University of Mumbai

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विद्याविषयक प्राधिकरणे
सभा आणि सेवा विभाग(ए.ए.एम.एस)
रूम नं. १२८ एम.जी.रोड, फोर्ट,
मुंबई – ४०० ०३२
टेलिफोन नं - ०२२ - ६८३२००३३

(नॅक पुनर्मूल्यांकनाद्वारे ३.६५ (सी.जी.पी.ए.) सह अ++ श्रेणी
विद्यापीठ अनुदान आयोगाद्वारे श्रेणी १ विद्यापीठ वर्जा)

क.वि.प्रा.स.से./आयसीडी/२०२५-२६/३७ दिनांक : २७ मे, २०२५

परिपत्रक:-

सर्व प्राचार्य/संचालक, संलग्नित महाविद्यालये/संस्था, विद्यापीठ शैक्षणिक विभागांचे संचालक/ विभाग प्रमुख यांना कळविण्यात येते की, राष्ट्रीय शैक्षणिक धोरण २०२० च्या अमंलबजावणीच्या अनुषंगाने **शैक्षणिक वर्ष २०२५-२६** पासून **पदवी व पदव्युत्तर अभ्यासक्रम** विद्यापरिषदेच्या दिनांक २८ मार्च २०२५ व २० मे, २०२५ च्या बैठकीमध्ये मंजूर झालेले सर्व अभ्यासक्रम मुंबई विद्यापीठाच्या www.mu.ac.in या संकेत स्थळावर NEP २०२० या टॅब वर उपलब्ध करण्यात आलेले आहेत.

(डॉ. प्रसाद कारंडे)
कुलसचिव

मुंबई – ४०० ०३२
२७ मे, २०२५

Copy forwarded for information and necessary action to :-	
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7	The Deputy Registrar, PRO, Fort, (Publication Section), Pro@mu.ac.in
8	The Deputy Registrar, Executive Authorities Section (EA) eau120@fort.mu.ac.in He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
9	The Deputy Registrar, Research Administration & Promotion Cell (RAPC), rapc@mu.ac.in
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Copy for information :-	
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4	P.A to all Deans of all Faculties
5	P.A to Finance & Account Officers, (F & A.O), camu@accounts.mu.ac.in

To,

1	The Chairman, Board of Deans pvc@fort.mu.ac.in
2	**Faculty of Humanities,** **Offg. Dean** 1. Prof.Anil Singh Dranilsingh129@gmail.com **Offg. Associate Dean** 2. Prof.Manisha Karne mkarne@economics.mu.ac.in 3. Dr.Suchitra Naik Naiksuchitra27@gmail.com
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4	The Director, Board of Examinations and Evaluation, dboee@exam.mu.ac.in
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Ac-20/05/2025
Item No. 8.16 (R)

University of Mumbai

Title of the program

Revised Syllabus for

P.G. Diploma in Home Science - Dietetics and Applied Nutrition

Semester – Sem. - I & II
Ref: GR dated 16th May, 2023 for Credit Structure of PG

(With effect from the academic year 2025-26)

University of Mumbai

(As per NEP 2020)

Sr. No.	Heading	Particulars	
	Title of programme O: _____A	**P.G. Diploma in Home Science – Dietetics and Applied Nutrition**	
2	**Eligibility O: _____**	**A**	For being eligible for admission, a learner must have passed: • B.Sc. Home Science with specialization in Foods, Nutrition and Dietetics or its equivalent. OR • B.Sc. with Foods and Nutrition/ Foods, Nutrition and Dietetics/Food Technology or its equivalent. OR • B.Sc. General/Composite Home Science OR • B.Sc. Home Science in any other Specialization OR • B.Sc. Microbiology/Biochemistry/ Life Sciences/Chemistry/Biotechnology/Biological Sciences as a major or part fulfillment. OR • B.Sc. Home Economics OR • B.Sc. Human Ecology OR • B.Sc. Family and Community Sciences OR • B.Sc. /B.A. in Human Sciences OR • B.Sc. Nursing or an equivalent Nursing Degree of another recognized University. OR • B.Sc. Pharmacology OR • B.Pt. (Bachelor of Physiotherapy) OR • Medical Graduates in any discipline (MBBS/BAMS/BHMS/BDS) OR • B. Tech Food Technology OR • B. Voc Home Science/ Foods, Nutrition and Dietetics/Foods and Nutrition/Food Processing and Technology or its equivalent. OR • B.Sc. Catering and Hotel Management or its equivalent. OR

			• A graduate degree which includes at least four of the • following subjects in the undergraduate programmers - Basic Nutrition, Biochemistry, Physiology, Food Science, Food processing/Food Preservation, Dietetics, Community Nutrition/Public Health Nutrition.
	Duration of programme **R:**	**A**	1 Year
4	**R:** _____ **Intake Capacity**	20	
5	**R:** _____ **Scheme of Examination**	NEP 50% Internal 50% External, Semester End Examination Individual Passing in Internal and External Examination	
6	**Standards of Passing** **R:**	40%	
7	_____ **Credit Structure** **Sem.I & II** **R.IMP - 100**	Attached herewith	
8	**Semesters**	**A**	Semester I & II
9	**Programme Academic Level**	**A**	6.0
10	**Pattern**	Semester	
11	**Status**	New	
12	**To be implemented from the Academic Year..**	**A**	From Academic Year: 2025 - 2026

Sd/-	**Sd/-**	**Sd/-**	**Sd/-**
Sign of the BOS Chairman **Dr. Mira Desai** **Ad-hoc Board of Studies in Home Science**	**Sign of the Offg. Associate Dean** **Dr. C.A.Chakradeo** **Faculty of Interdisciplinary Studies**	**Sign of the Offg. Associate Dean** **Dr. Kunal Ingle** **Faculty of Interdisciplinary Studies**	**Sign of the Offg. Dean** **Prof. A. K. Singh** **Faculty of Interdisciplinary Studies**

Preamble

1) Introduction

From the late 1990s, there was recognition of the urgent need for trained dietitians in clinical and community settings in India. To address this need, a P.G. Diploma in Dietetics and Applied Nutrition was started in 1980's at the College of Home Science Nirmala Niketan with permanent affiliation to the University of Mumbai. Over the two decades, the Programme has yielded a growing cadre of trained (**after RD exam**) registered dietitians, many of whom are heading the Diet Departments of nationally acclaimed hospitals in Mumbai and elsewhere.

