RANCHI WOMEN'S COLLEGE

RANCHI

(Autonomous College)

Constituent Unit

of

Ranchi University, Ranchi

(B.Sc. with Clinical Nutrition and Dietetics)

Undergraduate Programme: A Template

2021

SUBMITTED BY

CND DEPARTMENT(UG & PG)

Ranchi Women's College, Ranchi

Department of C.N.& D.

Constitution of Board of Studies

10.06.2021

Board of Studies of Department of C.N.& D has been constituted with following members under various categories for academic session 2021-22 and 2022-23 (tenure valid for two years)

1. Co-ordinator, Department of C.N.& D.	Dr. Abha Prasad	Chairperson
2. Faculty, Department of C.N.&D	i. Mrs. Geeta Kumari	Member
3. Guest Faculty, Department of C.N.&D	Dr. Mrs..Iffat Matin Mrs. Arpita Mishra Mrs Ghazala Matin	Member
4.Expert from Outside College	i. Mrs.Dr. Asha Kumari Prasad P.G. Head Department of H.Sc. Ranchi University	Expert
	ii. Mrs.Dr.Asha Kumari P.G. Department of H.Sc. Ranchi University	Expert
5.University Nominee	Dr. Nayani Saxena Associate Professor University Department of zoology Ranchi University, Ranchi	V. C. Nominee 10.6.21
6.Meritorious Student	i. Ms.Sahista Yasmin	P.G. SemIV
	ii Ms.Sarna Neha Horo Sarna Neha Horo	U.G. Sem-VI

Abha Prasad

Dr. Abha Prasad
Co-ordinator
Department of C.N.&D.

Member Secretary
Academic Council
Ranchi Women's College

CHAIRPERSON
ACADEMIC COUNCIL
RANCHI WOMEN'S COLLEGE

Department of CND
Ranchi Women's College Ranchi

1. 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 outcome based 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.

a. 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 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.

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b. 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.

c. 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.

(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	10	40
	GE -1 T	Bot./Zoo/Chem./Phy./Maths (Sub)	4	75	15	60
	GE – 1 P		2	25	5	20
	AECC-1	English	2	50	10	40
SEM-2	CC – 3 T	Human Physiology	4	75	15	60
	CC-4 T	Food Microbiology	4	75	15	60
	CC P2	Practical based on CC3 & CC4	4	50	10	40
	GE -2 T		4	75	15	60
	GE – 2 P		2	25	5	20
	AECC-2	Environmental Science	2	50	10	40
SEM-3	CC – 5 T	Clinical Nutrition	4	75	15	60
	CC-6 T	Sanitation & hygiene	4	75	15	60
	CC-7 T	Community Nutrition	4	75	15	60
	CC-P3	Practical based on CC5 CC6 & CC7	6	75	15	60
	GE -3 T		4	75	15	60
	GE – 3 P		2	25	5	20
	SEC-1	Public Health & Environment	2	50	10	40
SEM-4	CC – 8 T	Basic Dietetics	4	75	15	60
	CC-9 T	Meal Management	4	75	15	60
	CC-10 T	Food Commodities	4	75	15	60

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	CC- P4	Practical based on paper 8,9 &10	6	75	15	60
	GE -4 T		4	75	15	60
	GE – 4 P		2	25	5	20
	SEC-2	Entrepreneurship	2	50	10	40
SEM-5	CC –11 T	Book keeping and cost accountancy	4	75	15	60
	CC-12 T	Food service equipment	4	75	15	60
	CC P5	Practical based on Paper 11&12	4	50	10	40
	DSE-1T	Advance Dietetics	4	75	15	60
	DSE-2	Job Training	4	75	15	60
	DSE-P1	Practical based on DSE-1&2	4	50	10	40
SEM-6	CC –13 T	Quality Food Production & Service	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	10	40
	DSE-3T	Catering Management	4	75	15	60
	DSE-4	Job Training	4	75	15	60
	DSE-P2	Practical based on DSE-3&4	4	50	10	40
		Total	140	2400		

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COURSE STRUCTURE OF C(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 1 T		2
5	AECC1	English	2

SECOND SEMESTER

PAPER	SUBJECT CODE	NAME	NO OF CREDITS
6	CC 3T	Human physiology	4
7	CC 4T	Food microbiology	4
8	CC P2	Practical Based on CC3 & CC4	4
9	GE 2 T		4
10	GE2 P		2
11	AECC 2	Environmental Science	2

