition – ICDS, SNP, ANP, Midday meal programme, FAO, WHO, UNICEF, CARE, ICMR, ICAR, CSIR, NIN.

4. Breast feeding and its implications, Hazards of bottle feeding.

5. Weaning foods – Planning, formulating and preparing.

6. Importance of correct and timely weaning.

7. Nutrition and infection – relationship, immunisation and its importance.

8. Recent advances in Community Nutrition research – Fortification & food adulteration.

Book Recommended:

1. K.Park – Preventive and Social Medicien
2. L.K.Mohan & S.E.Stump – Krause's Food & Nutrition Therapy.
3. B.Srilakshmi – Nutrition Science.

PRACTICAL (CC – 9) **Credit -2**
MARKS 25 **Class - 30**

The objective of this practical course is to enable the students to learn and prepare different types visual aid for the community to gain practice experience in giving demonstrations and conducting survey and other methods of assessments.

1. Diet and nutrition surveys:

a) Identifying vulnerable and risk groups

b) Diet surveys and breast feeding and weaning practices of specific groups.

c) Use of anthropometric measurements in children.

2. Methods of extension used in community:

a) Preparation of visual aids – charts, posters models etc. for exhibition.

b) Lecture and method demonstrations to target groups.

3. Field visits to:

a) Observe the working of nutrition and health-oriented programme.

b) Hospitals to observe nutritional deficiencies.

30.10.23

4.10 CORE COURSE

SEMESTER IV TIME 3HOURS	**SPORTS NUTRITION**	SUBJECT CODE CC10 CREDIT 4 CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:

- Gain Knowledge in general metabolic principles, primarily fuel sources for the working muscle During exercise.
- Develop knowledge of the macro nutrient principles of sports nutrition for different types of Athletes based on their goals, specifically related to energy and recovery.
- Be knowledgeable of hydration guidelines for safety and performance and know how to evaluate and monitor hydration status
- Be familiar with the micro nutrient needs of athletes which bio active food components (antioxidants, polyphenols) are beneficial
- Be able to evaluate dietary supplements for effectiveness and safety
- Be familiar with the nutritional impact on the brain, bone, connective tissue and immune function as it applies to athletes.
- Understand the role of nutrition in recovery from injury
- Be knowledgeable of the techniques to safely and effectively monitor and alter weight and body Composition
- Be able to assess and athlete's current intake and develop a sport nutrition plan based on type of Sport and goals

Course Outcome

- Understand the basic principles of sports nutrition.
- Acquire the knowledge of use of supplements for athletic purposes.
- Acquire the skills and techniques involved in the planning and preparation of therapeutic diets for according body composition.
- Develop the capacity and attitude for taking dietetics as a profession

30.10.23

Parts of course

Unit 1: Review of General Nutrition Principles Energy: Fuel Sources for the Working Muscle 1

Unit 2: Exercise Metabolism impact on Dietary protein fat carbohydrate: Types, Sources & Absorption Related to Exercise

Unit 3: Low Carb Diets for Athletes

Unit 4: Protein Recommendations for Athletes and hydration principle

Unit 5: Vitamins and minerals role in different types of sports performance

Unit 6: Supplements support safety and regulations

Unit7: Nutrition and Training Plans to Alter Body Composition

Unit 8: Nutritional Support for Injury Recovery

Practical (CC – 10) **Credit – 2**

MARKS 25 **Class 30**

- Assessment of exercise metabolism
- Case Study: Fatigued Athlete
- Calculating Protein Needs for an Athlete
- Nutrition Assessment for an Athlete
- Case study: "Making Weight" and Recovery for a Weight Class Athlete

- **Books recommended**

- Nutrition for sports exercise and health, Mario Spano , Human Kinetics; 1st edition
- Essential sports nutrition, Marin sumbal, CSSD , Rockridge Pr; 2nd edition

30.10.23

5.2 SKILL ENHANCEMENT COURSE

SEMESTER IV	**ENTERPRENEURSHIP**	SUBJECT CODE SEC2
TIME 3HOURS		CREDIT 2
		CLASS 30

Pattern of exam
Final term

Marks distribution
Final marks 100

Objectives:-

The purpose of the course is that the students acquire necessary knowledge and skills required for organizing and carrying out entrepreneurial activities.