Currently there is a paucity of qualified practicing dietitians in India for a 1.4 billion population. India stands with the burden of chronic degenerative diseases as a health emergency and duals the second burden of malnutrition. As health, wellness and lifestyle being on the forefront of the National Nutrition Mission as well as global sustainable development goals, it is imperative that dietetics forms an integral part of public health nutrition and that it be addressed on a high-priority basis. The field of dietetics being a newer field, is very dynamic due to the multidisciplinary research emerging in this area leading to various newer techniques of medical nutrition therapy. It is therefore vital to have highly qualified dietetic professionals who will be able to transform individual and community health. With the awareness of the impact of epigenetic processes implied in chronic degenerative diseases, it is crucial to have highly qualified dietetic professionals with a strong background in clinical nutrition research and evidence – based practice to create sustainable health, dietary and lifestyle solutions. Moreover, healthcare currently encompasses many multi-disciplinary approaches which need to be incorporated into dietetic and nutrition practice in both clinics and communities.

Thus, this P.G. Diploma in Dietetics and Applied Nutrition is designed to provide an in- depth knowledge of both theoretical and practical components making it one of the courses that can lead to a contribution for both the individualized in-patient and out-patient care as well as in the public health sector.

The coursework includes fundamental concepts of therapeutic dietetics, human physiology, clinical biochemistry, and applied nutrition in various fields and food service management in institutions. Mandatory and elective courses, along with their corresponding practical and extensive internships (On the Job training) form an integral part of the curriculum.

The papers in Research Methods and those in Statistics will help students to understand the techniques and methodologies used for evidence-based practice. The elective courses offer various training opportunities in the most recent advances in the field of dietetics and insights into recent digital advances which will enhance competencies in channelizing ideas and innovations related to dietetics and public health. Students will acquire competencies in developing a comprehensive approach to tackle chronic disease conditions. Emphasis has been placed in providing adequate theoretical and practical knowledge in intensive care nutrition therapy for acute and critical cases as well as emphasizing on detailed case studies in all other aspects of medical nutrition therapy. Successful completion of this P.G. Diploma programme will enhance employability of students, providing multiple avenues for their professional development in the field of dietetics and nutrition.

This field lends itself to multiple entrepreneurial opportunities as diet and fitness consultants as well as life style management professionals. The training will impact nutrition education and competencies in nutritional counselling to reach out to both individuals and masses as an integral part of public health.

Overall, the P.G. Diploma in Dietetics and Applied Nutrition will aim to deliver holistic education integrating the theory and practical learnings and will help students establish a niche career for themselves while contributing positively to community / society's health outcomes.

2) Aims and Objectives

a. To create a strong understanding of fundamental and advanced concepts in the field of Dietetics and Applied Nutrition.
b. To equip students with knowledge, skills and research competencies for professional application into the areas of food processing, therapeutic dietetics and public health nutrition.
c. To empower the students with analytical reasoning skills, research competencies; open mindedness to use recent technologies; creativity for contribution to individuals' and the community's health and an entrepreneurial bend of thought and action.
d. To create competent professionals who work with acknowledgement of the dynamism and evolution in the field of clinical nutrition and dietetics, and are capable of keeping up with the emerging trends and practices in the field with a vision to contribute to national development.

3) Programme / Learning Outcomes

The programme encompasses a comprehensive range of skills and knowledge, values and mindset, enabling graduates to excel in the multifaceted field of Dietetics and Applied Nutrition. On successful completion of the programme, student will be able to be a competent and valuable member of the fraternity as outlined below:

Programme Outcome (PO)	Definition To be able to…	Graduate Attribute
PO1	Demonstrate an in-depth knowledge and understanding of core fundamentals of concepts of nutrition and therapeutic Dietetics, public health and management of food service in a hospital/health care setup.	Disciplinary Knowledge
PO2	Effectively develop nutritious and therapeutic diets and to communicate them clearly to patients, explaining complex concepts of nutrition in simple and understandable terms both orally and in writing.	Communication Skills
PO3	Design effective diets based on the nutritional diagnosis and evaluate the modes of nutritional therapies as per the individual requirements of the patient's clinical status.	Critical Thinking

PO4	Creatively construct dietary and nutritional strategies to manage diseases, and address nutrition related health issues in the clinical set up; to support the hospital / clinical industry as a knowledge partner in formulation of healthy food products; and to engage in entrepreneurial initiatives to solve individual and community health problems.	Innovation, Entrepreneurial
PO5	Competently evaluate traditional as well as recent nutrition practices in relation to evidence – based nutrition and draw applicable conclusions, using a scientific and an open mind with the vision of bettering food and nutrition practice in the hospital / clinical set up.	Analytical and Scientific Reasoning
PO6	Proficiently explore the cause-and-effect relationships of food, nutrition and lifestyle on health and to construct and follow through a research problem using research techniques and statistical analysis, thus drawing up adequate conclusions for applications of research in the hospital industry / clinical set up and community as employee or entrepreneur.	Research and Statistics related skills
PO7	Successfully work in cooperation with the health care team and derive meaningful beneficial conclusions for patient nutrition care. To collaborate and make meaningful linkages with GOs and NGOs to meet dietary needs of consumers as well as community health requirements through interdisciplinary and multidisciplinary efforts in the public health sector.	Cooperation /Team work
PO8	Envision a drive to translate research, recent innovations and personal and professional experiences into applications to benefit food industry, clinical practice, community health; and entrepreneurial ventures with self-awareness and introspection.	Reflective Thinking
PO9	Use technology for nutrition and dietetic communication, consumer information, hospital administration, diet planning, nutrition education as well as be aware of using digitization for entrepreneurial ventures.	Information/digital literacy
PO10	Work independently, identify appropriate resources for a project and manage the project to completion.	Self – Directed Learning
PO11	Be adept with regard to national and global multi-cultural aspects of foods and nutrition, thus being able to deliver food products and nutrition and lifestyle strategies for health in harmony with the existing cultural practices of the individual and the community.	Multi-cultural competence
PO12	Practice principles of dietetics and community health in the most sustainable and effective manner, placing consumer, patient, community and fraternity well-being at the center of operations and refrain unethical behavior at workplace, the community and research.	Moral and Ethical awareness and reasoning

PO13	Take on leadership positions formulating and sharing an inspiring vision and the eagerness to bring productive and sustainable positive results for the professional group, the community and the foods, nutrition and dietetics fraternity using organizational, entrepreneurial and managerial skills.	Leadership readiness/qualities
PO14	Continue lifelong learning and be updated with cutting edge knowledge and practices in the field and the understanding that ongoing learning has to be the personal and professional way of life; thus, being continuously involved in evolving, up scaling, reinventing and reskilling the requirements of the times.	Lifelong learning

4) CREDIT STRUCTURE OF THE PROGRAMME (SEMESTER – I)
(Table as per Parishishta 1 with sign of HOD and Dean)

R: IMP - 100

Postgraduate Programme in University:

A. P.G. Diploma in Home Science – Dietetics and Applied Nutrition

Parishishta – 1

Year (1 Yr PG)	Level	Sem. (1 Yr)	Major		RM	OJT / FP	RP	Cum. Cr.	Degree / Diploma
			Mandatory*	Electives (Any one)					
I	6.0	Sem-I	**Course 1** A) Human Physiology (Th) (2 Cr) B) Clinical Biochemistry (Th) (2 Cr) **Course 2** Advanced Human Nutrition (Th) (4 Cr) **Course 3** A) Clinical Nutrition and Therapeutic Dietetics 1 (Th) (2 Cr) B) Clinical Nutrition and Therapeutic Dietetics 1 (Pr) (2 Cr) **Course 4** A. Public Health Nutrition (Th) (2 Cr) B. Public Health Nutrition (Pr) (2 Cr)	**Course 5** **Elective 1** A) Recent Advances in Health and Wellness Nutrition (Th) (2 Cr) B) Holistic Health and Wellness (Pr) (2 Cr) **OR** **Elective 2** A) Development of Therapeutic Foods (Th) (2 Cr) B) Food Product Development (Pr) (2 Cr)	**Course 6** Research Methods and Statistics (Th) (2 Cr)	-	-	22	----
Sem – I (For PG Diploma)			**16**	**4**	**2**	**-**	**-**	**22**	

Note: Curriculum will be supplemented by Extension Work and Educational Trips for experiential learning with

supplemental credits.

A MOOC course on SWAYAM/ NPTEL/COURSERA can be completed with supplemental credits.

CREDIT STRUCTURE OF THE PROGRAMME (SEMESTER – II)
(Table as per Parishishta 1 with sign of HOD and Dean)

R: IMP- 100

Postgraduate Programme in University:

A. P.G. Diploma in Home Science – Dietetics and Applied Nutrition

Parishishta – 1

<table>
<tr><th colspan="10">Exit option: P.G. Diploma (44 Credits) after Three Year UG Degree</th></tr>
<tr><th rowspan="2">Year (1 Yr PG)</th><th rowspan="2">Level</th><th rowspan="2">Sem. (1 Yr)</th><th colspan="2">Major</th><th>RM</th><th>OJT/ FP</th><th>RP</th><th>Cum. Cr.</th><th>Degree / Diploma</th></tr>
<tr><th>Mandatory*</th><th>Electives (Any one)</th><th></th><th></th><th></th><th></th><th></th></tr>
<tr><td rowspan="4">I</td><td rowspan="4">6.0</td><td rowspan="4">Sem-II</td><td>Course 1
A. Critical Care Nutrition (Th) (2 Cr)
B. Critical Care Nutrition (Pr) (2 Cr)</td><td rowspan="4">Course 5
Elective 1
A) Sports Nutrition and Fitness (Th) (2 Cr)
B) Sports Nutrition and Exercise Physiology (Pr) (2 Cr)
OR
Elective 2
A) Entrepreneur ship and Digital Technology in Dietetics (Th) (2 Cr)
B) Entrepreneu rship in Nutrition and Dietetics
(Pr) (2 Cr)</td><td rowspan="4">-</td><td rowspan="4">On the Job training (4 Cr)</td><td rowspan="4">-</td><td rowspan="4">22</td><td rowspan="4">PG Diploma</td></tr>
<tr><td>Course 2
A. Clinical Nutrition and Therapeutic Dietetics 2 (Th) (2)
B. Clinical Nutrition and Therapeutic Dietetics 2 (Pr) (2)</td></tr>
<tr><td>Course 3
Nutrition through Life Cycle (Th) (4 Cr)</td></tr>
<tr><td>Course 4
Food Service Management (Th) (2 Cr)</td></tr>
<tr><td colspan="3">Sem – II (For PG Diploma)</td><td>14</td><td>4</td><td>-</td><td>4</td><td>-</td><td>22</td><td></td></tr>
<tr><td colspan="10"></td></tr>
<tr><td colspan="3">Cum. Cr. For PG Diploma</td><td>30</td><td>8</td><td>2</td><td>4</td><td>-</td><td>44</td><td></td></tr>
</table>

Note: Curriculum will be supplemented by Extension Work and Educational Trips for experiential learning with supplemental credits.

A MOOC course on SWAYAM/ NPTEL/COURSERA can be completed with supplemental credits.
Students are required to do a Summer Internship/Project (4 weeks) as a mandatory requirement during the summer vacation with supplemental credits.

Year & Level	Mandatory	Elective	Pub. Health	OJT/ FP	RP	Cum. Cr.	Degree
Cum. Cr. for 1 Yr. PG Degree	28	8	4	4	-	44	

Note: * The number of courses can vary for totaling 14 Credits for Major Mandatory Courses in a semester as illustrated.

Sign of Head of the Institute: **Sign of Dean**:

Name of the Head of the Institute:
Dr. Asha Mathew
(Principal)

Name of the Dean:

Name of the Department:
Foods, Nutrition and Dietetics

Name of the Faculty:

Syllabus: P.G. Diploma in Home Science – Dietetics and Applied Nutrition

Semester I (_____) **Level: 6.0** **Cumulative Credits: 22**

Mandatory Courses (Credits 14)

Code: _____: Course 1 Credits 4 C1: A) Human Physiology (Th) (2 Cr)
B) Clinical Biochemistry (Th) (2 Cr)

Code: _____: Course 2 Credits 4 C2: Advanced Human Nutrition (Th) (4 Cr)

Code: _____: Course 3 Credits 4 C3: A) Clinical Nutrition and Therapeutic Dietetics 1 (Th) (2 Cr)
B) Clinical Nutrition and Therapeutic Dietetics 1 (Pr) (2 Cr)

Code: _____: Course 4 Credits 2 C4: Research Methods and Statistics (Th) (2 Cr)

Elective Courses: Course 5 (Credits 4)

Code: _____: A) Recent advances in Health and Wellness Nutrition (Th) (2 Cr)
B**)** Holistic Health and Wellness (Pr) (2 Cr)

OR

Code: _: A) Development of Therapeutic Foods (Th) (2 Cr)
B**)** Food product Development (Pr) (2 Cr)

Public health Nutrition: Course 6 (Credits 4)

Code: _____: A) Public Health Nutrition (Th) (2 Cr)

B) Public Health Nutrition (Pr) (2 Cr)

Syllabus: P.G. Diploma in Home Science – Dietetics and Applied Nutrition

Semester II (_____) **Level: 6.0** **Cumulative Credits: 22**

Mandatory Courses (Credits 14)

Code: __: Course 1 Credits 4 C1: A) Critical Care Nutrition (Th) (2 Cr)

B) Critical Care Nutrition (Pr) (2 Cr)

Code: _____: Course 2 Credits 4 C2: A) Clinical Nutrition and Therapeutic Dietetics 2 (Th) (2 Cr)
B) Clinical Nutrition and Therapeutic Dietetics 2 (Pr) (2 Cr)

Code: _____: Course 3 Credits 4 C3: Nutrition through Life Cycle (Th) (4 Cr)

Code: __: Course 4 Credits 2 C4: Food Service management (Th) (2 Cr)

Elective Courses: Course 5 (Credits 4)

Code: _: A) Sports Nutrition and Fitness (Th) (2 Cr)

B**)** Sports Nutrition and Exercise Physiology (Pr) (2 Cr)

OR

Code: A) Entrepreneurship and Digital Technology in Nutrition and Dietetics (Th) (2 Cr)

B) Entrepreneurship in Nutrition and Dietetics (Pr) (2 Cr)

Course 6 (Credits 4) Code:
On the Job training (4 Cr)

Syllabus:
P.G. Diploma in Home Science – Dietetics and Applied Nutrition

(Semester I)

Semester-I
Mandatory Courses

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- I **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 01 C 1 A	**Human Physiology**	**Theory**	**2**

Course Objectives:

1. To help students strengthen their understanding of the fundamental concepts of physiological processes of the human body.
2. To facilitate comprehension of newer and applied concepts of human physiology.
3. To enable in students the skills of application of the principles of physiology in health and disease management.