THIRD SEMESTER

PAPER	SUBJECT CODE	NAME	NO OF CREDITS
12	CC 5T	Clinical Nutrition	4
13	CC 6T	Sanitation & Hygiene	4
14	CC 7T	Community nutrition	4
15	CC P3	Practical Based on CC5 CC6 & CC7	6
16	GE 3 T		4
17	GE 3 P		2
18	SEC 1	Public Health &Environment	2

FOURTH SEMESTER

PAPER	SUBJECT	NAME	NO OF

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	CODE		CREDITS
19	CC 8T	Basic Dietetics	4
20	CC 9T	Meal Management	4
21	CC 10T	Food Commodities	4
22	CC P 4	Practical Based on CC8 CC9 & CC10	6
23	GE 4T		4
24	GE 4P		2
25	SEC 2	Enterpreneurship	2

FIFTH SEMESTER

PAPER	SUBJECT CODE	NAME	NO OF CREDITS
26	CC11 T	Book keeping & Cost accountancy	4
27	CC12 T	Food Service Equipment	4
28	CC P5	Practical Based on CC11 & CC12	4
29	DSE 1T	Advance Dietetics	4
30	DSE 2	Job Training	4
31	DSE P1	Practical Based on DSE 1 & 2	4

SIXTH SEMESTER

PAPER	SUBJECT CODE	NAME	NO OF CREDITS
32	CC13 T	Quality Food Production & services	4
33	CC14 T	Neutraceuticals and Functional food	4
34	CC P6	Practical Based on CC13 & CC14	4
35	DSE 3T	Catering Management	4
36	DSE 4T	Job Training	4
37	DSE P2	Practical Based on DSE 3 & 4	4

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3. LEARNING CURRICULUM FRAME WORK

3.1 Core course

Semester – I		
	CC-1 **Basic Nutrition**	Credit -4
Time – 3 Hours		
Full Marks – 60		

Pattern of Exam and marks distribution

Theory	Practical CCP1(CC1&2)
• Mid semester 15marks	- Mid semester 10 marks
• End semester	- End Semester 40 marks

1) 10 marks very short question (10 questions)
2) 5 marks short question (1 question)
3) 45 marks long questions (3 questions 15 marks each question)

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.

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

Practicals Credit - 2

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

Book Recommended

1.M.Swaminathan – Handbook of food & Nurtrion

2. B.Srilakshmi – Nutrition Science

3. Shilpi Agarwal – Nutrition Science.

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Semester –I		
	CC – 2 **Nutritional Biochemistry (Theory)**	Credit -4
Time – 3 Hours		
Full Marks – 60		

Pattern of Exam and marks distribution

- Mid semester
  15marks
- End semester

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

Objectives:-

- The course is an introcuction 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

i. Genetic repair mechanisms

ii. Genetic code – protein biosynthesis

3. Major metabolic pathways :

a. Carbohydrate metabolism : classification of carbohydrate, Glucose, transport, Biological

oxidation, glycolysis metabolism of lactate and pyruvate, citric-acid cycle biological

oxidation gluconeogenesis pentose phosphate pathway

b. Lipid metabolism: classification of lipids. Intestinal resynthesis of triglycerides transport , Bioxidation 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 paper CC2

- 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

Semester - II		
	CC – 3 **HUMAN PHYSIOLOGY** [THEORY]	Credit -4
Time – 3 Hours		
Full Marks – 60		

Pattern of Exam and marks distribution

Theory

- Mid semester 15marks
- End semester

1)10 marks very short question (10 questions)
2) marks short question (1 question)
3)5 marks long questions (3 questions 15 marks each question)

Practical CCP2(CC3&4)

- Mid semester 10 marks
- End Semester 40 marks

Objectives:-

- This course covers the physiology of humans, with emphasis on the major organs and the processes they govern, including heart function and circulation, muscle function and movement and the kidney and osmoregulation.
- Other topics will include energetics and temperature regulation, respiration and digestion.
- 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 equilibria in the face of a variable and changing environment.
- Use complex electronic equipment including Powerlabs and Bioamplifiers to record human physiological data, and responses to experimental stimuli.
- Interpret and draw inferences from experimental measures of physiological function including electrocardiograms and spirometry read-outs.