- To develop the ability of analysing and understanding business situations in which entrepreneurs act and to master the knowledge necessary to plan entrepreneurial activities.
- Develop the ability of analysing various aspects of entrepreneurship – especially of taking over the risk, and the specificities as well as the pattern of entrepreneurship development and, finally, to contribute to their entrepreneurial and managerial potentials.

Course outcome:

After learning the course the students should be able to

- Develop idea generation, creative and innovative skills
- Aware of different opportunities and successful growth stories
- Learn how to start an enterprise and design business plans those are suitable for funding by considering all dimensions of business.
- Understand entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship.
- Run a small enterprise with small capital for a short period and experience the science and art of doing business.

Parts of course

Unit I Element in enterprise Management: Basic Management concepts, personnel, production, Materials, financing and marketing managements, problem solving and innovation, industrial and business law.

Entrepreneurial motivation.

30.10.23

Unit II

Environmental analysis, project selection, project appraisal, modification/ finalization of project, collaborations, preparations for launching, trial run and test marketing.

Unit III

a. Institutions, Financing Procedure and Financial Incentives.

b. Financial Ratio and their Significance.

c. Book of accounts- meaning, characteristics objectives, advantages, limitation of accounting, general journal, ledger, cash receipts, trial balance.

Unit IV

a. Energy Requirements and Utilization.

b. Choice of Technology , Plant and Equipment

c. Critical Path method (CPM). Project Evaluation Review Techniques (PERT) as planning tools for establishing SSI.

d. (i) Creativity and Innovation. (ii) Problem Solving Approach. (iii) Strength Weakness Opportunity. (iv) Introduction of CPM & SWOT Analysis.

e. Techno – Economic Feasibility of the Project.

f. Plant Layout and Process Planning for the Product.

g. Quality Control/Quality Assurance and Testing of Product.

Unit V

a. Elements of Marketing and sales Management.

b. (i) Nature of Product and Market Strategy. (ii) Packaging and Advertising after Sales Service. c. Costing and Pricing.

d. Management of self and understanding human behaviour.

Book Recommended

1. Rajeev Roy – Entrepreneurship

2. N.V.R.Nardu & T.Krishna Rao – Management and Entrepreneurship

3. S.K.Mohanty – Fundamentals of Entrepreneurship

30-10-23

4.11 CORE COURSE

SEMESTER V	**QUALITY FOOD**	SUBJECT CODE CC11
TIME 3HOURS	**PRODUCTION & PRESERVATION**	CREDIT 4
		CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- Manage the human resources within a food services organization or department
- Communicate appropriately with clients, staff and management
- Apply food services technology and operate industry equipment
- Develop nutritional menus for food service production
- Manage food service production
- Demonstrate professional behaviors expected within the food service industry
- Manage food services budgets

Course outcome:

- Plan and construct menus for Indian regional cuisines and occasions. Comprehend food service systems.
- Plan and forecast production schedules.
- Select appropriate purchasing procedures and issuing.
- Skill in stepping up of recipes of different cuisines.
- Manage a large scale food production unit

Parts of course

1. Aims and objectives of different food service outlets.

a) Industrial (b) Institutional (c) Hospitals - Different food and beverage outlet

30.10.23

2. Menu planning – sequence of course – Indian (regional i.e., North India, South Indian, West Indian and Gujarat is, Western and others). Techniques of writing menu (give exercises for planning menu).

3. Type of meals – and styles of service, breakfast lunch, dinner, afternoon tea, snacks table d'hote and a'la carte menu (1) BF (2) Ala Carte (3) TDH

4. Introduction to basic and special equipment for food production and service care and use of equipments.

5. Types of services of food and beverage outlet

6. Staff organization of different outlets - (a'la carte and table d'hôte), manager, Hostess, Supervisor Steward, Waiter).

7. Beverages, alcoholic and non – alcoholic, hot and cold. Classification of beverages, use and importance in meals and snacks, suitable glassware for beverage service.

8. Basic of food processing and preservation

- Technology
- Historical aspects and principal &methods

9. Packageing, labeling and controlling of food products.

10. Modern industrial techniques.

Book Recommended

1. D. Lillicrap and John Cousins – Food and Beverage Service

2. James Peterson – Essentials of Cooking

3. Bert wolf, Emily Aronson – The New Cooks Catalogue

PRACTICAL (CC-11) **Credit - 2**

MARKS 25 Class 30

1. Organizing, preparing and serving food for three different meals for 50 members or more (list attached).

30.10.23

2. Setting up the restaurant – lying of table cloth changing, setting up the silvers and other table appointments. Folding of serviettes correct use of waiter's cloth. Preparing for customers.