Course Outcomes (CO):

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

CO No.	Course Outcome
CO1	Recall key terms, definitions, and fundamental concepts related to human physiological systems (e.g., nervous system, cardiovascular system, respiratory system).
CO2	Interpret and explain physiological processes in their own words, demonstrating comprehension of underlying mechanisms.
CO3	Apply physiological principles to solve problems and analyze real-world scenarios.
CO4	Differentiate between normal and abnormal physiological functions, identify relationships between different systems, and break down complex processes into their constituent parts.
CO5	Analyze physiological markers to assess health conditions and disease progression.
CO6	Construct informed opinions on emerging trends and controversies in physiological research.

Unit No.	Course Content	No. of Hours
I	**A. Cellular levels of organization:** i Plasma membrane, Organelles, Cell life cycle; Tissue level of organization: types of tissues, structure and function **B. Nervous and Sensory System:** i Introduction to central and autonomic nervous system, ii Structure of neuron, fundamental principles of nervous control, reflex actions **C. Digestive System**: i Overview of structure and function: Oral cavity, Stomach, Intestine, Pancreas, Liver, Gallbladder ii Process of digestion and absorption iii Pathophysiology of disorders related to Upper and lower GI tract, liver, pancreas and gallbladder **D. Endocrine system:** i Location of different glands (Pituitary, thyroid, parathyroid, adrenal, gastro-intestinal, pancreas, adipose), their secretions ii Functions of the different hormones and disorders **E. Reproductive system:** i Structure and function of the male and female reproductive system ii Physiology of menstruation, pregnancy and lactation **F. Lymphatic system and Immunity**: i Functions; Lymphatic vessels, lymphocytes, Lymphoid tissues and organs; Types of immunity (Non-specific and Specific); Innate immune system; Immune response ii Hyper-sensitivities and allergies	**15**
II	**A. Cardiovascular system**: i Blood components and function of blood (serum/plasma difference) ii Blood related disorders (sickle cell anemia & thalassemia), Nutrition Anemia's. iii Heart and the circulatory system: Structure of heart, Cardiac cycle, Conducting system of the heart, Blood circulation (Structure of vessel wall, Arteries, veins and capillaries, Blood pressure Peripheral resistance, Pulmonary circuit and systemic circuit) **B. Respiratory System:** i Parts of the respiratory system (Upper and lower respiratory system) ii Structure of lungs, External and internal respiration pulmonary ventilation iii Acid Base balance iv Pulmonary disorders- COPD and cystic fibrosis, pneumonia **C. Excretory System:** i Structure and function of: Kidney and nephrons, mechanism of urine formation ii Fluid and electrolyte balance iii Renal disorders **D. Musculo-Skeletal System:** i Structure and classification of bones Axial and Appendicular skeletal structure, voluntary and involuntary muscles ii Bone Pathology (osteomalacia, osteoporosis and psoriasis) iii Physiology of contraction and relaxation of muscles	**15**

	iv Musculoskeletal disorders **E. Inherited metabolic disorders:** i Modes of inheritance, ii Disorders related to carbohydrate, protein, fat, vitamin, mineral and nucleic acid metabolism, tuberculosis	
	Total hours	**30**

References:

Guyton, A.C. (2020). Textbook of Medical Physiology 14th Edition, Saunders Company.
Best and Taylor, (1975). The Living Body. Chapman and Hall Ltd., London.
Chatterjee, C.C (2007). Human Physiology. Medical Allied Agency, India.
Pal, G., Pal, P., Nanda, N. (2016). Comprehensive Textbook of Medical Physiology - Two Volume Set. India: Jaypee Brothers Medical Publishers Pvt. Limited.
Tortora, G. J., Derrickson, B. H. (2017). Tortora's Principles of Anatomy and Physiology. Singapore: Wiley.
Ross and Wilson (2010). Anatomy and Physiology in health and illness. 10th ed, Elsevier, China
Waugh, A., Grant, A. (2018). Ross & Wilson Anatomy and Physiology in Health and Illness. United Kingdom: Elsevier Health Sciences.

Evaluation:

2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topics / Literature review with class discussion	10
Class test/ debate/Quiz	10
Class participation and evaluation	5
Total Marks for CIE	25

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total Marks for the Semester End Examination	25
TOTAL MARKS FOR THE COURSE	**50**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition

(Under NEP)

Semester- I **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 01 C 1 B	**Clinical Biochemistry**	**Theory**	**2**

Course Objectives:

1. To help students strengthen their understanding of the fundamental concepts of clinical biochemistry.
2. To facilitate comprehension of newer and applied concepts of clinical biochemistry.
3. To enable in students the skills of application of the principles of biochemistry in health and disease management.

Course Outcomes (CO):
On successful completion of the course, the student will be able to:

CO No.	Course Outcome
CO1	Recall key terms, definitions, and fundamental concepts related to clinical biochemistry (e.g., enzymes, hormones, metabolic pathways, laboratory tests).
CO2	Interpret and explain the physiological significance of biochemical laboratory results, demonstrating comprehension of underlying metabolic processes.
CO3	Apply their knowledge of clinical biochemistry to interpret patient data, identify potential diagnoses, and recommend appropriate investigations.
CO4	Differentiate between normal and abnormal laboratory values, identify patterns in test results, and break down complex biochemical pathways to understand their relevance to disease states.
CO5	Analyze clinical biomarkers to assess health conditions and disease progression.
CO6	Construct informed opinions on emerging trends and controversies in clinical biochemical research.