Parts of course

1.**Blood composition** – functions, clotting, blood groups –
Blood Vessel Artery, Vein, capillary, structure of heart , cardiac cycle, ECG and its significance, blood pressure – pulse, systolic, diastolic, anaemia, leukemia, varicose veins, atherosclerosis, Angina pectoris

2. **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.

3. **Digestive System :** Organs, structures, functions– Teeth, tongue, salivary glands, saliva, composition and function. Oesophagus, Stomach, Small intestine, Large intestine, Pancreas, Liver, Gallbladder. Diabetes Mellitus, diarrhoea, peptic & duodenal ulcers

4. **Excretory system:** Organs, structure and functions of kidney, Ureter, Urinary bladder. Formation of Urine, composition of normal urine

5. **Skin** – Structure and function. Disorders of Skin - burns.

6. **Nervous system** – structure of a nerve cell, nerve fibres & an outline classification of nervous system. Conduction of nerve impulse, synapse, Reflex action,

7. **Muscular system**:- types of muscles – striated, non-striated, cardiac - similarities differences. Muscular contraction.

8. **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.

Book Recommended

1. G.J.Tortora & S.R.Grabowski –Principals of Anatomy and Physiology – Harper Collins College Publishers
2. A.C. Guyton & Hall – Textbook of medical Physiology
3. C.C.Chatterjee – Human Physiology Vol-I & II
4. L. Sherwood – Human Physiology
5. K.E.Barrett, Susan M.Barrett, S.boitano & Heddwenil Book – Ganong's Review of Medical Physiology.
6. Keele, Neil & Joel Samsan wrights applied Physiology.

PRACTICAL Credit -2

1. Study of Human (manekin) : - Abodminal cavity of Human observe & draw liver, kidney, appendix, spleen, Pancreas, stomach, gall bladder, large and small intestines, ureter, bladder, diaphragm.
2. Types of Cells: Microscopic examination of prepared slides.
a) Epithelium – stratified squamous, ciliated, columnar
b) Connective tissue – Adipose, Bone, areolar, connective tissue
c) Muscle – smooth, cardiac, stratified.
d) Nerve – medullated, neuron.
e) 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) Haemoglobin estimation using haemometer.
d) R.B.C. count & W.B.C. count.
4. Histology of Artery and Vein.
5. a) Lung Section. b) Trachea.
Pulse and respiration rate – at rest and after exercise.
6. Arterial Blood pressure: Determination using a sphygmomanometer.

Semester - II		
	CC – 4 **FOOD MICROBIOLOGY**	Credit -4
Time – 3 Hours		
Full Marks – 60		

Pattern of Exam and marks distribution

- Mid semester
  15marks
- End semester

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

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 micro organisms – 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.
   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 intoxications 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.
5. Beneficial effect of micro – organisms.

6. Visit to Dairy Milk

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 Microbiolog

SEMESTER – III		
	CC – 5 **CLINICAL NUTRITION (THEORY)**	Credit -4
Time – 3 Hours Full Marks – 60		

Pattern of Exam and marks distribution

Theory	Practical CCP3(CC5,6&7)
• Mid semester 15marks	- Mid semester 15 marks
• End semester	- End Semester 60 marks

1)10 marks very short question (10 questions)
2) marks short question (1 question)
3)5 marks long questions (3 questions 15 marks each question)

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 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.

Parts of course

1. Water and electrolyte balance: water and electrolyte losses and their replenishment, affect of dehydration.
2. Nutrient and drug interactions: Effect of drug therapy on intake absorption and utilization of nutrients.
3. Diseases of the gastrointestinal tract: effect on digestion, absorption and nutritional status.
4. Liver, Gallbladder and Pancreas:

Etiology, symptoms, metabolic and nutritional implications: - Hepatitis, Cirrhosis, Hepatic Coma, Pancreatis, Cholecystitis, Cholelithiasis.

5. Renal System: Etiology, symptoms, metabolic and Nutritional implications – Nephritis, Nephrotic Syndrome, Renal failure, renal calculi.
6. Disorders of Metabolism: Diabetes mellitus, inborn errors of Metabolism, Gout.
7. 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.