3. Serving and clearing practice, French and English service.

4. Service of beverages tea, coffee, juices and alcoholic beverages.

5. Laying for breakfast

6. Tray service

7. Order taking, making out checks bills presentation of bills.

8. Up keep and cleaning of cutlery, crockery other, equipment.

I) Rice Preparation: Plain & fried rice, pulao, masala rice, tomato rice, vegetable biryani, mogalai biryani, mutton biryani, chicken biryani, yakhani pulao. (Any four)

II) Wheat preparation: Chapati, paratha plain, paratha stuffed, puris, bhatura, nan.

III) Pulse preparations: Punjabi dal, sambar, Dal Makhani, Dalfry, sprouted pulses, Alu – chhole,

Masala rajma, ohanshak (Any four)

IV) Vegetable preparations: Alu matar, alu palak, dum alu, fried veg., palak paneer, vegetable kofta, vegetable korma (Any four)

V) Salads: Tossed Salad, Russian salad, moulded salad, decorative salad.

VI) Meat preparations: Kofta curry, Roghan josh, mutton chilli fry, mutton palak, vindaloo, murg masala, brain masala, tanduri chicken, chicken curry, prawns curry, fish curry, (Any four)

VII) Snacks: Variety of sandwiches, vegetable puffs, fried snacks, fermented and steamed snacks. VIII) Sweets: Laddu, Gujiya burfi, Shrikhand, gulabjaroun, puranpoli, kheer, halwas. (Any four) IX) Western Cookery:

Soups: Mixed Veg., Tomato Cream Soup, Carrot cream soup, mulligatawny soup, minestrone soup, chicken soup and corn soup.

Sauces: White sauce, cheese sauce, mayonnaise sauce, curry sauce.

30.10.13

Entrees: Vegetables Pie, Hollandaise, vegetables burgers, (any four)

Vegetables: Vegetables au gratin, Baked, Cauliflower, savory vegetables, baked stuffed capsicum.

Sweets: Bread pudding, soufflés, trifle, coffee mousse, gateaux.

Bakery Products:

Short crust pastries: Different types of tarts, pies and turn over.

Vegetable and mutton patties:

Cakes and cookies: Plain cake, fruit cake, banana bread, date and walnut cake and varieties of cookies.

Breads: Breads, different kinds of rolls, doughnuts.

Icing: Different types of icing

Industrial visit.

30.10.23

4.12 CORE COURSE

SEMESTER V	**SANITATION & HYGIENE**	SUBJECT CODE CC12
TIME 3HOURS		CREDIT 4
		CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- Understand public health and appreciate the current and future disease burden in developing countries
- Correlate sanitation and Environmental Health with Public Health (including nutrition) in the context of community hygiene development
- Understand the practicalities around community water supply, waste management (including drainage), and related environmental health issues for effective community hygiene promotion Examine indicators of performance in sanitation & hygiene and wider environmental health.

Course outcome:

- Knows the importance of hygiene and sanitation
- Understands the importance of water hygiene.
- Understands the importance of personal hygiene.
- Identifies control methods of Pest

Parts of course

1. Other food hazards – chemicals, antibiotics, hormones, metal contamination – poisonous foods.
2. Importance of personal hygiene of handler habits clothes illness education, of food handler in handling and serving food.
3. Safety in food procurement – storage, handling and preparation control of spoilage – safety of leftover food.
4. Cleaning methods – sterilization and disinfection products and methods – use of detergents, heat, and chemicals test for sanitizer strength.
5. Sanitation – kitchen design equipment and systems – structure and layout of food maintaining clean environment selecting, cleaning equipment.

30.10.23

6. Waste product handling – planning for waste disposal solid wastes and liquid wastes.
7. Control of infestation – Rodent control rat destruction.
8. Vector control – use of pesticides.

Book Recommended

1. S.Roday – Food Hygiene and Sanitation
2. M. Jacob. (1989) – Safe food Handling.
3. V.N. Reinhold – Principles of Food Sanitation
4. B.C.Hobbs & R.J.Gilbert – Food Poisoning and Hygiene.