Unit No.	Course Content	No. of Hours
I	**BiomoleculesofNutritionalSignificance-1** i. Carbohydrates – classification of carbohydrates. Overview of digestion, absorption and transportation of CHO. Metabolism of carbohydrate: EMP, TCA, HMP, Glycogen metabolism. Cori's cycle. ii. Proteins – Overview of classification digestion, absorption, and transportation of protein. Metabolism of protein, aromatic and BCAA amino acids. Formation of specialized products from amino acids and their functions–Glutathione, Creatine–creatinine, biogenic amines (dopamine, norepinephrine, tyranine, serotonin, GABA, histamine). Biologically important peptides (Insulin, ACTH, Oxytocin, Vasopressin, Angiotensin, TRH. Four levels of protein structure and functions of Insulin, Hemoglobin, Carboxypeptidase, Keratin), General reactions of amino acids, Urea cycle.	15
II	**Biomolecules of Nutritional Significance -2** i) Lipids – Overview of classification, digestion, absorption, and transportation of lipids. Fatty acids, MCT's, Cholesterol, Prostanoids. Metabolism of lipids: Beta Oxidation, Ketone body formation. ETC, ATP production and mechanism of Oxidative and Substrate level phosphorylation. ii) Enzymes – IUB classification of enzymes. Active site, Coenzymes Factors, Enzyme Inhibition – Clinical enzymology – LDH iso-enzymes, SGOT, SGPT, Amylase, Use of ELISA, RIA techniques. iii) Pathophysiology and Interpretation of biomarkers of disease conditions: GI, CVD, Diabetes Mellitus, Cancer, Renal disease.	15
	Total hours	**30**

References

Berg, J. M., Tynocrko, J. L. et al Biochemistry (5th ed.) New York W.H. Freeman and Co 2002.
Brody Tom. Nutritional Biochemistry 2nd ed. New Delhi Elsevier/Reed Elsevier India Pvt. Ltd. 2004 Chatterjee M.N. Shinde and Rana Textbook of Medical Biochemistry 6th ed. New Delhi Jaypee Brothers Medical Publishers 2005.
Devlin Thomas, M (ed.) Textbook of Biochemistry with Clinical Correlation New York, John Wiley and Sons Inc.1997.
Montgomery, Rex and others Biochemistry A case oriented Approach St. Louis The C.V. Mosby Co. 1977. Murray, R.K. and others. Harper's Biochemistry 25th ed. Connecticut, Appleton and large Publications. London, Prentice Hall Int. Inc 1996.
Lehninger, A.L.; Nelson D.L. and Cox. M.M., Principles o Biochemistry 3rd ed. New York. Worth Publishers McMullan Press, 2000.
Puri Dinesh Textbook of Biochemistry. A Clinically oriented Approach New Delhi B.I. Churchill Livingstone Pvt. Ltd. 2002.

Evaluation:
2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class discussion	10
Class test/ debate/Quiz	10
Class participation and evaluation	5
Total	25

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	25

P.G. Diploma in Home Science – Dietetics and Applied Nutrition

(Under NEP)

Semester- I **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
DAN 01 C2	**Advances in Human Nutrition (Th)**	**Theory**	**4**

Course Objectives:
To enable students to

- Define and differentiate between macro and micronutrients, and explain their roles in human nutrition.
- Apply knowledge of nutritional principles to analyze and evaluate dietary patterns and their impact on health outcomes
- Design personalized nutrition plans based on individual needs and health goals.

Course Outcomes (CO):

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

CO No.	Course Outcomes
CO1	Define key terms and concepts in human nutrition
CO2	Explain the role of macronutrients and micronutrients in human health
CO3	Evaluate nutrition-related research studies and their implications for public health.
CO4	Analyze the role of specific vitamins (fat-soluble and water-soluble) in health and disease.
CO5	Assess the effectiveness of nutrition interventions in improving health outcomes.
CO6	Create educational materials that promote healthy eating habits based on the latest nutrition science.

Unit No.	Course Content	No. of Hours
I.	**A. Nutrient requirements** • RDA, AI, RDI, TUL, EAR • Methods of determining RDAs • National vs. International dietary standards **B. Energy** • Units of energy, Energy intake vs Energy expenditure (EE) • Components of EE, Estimation of BMR & Total Energy expenditure • Calorimetry (Direct & Indirect) and Non calorimetric techniques. GEV & MEV; Atwater Factors-Advantages & Disadvantages • Energy imbalances-Excess & Deficiency –Acute and Chronic Physiological adaptations to Over and under nutrition **C. Fats and Fatty acids** • Overview of Classification, Functions, digestion and absorption; • RDAs of total dietary fat and fatty acid consumption; Fatty acid ratios • Role of total fat intake, SFA, MUFA & PUFAs in health & disease	**15**

	• Oil blends	
II.	**A. Carbohydrates** • Overview of Classification, Functions, digestion and absorption. • Carbohydrate recommendations • Glycaemic Index and Glycaemic Load-Applications in the diet • Dietary fiber and Resistant starch-Types, Health benefits • Sugar substitutes-Nutritive and non -nutritive sweeteners- Synthetic and Natural sweeteners **B. Proteins and Amino acids** • Overview of Classification, Functions, digestion and absorption; • Essential Amino acid requirements and AA imbalances • Assessment of quality of Food protein-Biological and chemical methods. • Assessment of protein nutritional status: Anthropometry, BIA -Tracer techniques, -Recommended Dietary Allowances of protein and amino acids for various groups of population -Concerns of RDAs for vulnerable groups of population	**15**
III	**I. Micronutrients** i. **Vitamins**: Overview of Classification, digestion, absorption and transportation, functions, Requirements, deficiency & toxicity; ii. Assessment of nutritional status of Fat soluble –A,D,E & K & Water soluble vitamins (B-Complex vitamins and vitamin. a. iii. Interrelationship between vitamins;& vitamins and macronutrients B. **Minerals** : Overview of Classification, digestion, absorption and transportation, functions, Requirements, deficiency & toxicity • Assessment of nutritional status of Macro minerals-Na, K, Ca, Phosphorus & Magnesium • Micro minerals-Iron, Iodine, Zinc and fluorine Trace Minerals- Copper and Selenium B: Mineral-Mineral interactions; • Interrelationship between vitamins & Minerals • Interrelationship between macro and micronutrients	**15**
III	**A. Role of nutrition in health and disease** • Management of various Metabolic and lifestyle disorders (Diabetes, CVD, cancer, liver and renal diseases). • Nutrigenomics- understanding the interaction between genetics and diet. • Interpretation of Nutrigenomic report. **B.** Complementary Nutrition- Prebiotics, Probiotics and Synbiotics. Meal Replacers Overview of Functional food, Nutraceuticals, Phytochemicals, and bioactive components in food.	**15**
	Total Contact Hours	**60**

References:

Wildman, R. E. C. (2018). Advanced Human Nutrition. India: Jones & Bartlett Learning.

The Latest Research and Development of Minerals in Human Nutrition. (2021). Netherlands: Elsevier Science.