Semester - III
CC – 6 **SANITATION & HYGIENE** Credit -4
Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

- Mid semester
  15marks
- End semester

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

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.
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.

SEMESTER – III

CC – 7 **Community Nutrition (Theory)** Credit -4

Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

- Mid semester
  15marks
- End semester

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

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 inalleviating 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.
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 vita 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.

CC – 7 PRACTICAL Credit -2

The objective of this practical course are to enable the students to learn and prepare deferent 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.

Semester – IV

CC – 8 BASIC DIETETICS [THEORY] Credit -4

Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

Theory

- Mid semester 15marks
- End semester

1)10 marks very short question (10 questions)
2) marks short question (1 question)
3)5 marks long questions (3 questions 15 marks each question)

Practical CCP4(CC8,9&10)

- Mid semester 15 marks
- End Semester 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.

2. Role of Dietician – The Hospital and community

3. 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).

4. Diet in Gastro – intestinal disorders –

Etiology, Symptoms, Dietary modifications and feeding pattern.

a) Diarrhoea (Child and Adult) – Classification.

b) Constipation

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

5. 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

6. 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.

7. 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. Hypoglycaemic agent, insulin and its types.

6. Complications of Diabetes.

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

Book Recommended

1. Srilakshmi – Dietetics

2. M.Swaminathan – Food and Nutrition

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

4. Subhangini A. Joshi – Nutrition and Dietetics

5. C.Gopalan – Nutritive value of Indian Foods

CC – 8 PRACTICAL Credit -2

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 hepatitis and cirrhosis of liver

7. Planning and preparation of diet for Diabetes mellitus.

8. Planning and preparation of liquid diets for hypertension and atherosclerosis.

Semester – IV

CC – 9 MEAL MANAGEMENT Credit -4

Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

- Mid semester
  15marks
- End semester

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

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.

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

CC – 9 PRACTICAL Credit -2

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

2. Planning and preparation of a balanced diet for nursing mother lactation

3. Planning and preparation of a balanced diet for pregnant women

4. Supplementary feeding – preparation of weaning foods.

5. Planning and preparation of diet for a toddler, Pre – School child.

6. Planning and preparation of meal/packed lunch for school children.

7. Planning preparation of meal for Adolescents.

8. Planning a diet for senior citizen preparation of meals.

9. Planning of meals for middle income family.

10. Nutritional survey for various age groups.

Semester – IV		
	CC – 10 **Food Commodities** (Theory)	Credit -4
Time – 3 Hours Full Marks – 60		

Pattern of Exam and marks distribution

- Mid semester
  15marks
- End semester

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

Objectives:-

- To help individuals recognise 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.

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 dextrinisation , gelatinisation, 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.

12. Tea, Coffee, Chocolate and Cocoa Powder: Growth, Cultivation, processing, and nutritional aspects.

13. Organic food, Nutraceutical (Introducation)

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

CC- 10 Practical credit-2

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

b. Experimental foods :

i. Microscopic study of different starches

ii. Study of effects of moist heat on starch.

iii. Gluten formation.

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

Semester – IV

SEC – 2 **ENTREPRENEURSHIP** Credit -2

Time – 3 Hours Full Marks – 50

Pattern of Exam and marks distribution

- Mid semester
  15marks
- End semester

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

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.

Unit II

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

Unit III

a. Choice of Technology, Plant and Equipment.

b. Institutions, Financing Procedure and Financial Incentives.

c. Financial Ratio and their Significance.

Unit IV

a. Energy Requirements and Utilization.

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

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

d. Techno – Economic Feasibility of the Project.

e. Plant Layout and Process Pianning for the Product.

f. 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

Semester – V

CC–11 **BOOKEEPING AND FOOD COST ACCOUNTANCY** Credit -4

Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

Theory

- Mid semester 15marks
- End semester

1)10 marks very short question (10 questions)
2) marks short question (1 question)
3)5 marks long questions (3 questions 15 marks each question)

Practical CCP5(CC 11&12)

- Mid semester 10 marks
- End Semester 40 marks

Objectives:-

- To give an insight into the basics of Accounting Concepts and Principles to Prepare to Students to have the foot hold in Accounts.