PRACTICAL (CC – 12) **Credit – 2**

MARKS 25 **Class 30**

1. Study of personal and environmental hygiene habits of street food handlers. Intervention and result analysis. Project submission and presentation.

30-10-23

6.1 DISCIPLINE SPECIFIC ELECTIVE

SEMESTER V	**ADVANCE DIETETICS**	SUBJECT CODE DSE 1
TIME 3HOURS		CREDIT 4
		CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- To impart in depth knowledge regarding prevalence, etiology, diagnosis, diet and life style management in different diseases. □
- To gain knowledge on the methods of assessment of nutritional status among individuals and interaction of drugs and nutrients.
- To gain knowledge to recommend and provide appropriate nutritional care for prevention or and treatment of various diseases.

Course outcome:

To enable students to

- Understand the basic principles of diet and diet therapy.
- Acquire the knowledge of modifications of normal diet for therapeutic purposes.
- Acquire the skills and techniques involved in the planning and preparation of therapeutic diets for various ailments.
- Develop the capacity and attitude for taking dietetics as a profession

Parts of course

1. Nutritional Care – Nutrition and dietary counselling and following up.

□ Nutritional Assessment of patient

□ Interpersonal relationship with patient.

□ Planning and implementing dietary care.

□ Team approach to nutritional care.

30.10.23

- Patient education.

2. Diet in Liver diseases – Etiology, symptoms, Dietary modifications and feeding pattern. a) Jaundice

b) Hepatitis

c) Cirrhosis of Liver

d) Hepatic coma

e) Role of alcohol in liver diseases

3). Diet in Cardiovascular diseases – Etiology, Symptoms, Dietary modifications and feeding pattern. a) Atherosclerosis

b) Hypertension

c) Hyperlipidemia

d) Acute and chronic diseases of Heart.

e) Sodium Restricted diet – level of sodium restriction, source of sodium, danger of sodium restriction.

4). Diet in Disorder of metabolism

a) Diabetes Mellitus.

1. Incidence and predisposing factors 2. Symptoms, types and test for detection.

3. Metabolism in diabetes.

4. Dietary treatment and meal management.

5. Hypoglycemic agent, insulin and its types.

6. Complications of Diabetes.

5) Gout – Nature and occurrence of Uric acid, causes, symptom, dietary modifications

6). Diet in disease of Gall bladder, Pancreas and kidney.

- cholelithiasis
- cholecystitis
- Pancreatitis

30.10.23

7). Renal disease – Etiology, symptoms, dietary modifications and feeding pattern.

- Acute and chronic glomerulonephritis
- Nephrotic syndrome
- Acute and chronic renal failure
- Dialysis
- - Renal calculi / Urolithiasis.

8) Modified Diets – Prudent diet, Bland diet, Atkin diet, DASH diet, Ketogenic diet, Blenderised diet.

Book Recommended

1. Kumud Khanna – Text Book of Nutrition and Dietetics
2. B. Sulakshmi - Dietetics
3. L.K.Mohan & S.E.Stump – Krause's Food & Nutrition Therapy
4. Carroll A. Lutz – Nutrition & Diet Therapy : Evidence Based Application
5. E.D.Schlenker – Essentials of Nutrition & Diet Therapy
6. Rekha Sharma – Diet Management.

PRACTICAL (DSE - 1) **Credit -2**

MARKS 25 Class 30

1. Planning and preparation of diet for Nephritis and nephrotic syndrome, Kidney Failure
2. Planning and preparation for (i) Cholelithiasis (ii) Renal Calculi
3. Planning and preparation for diabetes mellitus.
4. Planning a diet jaundice
5. Planning a diet for cardiovascular disease
6. Planning and preparation of diet for a gout person.

6.2 DISCIPLINE SPECIFIC ELECTIVE

DSE -2 JOB TRAINING 1MONTH (HOSPITAL)

Job training at the Hospital including interaction with patients, diagnosing diseases, Diet counselling and Preparation of diet chart.