Shils, M.E., Olson, J., Shike, M. and Roos, C (2003). Modern Nutrition in Health and Disease, 9" edition Williams and Williams. A Beverly Co. London.
Bodwell, C.E. and Erdman, J.W. (2008) Nutrient Interactions. Marcel Dekker Inc. New York
Sareen, S, James, J (2005). Advanced Nutrition in Human Metabolism, 4th Edition, Thomson Wordsworth Publication, USA.
Chandra, R.K. (eds) (2002): Nutrition and Immunology, ARTS Biomedical. St. John's Newfoundland.
Grodd, J.L. and Gropper, S.S. (1999) Advanced Nutrition and human metabolism. Belmount CA Wodworth/ Thomson learning.
Judith E. Brown (1998) Nutrition Now, West/wadsworth International Thomson Pub. Co. Williams, Cand
Devlin, T.J. (1992) Foods nutrition and sports performance E and N Sposs I Ed.
Goodhart R.S.S and Shils, M.E (1998) Modern nutrition in health and disease. Philadelphia Lea and Febiger.
Shils, M.E., Olson, J., Shike, M. and Roos, C (2003). Modern Nutrition in Health and Disease, 9" edition Williams and Williams. A Beverly Co. London.
Stipanuk Martha H. 2006 Biochemical, physiological, molecular aspects of human nutrition – Saunders ELSEVIER.
Paul, I, Turner, E.R., Ross, Don – 2006 (2nd ed.) Discovering Nutrition – Jones and Bartlett Publishers – Canada.

Geissler, C., Powers, H (11th ed.) (2005) Human Nutrition ELSEVIER Churchill LivinstoneZegler,

Evaluation:
4 credits (Total marks 100)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class discussion/ Creating learning resources (videos or posters or brochures)	20
Class test/ Quiz/ Group Discussion	20
Class participation and evaluation	10
Total	**50**
SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from Unit 3	10
Question 4 from Unit 4	10
Question 5 from multiple units	10
Total	**50**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- I **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 01 C3 A	**Clinical Nutrition and Therapeutic Dietetics I**	**Theory**	**2**

Course Objectives:
To help students:

1. Gain a deep understanding of preventive measures and their significance in minimizing disease burden.
2. Understand the etiological factors and physiological changes associated with specific disease conditions and develop an insight into the role of modified diets in specific conditions.
3. Acquire the basic skills required to modify the normal diet to suit individuals suffering from specific diseases and lifestyle disorders.
4. Apply concepts of clinical nutrition dietetics in clinical settings.

Course Outcomes (CO):
On successful completion of the course, the student will be able to:

CO No.	Course Outcome
CO1	To expose students to the nutritional care process, the role of a nutritionist and the methods employed in nutrition provision and intervention.
CO2	Understanding the lifestyle factors that contribute to the management of diseases.
CO3	To impart knowledge regarding prevalence, etiology, diagnosis, pathophysiology and lifestyle management in different disease conditions.
CO4	Compare and contrast the effectiveness of different management strategies for specific diseases.
CO5	Design comprehensive health strategies for management of conditions for specific target populations.
CO6	Design and organize the therapeutic diet according to the nutrition care process

Unit No.	Course Content	No. of Hours
I.	**A. Nutritional Care Process and Counseling Strategies:** i The Nutrition Care process: a detailed study of nutritional assessment, diagnosis, planning and goal setting, intervention, follow-up and documentation ii Role and skills of a Dietitian iii Modifications of the Normal Diet iv Hospital inpatient nutritional care v Relevance of research for a Nutritionist/Dietitian vi Nutrition Education and Nutrition Counseling theories and strategies **B. A Weight Management** **i Obesity and overweight** • Genetic regulation of body weight • Etiology, pathophysiology, classification, causes and assessment techniques, metabolic effects of obesity with special reference to obesity as an inflammatory disease • Management strategies for prevention: Nutritional management, exercise, lifestyle, pharmacotherapy and behavioral changes, Bariatric surgery • Management of obesity in pregnancy, lactation and childhood, Osteoarthritis, Hypothyroidism, Cushing's syndrome, PCOS, VLCD, Bariatric Surgery. **ii Underweight and eating disorders** • Underweight: Etiology, metabolic consequences of starvation and management strategies • Eating Disorders: Anorexia Nervosa, Bulimia Nervosa, Binge eating disorder, eating disorder not otherwise specified • Nutritional deficiencies in underweight and managing comorbidities	**15**
II.	**A. Diabetes Syndrome** i Etiology, pathophysiology, assessment and complications (Acute and chronic) of type I, type II, Gestational diabetes. ii Dysbiosis of gut and its relation with onset of diabetes mellitus iii. Medical (OHA and insulin), nutritional and lifestyle management strategies, Carbohydrate counting iv. Nutrition in exercising diabetic populations **B. Cardiovascular Diseases** i Atherosclerosis and arteriosclerosis • Etiology, risk factors, diagnosis, pathophysiology and progression, endothelial dysfunction • Consequences of atherosclerosis: Arterial blockage, Thrombus formation and occlusion, embolism, inflammation • Etiology, Pathophysiology, Diagnosis, assessment and management strategies for prevention (Nutritional Lifestyle) of: ii Hypertension iii Hyperlipidemias iv Angina Pectoris **C. Nutrition in Prevention of Neurological Decline** (Impaired Cognitive function, Senility/Dementia)	**15**

	i Reducing the risk for neurodegenerative diseases (Alzheimer's and Parkinson's disease) ii Prevention of depression **D. Nutrition in Cancer prevention**	
	Total hours	**30**

References:

Barrer. K. (2007) Basic Nutrition Counselling Skill Development. Wadsworth Pub

Bendich, A., &Deckelbaum, R. J. (Eds.). (2006). Preventive Nutrition: The Comprehensive Guide for Health Professionals. Springer.

Bendich, A., &Deckelbaum, R. J. (Eds.). (2016). Preventive Nutrition: The Comprehensive Guide for Health Professionals. Humana Press.

Blake, J. S. (2018). Nutrition: From Science to You. Pearson.

Blake, J. S. (2020). Nutrition and You: Core Concepts for Good Health. Pearson.

Brown, J. E. (2019). Nutrition through the Life Cycle. Cengage Learning.

Lutz, C. A., Przytulski, K. R., & Rutherford, K. L. (2015). Nutrition and Diet Therapy. F.A. Davis Company.

Mahan, L. K., & Raymond, J. L. (2021). Krause's Food & the Nutrition Care Process. 15th edition. Elsevier.

Pope, J., & Berman, M. (2017). Nutrition for a Changing World. Wadsworth Publishing.

Shills. M. (2006). Modern Nutrition in Health and Disease.10th ed. Lippincot William and Wilkins.

Sizer, F., & Whitney, E. (2020). Nutrition: Concepts and Controversies. Cengage Learning.

Smolin, L. A., & Grosvenor, M. B. (2018). Nutrition: Science and Applications. Wiley.