Course outcome:

After studying this course, students should be able to:

- understand and apply the essential numerical skills required for bookkeeping and accounting
- understand and explain the relationship between the accounting equation and double-entry bookkeeping.
- record transactions in the appropriate ledger accounts using the double-entry bookkeeping system.
- balance off ledger accounts at the end of an accounting period.
- prepare a trial balance, balance sheet and a profit and loss account.

Parts of Course

Book Keeping

1. Introduction, objective , Principles and Advantages of Double Entry, Book Keeping , elements of Transactions, Identifying Debit and Credit effects. Double effect of transaction on accounts grouping of accounts. Book keeping as science and arts.

2. Journal, Source of journal entry like bills, cash memos receipts, vouchers etc. Journaling a transaction, Narration to a journal entry.

3. Ledger, indexing Accounts, opening accounts classification of ledger and ledger, transferring journal entries into ledger – ledge rising Balancing of ledger accounts, preparing a trial balance.

4. Introduction and advantage of subsidiary books, sales book, Purchase book, Return inwards books, out word book. Layout of subsidiary books, Recording transactions in subsidiary books and posting tem to ledger accounts. Debit & Credit Notes.

5. Introductions to cash book, layout of cash book, recording of transaction in cash book, bank and discount column, entries, totalling, balancing & posting of cash book for ledger, bank accounts bank overdraft. Deposit in bank and payment by cheques, importance of cash book

6. Introduction to petty cash book, purpose and Advantages duties and responsibilities of petty cashier.

interest and fixed instalment systems of petty cash recording totalling, balancing and posting of ledger of petty cash book.

7. Trial Balance, introduction to a trading manufacturing, profit and loss account and balance sheet method for preparing , net profit and gross profit concept assets & liabilities. (in case of sole proprietor only)

8. Final A/C, Trading, P/L and Balance sheet.

9. I] Gross profit ratio. II] Profit ratio III] Current ratio IV] Liquid ratio V] Proprietary ratio VI] Return on Investment ratio.

10. Book of Accounts, Financial statement and funds flow analysis.

FOOD COST ACCOUNTANCY:

11. Management: Elementary principles, process and objectives of management 'planning organization, co – ordinating , controlling scientific menu planning.

12. Cost Accounting : Introduction, Definition , objectives, Scope, advantage, limitations, introduction to method and techniques, cost classification, cost cent cost unit, cost classifications by function by elements, by behaviour direct & indirect cost, the build up of total cost. Cost sheet and cost statement, calculation of profit on cost or on selling price, fixing selling price, concept of cost benefit analysis (cost accounting shall have reference to food cost accountancy)

13. Stores: Organization, layout management and control, control procedures – stores, requisition, issue note, bin card, condex system, daily stock balance, daily issue statement and cost thereof order and Recorder level, economic recorder level, minimum & max level, store ledger, LIFO, FIFO, HIFO, longer level, stock inventory, valuation of inventory, stores control, cost of carrying and not carrying stores.

Book Recommended

1. Dr. S.K.Singh (XI & XII) – Accountancy

2. D.K.Goyal & Goyal (XI & XII) – Accountancy

3. Dr. B.K.Mehta – Cost Accountancy

4. S.A.Siddiqui – Comprehensive Accountancy (C.B.S.E)

Semester – V

CC –12 **Food Service Equipment** Credit -4

Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

- Mid semester
  15marks
- End semester

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

Objectives:-

- Prepare students to meet the challenges associated with the Food and Beverage Industry.
- Provide a familiarity in Food Service Facilities Planning, in the areas of:

1. establishing goals and cost limitations,
2. structural and engineering principles,
3. Formulation of plans and specifications for food needs and operational requirements.

Course outcome:

After completion of the course students will be expected to be able to:

- Distinguish the difference between design and layout
- Identify the preliminary planning information for foodservice operations Identify the importance of the prospectus and the feasibility study in foodservice layout and design .
- Describe the major principles of functional planning of foodservice facilities
- General principles of planning the atmosphere in a foodservice establishment

Parts of course

1. Equipment in food service :-

a) Classification of Equipment, Types of Equipment, for food storage, preparation, Food Serving and Dish Washing and Material Used.

b) Laundry :-

c) Basic electrical consideration for operation of equipments

2. Organisation of Space :-

a) Kitchen space – size and types of kitchen, developing kitchen plans, work simplification, Designing kitchen, designing for safety, layout of kitchen work centre in kitchen layout, storage in kitchens, Maintenance of kitchens.

b) Storage space – location of storage space, Types of storage planning storage space, layout, Sanitation, Safety and security of stores.

c) Service area – Location, Planning service area, some dimensions for service area, decore of service and dining area.