30.10.23

4.13 CORE COURSE

SEMESTER VI	**CLINICAL NUTRITION**	SUBJECT CODE CC13
TIME 3HOURS		CREDIT 4
		CIASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- To impart knowledge and develop capacities of the students through higher education in the area of Clinical Nutrition and Dietetics and application in Medical Nutrition Management.
- Develop higher cognitive skills, Cultivate the virtues, Develop focus and depth in one or more disciplines, Develop leadership skills, Develop a global perspective, Prepare for lifelong learning).
- The nutrition curriculum prepares students to be leaders in the next generation o nutrition scientists, public health and clinical nutrition practitioners.
- The program promotes personal scholarship and academic growth, lifelong learnin skills, and mastery of core knowledge in nutrition and life sciences.

Course outcome:

- Students will be able to demonstrate critical thinking skills and analytical abilities identify and solve problems in the nutritional sciences.
- Students will be able to assess nutritional status of individuals in various life-cy stages and determine nutrition-related conditions and diseases by applying knowle of metabolism and nutrient functions, food sources, and physiologic systems.
- Students will be able to critique and effectively communicate nutrition informatior

Parts of course

1. Water and electrolyte balance: water and electrolyte balance and their regulation, metabolism of electrolytes. Effects Dehydration and overhydration.
2. Nutrient and drug interactions: definition if interaction, function of drugs and inta absorption and utilization drugs, foods and drug interaction, effects of specific fo drug metabolism and drug induced changes to nutritional status.
3. Diseases of the gastrointestinal tract: effect on digestion, absorption and nutritior status. Liver, Gallbladder and Pancreas: Etiology, symptoms, metabolic and nutr implications: - Hepatitis, Cirrhosis, Hepatic Coma, Pancreatis, Cholecystitis, Cholelithiasis.

4. Renal System: Etiology, symptoms, metabolic and Nutritional implications – Nephritis, Nephrotic Syndrome, Renal failure, renal calculi.
5. Disorders of Metabolism: Diabetes mellitus, inborn errors of Metabolism, Gout.
6. Cardiovascular system: - Etiology, symptoms: Role of specific nutrients. Clinical findings related to Nutritional care – Hypertension, Atherosclerosis.

Book Recommended

1. Michael J.Gibney, Maninos Elia, Olle Ljungqvist & julic Dowsett – Clinical Nutrition
2. J.S.Garrow, WPT James & A.ralph – Human Nutrition and Dietetics.
3. F.P.Antia & Philip Abraham – Clinical Dietetics & Nutrition.

PRACTICAL (CC – 13) **Credit – 2**

MARKS 25 **Class 30**

1. Case studies to nutritional plan for specific disease
   - Dehydration and over hydration
   - Hepatitis
   - Cirrhosis
   - Pancreatis,
   - Cholecystitis
   - Cholelithiasis.
   - Nephrotic Syndrome
   - Renal failure
   - Renal calculi
   - Diabetes mellitus
   - Gout
   - Hypertension
   - Atherosclerosis

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4.14 CORE COURSE

SEMESTER VI TIME 3HOURS	**NEUTACEUTICALS & FUNCTIONAL FOOD**	SUBJECT CODE CC14 CREDIT 4 CLASS 60

Pattern of exam

Mid term

1. Very short question(5 questions)
2. Short question (1 question)
3. Long question (1 question)

Final term

1. Very short question(10 questions)10 marks
2. Short question (1 question) 5 marks
3. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- The objectives of this subject are to provide students with an overview of the field of functional foods, nutraceuticals and natural health products.
- To understand the functional food concept as related to ingredient efficacy and safety.
- In addition, it familiarizes students with: examples of bioactive ingredient-disease relationships and the importance of clinical study support; regulatory aspects of functional foods.

Course outcome: the student will be able to:

- describe components of nutraceutical and functional foods
- Evaluate the standards of evidence required for efficacy and safety assessment of nutraceutical and functional foods.
- work effectively as a group member on a specific problem related to functional foods and nutraceutical products
- present ideas and concepts on issues of functional foods and nutraceuticals, both verbally and in written form, to a larger audience

Parts of course

Unit – I

Concept on Nutraceuticals: Nutraceutical and functional foods, nutraceutical as new dietary ingredients, biological significance of nutraceuticals, nutraceuticals and dietary supplement word market for nutraceuticals, regularly issues.

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Nutrugebinucs: nutrigenomics an introduction and its relation to nutraceuticals.

Unit – II

The role of nutraceutcals/ functional food in disease prevention: angiogenesis and cardiovascular diseases, Cancer, diabetes, cholesterol management, obesity and inflammation dosage levels.