Evaluation:
2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class discussion/ Creating learning resources (videos or posters or brochures)	10
Class test/ Quiz/ Group Discussion	10
Class participation and evaluation	5
Total	**25**
SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	25

P.G. Diploma in Home Science – Dietetics and Applied Nutrition

(Under NEP)

Semester- I **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 01 C3 B	**Clinical Nutrition and Therapeutic Dietetics I**	**Practical**	**2**

Course Objectives:

1. To provide a detailed practical aspect to the clinical conditions studied in theory.
2. To enable students to:
   - Do a detailed study of Medical Nutrition Therapy with appropriate literature review.
   - Analyze the given case.
   - Make a nutritional diagnosis with problem, etiology and symptom (PES) Statement and outline the goals of therapy.
   - Study of medical and surgical interventions which require nutritional management.
   - Propose a nutrition plan for the patient – with suggested outline of medical nutrition therapy with appropriate literature review, diet plan with detailed calculations and suggested supplements and adjuncts.
   - Prepare the selected meal.
   - Evaluate the suggested diet plans.
   - Prepare patient education resources.

Course Outcomes (CO):

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

CO No.	Course Outcome
CO1	Recall key principles of therapeutic dietetics and their application in clinical settings.
CO2	Explain the rationale behind different therapeutic diets and their effects on health.
CO3	Apply knowledge of dietary modifications to create personalized meal plans for different medical conditions.
CO4	Demonstrate the ability to calculate nutrient content in therapeutic diets.
CO5	Compare and contrast various dietary approaches for managing similar health conditions.
CO6	Judge the suitability of therapeutic diets for patients with comorbidities or special dietary requirements.
CO7	Design comprehensive dietary plans that integrate therapeutic requirements, patient preferences, and cultural considerations.

Unit No.	Course Content	No. of Hours
I.	**A. Understanding the role of supplements and nutraceuticals (Review)** **B. Planning of Diets:** Planning diets using Medical Nutrition Therapy with i. Allocation of proximate principles ii Menu Planning iii Detailed calculation to understand the efficacy of the plan iv Supplement usage v Outline recommendations in easily understood format vi Planning for the following conditions: • Obesity and Metabolic syndrome: Juvenile Onset and Adult-Onset obesity, Bariatric Surgery, VLCD, PCOD • Eating Disorders • Planning for the following conditions: • Diabetes: Pre-diabetes, Type I, Type II DM, Gestational Diabetes • Underweight • Obesity • Eating Disorders **C. Preparation of the prescribed therapeutic food samples with respect to the above cases**	**30**
	A. Planning of Diets: Planning diets using Medical Nutrition Therapy with i. Allocation of proximate principles ii. Menu Planning iii Detailed calculation to understand the efficacy of the plan iv Supplement usage v Outline recommendations in easily understood format vi Planning for the following conditions: • Cardiovascular Diseases: Atherosclerosis, arteriosclerosis, Angina Pectoris. • Hyperlipidemias, Hypertension, metabolic syndrome • Prevention of cancer and overview of neutropenic diet • Prevention of Neurodegeneration (Alzheimer's and Parkinson's disease). **B. Preparation of the prescribed therapeutic food samples with respect to the above cases**	**30**
	Total hours	**60**

References:

Brown, J. (2002). Nutrition through the Lifecycle. Wadsworth Pub Co.
Garrow, J.S (1993). Human Nutrition and Dietetics 9th ed. Churchill Livingstone Pub.
Gibney, J.M. (2005). Clinical Nutrition Blackwell Publishing House.
Gopalan. C. (2000). Nutritive Value of Indian Foods. NIN ICMR Pub.
Jamison, J. (2003). Clinical Guide to Nutrition and Dietary Supplements in Disease Management Churchill

– Livingstone Pub.
Jeejeebhoy, et al (1988). Nutrition and Metabolism in Patient Care.
King, K. (2003). Nutrition Therapy 2nd ed. Helm Publishing, Texas.
Kathryn Pinna (Author), Sharon Rady Rolfes, Ellie Whitney: Understanding Normal and Clinical Nutrition, 12th Edition. (2020), Brooks/Cole publishers.
L. Kathleen Mahan: Krause's Food & the Nutrition Care Process, 16th Edition, (2022), Saunders Publishers.
Peckenpaugh, N (2003). Nutrition Essentials and Diet Therapy. 9th ed.
Sauberlich. H (1999) Laboratory Tests for the Assessment of Nutritional Status 2nd ed. CRC Press.
Saunders Pub Co. Blackwell Scientific Publication (1994). Manual of Dietetic Practice.2nd ed.
Shills, M. (2006). Modern Nutrition in Health and Disease.10th ed.Lippincot.
W.B.Saunders CO. Lee, R.D. (2003). Nutritional Assessment 3rd ed. McGraw Hill Pub.
Whitney.C. (2006) Understanding Normal and Clinical Nutrition. Wadsworth publication.
William and Wilkins ICMR Pub. (2000). Nutrient Requirement and Recommended Dietary Allowances for Indians.

Evaluation:
2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Journal	5
Continuous Evaluation: Assessment of case studies	10
Continuous Evaluation: Assessment of Cooking Skills and Techniques	10
Total	**25**

Semester-end Examination:	**Marks**
Construction of a case specific diet plan	20
Viva Voce examination	5
Total	**25**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- I **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 01 C4	**Research Methods and Statistics**	**Theory**	**2**

Course Objectives:

1. To define and differentiate between quantitative and qualitative research methods.
2. To explain the steps involved in the research process, including literature review and ethical considerations.
3. To apply sampling techniques and appropriate data collection methods to a given research scenario.
4. To analyze research data using descriptive statistics, including measures of central tendency and variability, and interpret the findings.
5. To design a simple research proposal, including objectives, methodology, and data analysis plan, for a research question relevant to nutrition and dietetics.

Course Outcome:

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

CO No.	Course Outcomes
CO1	Describe heightened appreciation for high quality research in their specialization and allied areas.
CO2	Understand, differentiate between, evaluate, and select different sampling techniques and research designs for particular research aims.
CO3	Apply knowledge and skills to design and conduct descriptive research studies.
CO4	Identify the level of measurement of a variable and the corresponding suitable statistical technique to describe this variable.
CO5	Evaluate, differentiate between, and select different descriptive statistical techniques to numerically and graphically summarize data.
CO6	Formulate a research proposal on a worthwhile topic in their discipline, as also on interdisciplinary topics.