3. Hygiene, sanitation and safety

a) Hygiene and sanitation – Environmental Hygiene and sanitation, Hygiene in food, Handling and personnel Hygiene.

b) Safety .

c) Laws governing food service establishment – labour laws, working conditions, welfare, Health and safety, Harmonious working relation, payments, Food Laws, Food Standards in India and Role of Consumers in maintaining standards.

4. Different Food and Beverage & outlet.

a) Five types of Services of food & beverage outlets.

b) Staff organisation of different outlet (a'la carte and table d'hôte). Manager, Hostess, supervisor, steward, Waiter.

5. Menu Planning – Sequence of Course – Indian (Regional i.e., North Indian, South Indian, West Indian, and Gujarathis, Western and others.) Techniques of writing menu.

6. Types of meals and styles of service - Breakfast, Lunch , Dinner, afternoon tea, Snacks (table d'hôte and a'la carte menu)

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. Use of bills and checks in control system outlets.

9. Project report on names of different organizations.

Book Recommended

1. Mohini Sethi & Surjeet Malhan -- Catering Management

2. Dennis Lillicrap and John Cousins – Food and Beverage Service

3. Jamcs Peterson – Essentials of Cooking

4. Mohini Sethi & Barkra Jain – Fasting and Feasting then & Now

Semester – V

DSE-1 **Advanced Dietetics (Theory)** Credit -4

Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

- Mid semester 15marks
- End semester

Practical Adv. Dietetic & Job training

-Mid semester 10 marks

-End semester40 marks

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

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.

□ Patient education.

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

□ Typhoid

□ Influenza

□ Tuberculosis

□ Malaria

B) Cancer and Burns.

3. Diet in Gastro – intestinal disorders – etiology, symptoms and Dietary modification.

- Flatulence
- Malabsorption syndrome – Sprue, celiac disease, Lactose intolerance.
- Ulcerative colitis – symptoms, dietary treatment.

4. Diet in disease of Gall bladder, Pancreas and kidney.

- cholelithiasis
- cholecystitis
- Pancreatitis

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

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

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

6. Allergy and skin disturbances – Definition, classification, Manifestation, common food allergy, tests and dietetic treatment.

7. Diet and drug interaction – Effect of drug therapy on intake, absorption and utilisation of nutrient.

8. Feeding infants and children – problem of feeding children.

9. 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.

DSE- I PRACTICAL Credit -2

1. Planning and preparation of high and low calorie diet with modified fat and carbohydrate level.

2. Planning and preparation diet in fever and infection.

3. Planning and preparation of diet for Nephritis and nephrotic syndrome, Kidney Failure

4. Planning and preparation for (i) Cholelithiasis (ii) Renal Calculi

5. Planning and preparation of modified diets

6. Planning and preparation of diet for an obese person.

7. Planning and preparation of diet in (i) Cancer (ii) Trauma (Burns)

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

Semester – VI

CC – 13 QUALITY FOOD PRODUCTION & SERVICES (THEORY) Credit -4

Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

Thcory

- Mid semester 15marks
- End semester

1)10 marks very short question (10 questions)
2) marks short question (1 question)
3)5 marks long questions (3 questions 15 marks each question)

Practical CCP6(CC 13&14)

- Mid semester 10 marks
- End Semester 40 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 behaviours 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

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'al 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'ia 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. Use of bills and caotee and checks as simple control system.

9. Project report on names of different organizations.

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

CC-13 Paper – 20 PRATICAL Credit

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

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 rajman, ohanshak (any four)

IV) Vegetable preparations: Alu matar, alu palak, dum alu, fried veg., palak panaar, 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.

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

Evaluation: Continuous assessment will be done.

Semester – VI

CC-14 Nutraceuticals and Functional Foods (THEORY) Credit -4

Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

- Mid semester
  15marks
- End semester

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

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.

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, phytoestrogents, omega-3 and omega-6 fatty acids, antioxidants, phytosterols; dosage for effective control of disease or health benefit with adequate safety.