Unit – III

Health benefits of nutraceuticals, natural pigments (chlorophyll, Chlorophyllin, Carotenoids) anthocyanins, glucosinolates, isoflavonoids, phytoestrogens, omega-3 and omega-6 fatty acids, antioxidants, phytosterols; dosage for effective control of disease or health benefit with adequate safety.

Unit – IV

Definition, development of functional foods, isolation, storage, processing and stability of
phytochemicals/ bioactive compounds.

Prebiotics and probiotics: usefulness of probiotics and prebiotics in gastrointestinal health and other benefits, beneficial microbes: prebiotic ingredients in foods: types of prebiotics and their effects on gut microbes, resistant starch, fructo-oligosaccharides as probiotic food components.

Book Recommended

1. G. Subbulakshmi & M. Subhadra – Functional Food and Nutrition
2. B. Srilakshmi – Dietetics
3. Staci Nix – William's Basic Nutrition and Diet Therapy.

actical CC4. Credit 2

ARKS 25 Class 30

T presentation on topics related to neutraceuticals and functional foods.

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6.3 DISCIPLINE SPECIFIC ELECTIVE

SEMESTER VI	CATERING MANAGEMENT	SUBJECT CODE DSE 3
TIME3HOUR	&FOOD SERVICE EQUIPMENT	Credit 4

Pattern of exam

Mid term

4. Very short question(5 questions)
5. Short question (1 question)
6. Long question (1 question)

Final term

4. Very short question(10 questions)10 marks
5. Short question (1 question) 5 marks
6. Long question (3 question) 15 marks each question (45 marks)

Marks distribution

Mid term 15 marks

Final term 60 marks

Objectives:-

- Acquire the fundamental skills for the management of the departments of Food and Beverages.
- Develop and apply strategic solutions to respond to the challenges of commercial and group catering in our present times.
- To encourage initiative and entrepreneurial spirit in the field of catering.
- To present guidelines for healthy eating in the different stages and physiological situations of life, planning suitable menus to the different groups, applying appropriate rules for the proper handling of food.

Course outcome:

- Understand concepts and functions of catering management
- Know the importance and guidelines of menu planning
- Aware of functions and types of menus followed in catering institutes
- Understand the importance of food selection , purchase and storage of food
- Gain knowledge on different purchasing methods and guidelines followed in catering institutes
- Recognize the steps in food production and concept of standardization.

Parts of course

1. ORGANISATION AND MANAGEMENT

1. Definition & types of organization
2. Definition, functions and tools of management

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3. Techniques of effective management

4. Energy and time management and its application to food preparation.

2. FOOD SERVICE EQUIPMENT

1. Classification of equipment

2. Basic electrical consideration for operation of equipment

3. Different food & beverages outlets

4. Types of meal and styles service

3. FOOD MATERIAL MANAGEMENT

5. Meaning, definition, importance

6. Food selection, purchasing, receiving and store room management.

7. Control in selection to the above operations (material planning, budgeting, material identification, store keeping, definition, objectives, functions, factors underlying successful storekeeping, duties & responsibilities of a storekeeper, purchasing, organization principles, procedure, systems and quality control).

4. PERSONNEL MANAGEMENT:

8. Recruitment, selection & training of personnel, performance appraisal, motivation.

9. Labour policies and legislation

5. LAWS AFFECTING FOOD SERVICE OPE RATIONS:

10. Union and contract negotiations. Lists to different types of food service institutions to study the following:-

11. Eg. Hospitals, Flight Kitchen, Hotel Restaurant, Canteen (Industrial)

(a) Organization (b) Physical Plan & Layout (c) Food Service Equipment (d) Sanitation & Hygiene.

6. Management of self and understanding human behaviour.

7.Coping with uncertainties, Stress Management and Positive Reinforcement.

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Book Recommended

1. Mohini Sethi & Surjeet Malhan – Catering Management .
2. David A. Decenzo & S.P. Robbins - Fundamental of Human Resource Management
3. M.J. Bolda – Personnel Management Hotel & Catering Industry.

6.4 DISCIPLINE SPECIFIC ELECTIVE

DSE– 4 JOB TRAINING CREDIT – 4

Job training regarding catering management at a recognized Hotel.

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