Unit – IV

Defination, development of functional foods, isoloation, storage, processing and stablilty of phyochemicals/ bioactive compounds.

Prebiotics and probiotics: usefulness of probiotics and prebiotics in gastro intertinal 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.

Semester – VI

DSE – 3 CATERING MANAGEMENT [THEORY] Credit -4

Time – 3 Hours Full Marks – 60

Pattern of Exam and marks distribution

- Mid semester 15marks
- End semester

Practical -Catering Management & Job training

-Mid semester 10 marks

-End semester40 marks

1)10 marks very short question (10 questions)

2)5 marks short question (1 question)

3)45 marks long questions (3 questions 15 marks each question)

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

3. Techniques of effective management

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

2. 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) .

3. PERSONNEL MANAGEMENT :

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

9. Labour policies and legislation

4. 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.

5. Management of self and understanding human behaviour.

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

DSE-3

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.

DSE– 4 JOB TRAINING CREDIT – 4

Job training at hospital

3.2 Overall Learning Outcomes

The learning outcomes based course curriculum framework of CND is designed to persuade the subject specific knowledge as well as relevant understanding of the course. The academic and professional skills required for CND-based professions and jobs are also offered by same course in an extraordinary way. In addition, the learning experiences gained from this course should be designed and implemented for cognitive development in every student. The practical associated with this course helps to develop an important aspect of the teaching-learning process. Various types of teaching and learning processes will need to be adopted to achieve the same. The important relevant teaching and learning processes involved in this course are;

- Class lectures
- Seminars
- Tutorials
- Group discussions and Workshops
- Peer teaching and learning
- Question preparation
- Subjective type
- Long answer
- Short answer
- Objective type

1. Multiple choice questions
2. One answer/two answer type questions
3. Assertion and reasoning

- Practicum, and project-based learning
- Field-based learning
- Substantial laboratory-based practical component and experiments
- Open-ended project work,
- Games
- Technology-enabled learning
- Internship in industry, and research establishments.

3.3 Course Learning Outcomes

The course learning outcomes are aligned with program learning outcomes but these are specific-to-specific courses offered in a program. The course level learning shall be reflected as program level learning. The core courses shall be the backbone of this framework whereas discipline and skill enhancement courses would add academic excellence in the subject together with multi-dimensional and multidisciplinary approach. In course learning outcomes, the student will attain subject knowledge in terms of individual course as well as holistically. The example related to core courses and their linkage with each other is stated below:

Core Course(CC)

PROGRAMME OUTCOMES	CC1	CC2	CCP1	CC3	CC4	CCP2	CC5	CC6	CC7	CCP3	SEC1	CC8	CC9	CC10	CCP4	SEC2	CC11	CC12	CCP5	CC13	CC14	CCP6
CORE COMPETENCY	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
CRITICAL THINKING	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
ANALYTICAL			☑			☑				☑	☑					☑			☑			☑
TRAINING SKILL & VISIT									☑	☑	☑	☑	☑	☑	☑		☑	☑	☑			
TEAM WORK			☑			☑				☑	☑				☑				☑		☑	☑

DISIPLNE ELECTIVE COURSE (DSE)

PROGRAMME OUTCOMES	DSE1	DSE2	DSEP1	DSE3	DSE4	DSEP2
ADDITIONAL ACADEMIC KNOWLEDGES	☑	☑	☑	☑	☑	☑
CASE STUDY	☑	☑	☑			☑
GROUP DISCUSSION	☑	☑	☑			☑
SKILL DEVELOPMENT	☑	☑	☑	☑	☑	☑
COUNSELLING	☑	☑	☑			☑

3.4 Assessment Methods

Academic performance in various courses i.e. core, discipline electives, generic electives and skill enhancement courses are to be considered as parameters for assessing the achievement of students in CND. A number of appropriate assessment methods of CND will be used to determine the extent to which students demonstrate desired learning outcomes. Following assessment methodology should be adopted; □

- The oral and written examinations (Scheduled and surprise tests), □
- Closed-book and open-book tests, □
- Problem-solving exercises, □
- Practical assignments and laboratory reports, □
- Observation of practical skills, □
- Individual and group project reports, □
- Efficient delivery using seminar presentations, □
- Group Discussion
- Poster making
- Recipe competition
- Dietetics day and other subject related theme celebration