Unit No.	Course Content	No. of Hours
I.	**Research Methods** **1.** Introduction to Research **a.** Objectives of research **b.** Nature of research in Foods, Nutrition and Dietetics **2.** Types of research (Quantitative vs. Qualitative) **3.** Steps in the research process Conducting a literature review **4.** Ethical considerations in research **5.** Types of research designs **6.** Sampling techniques in research **7.** Data collection methods (Surveys, Interviews, Observations)	**15**
II.	**Statistics** 1. Introduction to Statistics i. Role of Statistics in Research ii. Levels of measurement (Nominal, Ordinal, Interval, Ratio) iii. Variables 2. Descriptive Statistics i. Frequency and percentages ii. Measures of Central Tendency (Mean, Median, Mode) iii. Measures of Variability (Range, Inter-quartile range, Variance, Standard Deviation) iv. Percentiles 3. Applications of Inferential Statistical Procedure i. One sample t test, Independent sample t test, Paired t test ii. ANOVA iii. Correlations iv. Chi square test 4. Use of SPSS in data entry and analysis 5. Data representation (Tables, graphs) 6. Reporting of research data	**15**
	Total Contact Hours	**30**

References:

- Jackson, S.L. (2012).Research methods and statistics: A critical thinking approach (4th ed.).
- Wadsworth C Engage Learning.
- Johnson, R. A., & Bhattacharyya, G. K. (2019). Statistics: Principles and methods (8th ed.). John Wiley.
- Martin, W. E., & Bridgmon, K. D. (2012). Quantitative and statistical research methods. Jossey-Bass.
- American Psychological Association. (2019). Publication manual of the American Psychological Association (7th ed.). APA.
- Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods

approach (4thed.).Sage.
- Merriam, S. B., & Tisdell, E. J. (2015). Qualitative research: A guide to design and implementation (4thed.).John Wiley.
- Patton, M. Q. (2002). Qualitative research & evaluation methods (3rd ed.). Sage.
Kerlinger, F.N. &Lee, H.B.(2000).Foundations of behavioral research. Harcourt.
- Leong, F.T.L. & Austin, J. T. (Eds.) (2006). The psychology research handbook: A guide for graduate students and research assistants (2nd ed.). Sage.

Evaluation:

2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Written Short Quizzes	5
Group project to be completed in pairs or threes: Formulating a Research Proposal on a High Priority Topic relevant to each student group's specialization; Students can opt to work on interdisciplinary research project proposals with team members from more than one specialization of Home Science	10
Problem-solving Exercises (in pairs or individually) & Practice Sums (individually)	10
Total	**25**

Semester-end Examination	
All questions are compulsory with internal choice.	
Question1fromUnit1	10
Question2fromUnit2	10
Question3from multiple units	5
Total	**25**

Semester-I

Elective Courses

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- I **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
DAN 01 C5 ELECTIVE 1A	**Recent advances in Health and Wellness Nutrition**	**Theory**	**2**

Course Objectives:

To enable students to understand:

1. Identify common health concerns and conditions affecting men and women across the lifespan, including hormonal, reproductive health and health across the lifespan
2. Explain the impact of lifestyle factors such as nutrition, physical activity, stress management, and sleep on women's and men's health outcomes
3. To critically evaluate the scientific evidence supporting the role of nutrition in brain health and development across the lifespan.
4. To apply this knowledge to develop and implement personalized nutrition plans for individuals with various neurological conditions.

Course Outcomes (CO):

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

CO No.	Course Outcomes
CO1	Describe the hormonal changes that take place in a woman and men throughout the lifespan
CO2	Discuss the rationale behind preventive care measures and their significance in women's and men's health maintenance.
CO3	Apply strategies for managing menopausal symptoms and promoting health during this life stage
CO4	Analyze individual dietary needs and recommend personalized nutrition plans to optimize brain health and function across different life stages.
CO5	Apply knowledge of neuro-nutrition principles to develop and implement dietary interventions for individuals with specific neurological conditions or concerns.
CO6	Communicate effectively about neuro-nutrition concepts and findings to both professional and lay audiences, including healthcare providers, clients, and the general public.

Unit	Course Content	Periods
Unit I	**A. Reproductive Wellness and Nutrition for Longevity for Females:** Each topic to be addressed with challenges, management and lifestyle modification strategies to enhance reproductive wellness: i. Menopause and Aging ii. Hormonal changes in degenerative diseases and its impact on reproductive health, iii. Menstrual issues, iv. PMS, v. Amenorrhea, vi. PCOD and PCOS, vii. Longevity Nutrition – Management of issues of skin and hair health across the lifespan, viii. Thyroid, ix. Infertility x. High Cortisol and xi. Postpartum depression • Government Health Policies for Women • Emerging therapies in cosmetic nutrition for a multi-disciplinary approach **B. Reproductive Wellness and Nutrition for Longevity for Males:** Each topic to be addressed with challenges, management and lifestyle modification strategies to enhance reproductive wellness: i. Nutrition for men in puberty and adolescence ii. Achieving optimal reproductive health in adulthood iii. Testosterone and hormonal imbalance iv. Sperm health and fertility v. Longevity Nutrition – Management of issues of skin and hair health across the lifespan, vi. Male infertility vii. Erectile dysfunction viii. Prostate health ix. Gynecomastia	15
Unit II	**A. Neuro Nutrition** Each topic to be addressed with challenges, management and lifestyle modification strategies: i. Nutrients for degenerative health are as follows: • Alzheimer's • Parkinson's • Epilepsy ii. Nutrients for development disorders are as follows: • Down's syndrome, • Cerebral palsy, • Lesion, • Stroke and • Trauma	15

	B. Cancer Prevention Strategies for men and women i. Genetic risk, initiation and progression, metabolic alterations, malnutrition and cancer cachexia ii. Medical management – Chemotherapy, radiation, HSCT iii. Medical nutrition therapy for different types of cancers • Head and neck • Lung • Gastro-Intestinal • Pancreatic • Renal • Blood cancer • Reproductive cancer iv. Palliative care	
	Total hours	30

References:

Essentials of Human Nutrition by Mahan and Escott-Stump: A classic textbook covering all aspects of human nutrition, including reproductive health.
Williams Nutrition for Health, Fitness & Sport by McArdle, Katch, and Katch: A comprehensive text with chapters on nutrition for athletes, which often includes sections on reproductive health and nutrition for women.
Condon, M. C. (2004). Women's Health: Body, Mind, Spirit: an Integrated Approach to Wellness and Illness. United Kingdom: Prentice Hall.
Exercise, Nutrition and the Older Woman: Wellness for Women over Fifty. (2000). United States: CRC Press.
Woman's Hormone Handbook: Unlock the Secrets of Female Hormonal Health for Lifelong Balance and Vitality. (2024). (n.p.): Teilingen Press.
Priyanka, R. (2022). Women's Mental Health and Wellbeing A Psychosocial Study. (n.p.): Hrithik.

The Men's Health Big Book of Food by Adam Campbell: A practical guide to healthy eating for men, with a focus on improving overall health and well-being, including sexual health.
The Fertility Diet for Men by Allan Pacey: A book dedicated to the role of nutrition in male fertility, covering topics such as sperm quality, testosterone levels, and lifestyle factors.

Evaluation:

2 credits Total marks 50

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class discussion	10
Class test/ debate/Quiz	10
Class participation and evaluation	5
Total	25

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	25

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- I **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
DAN 01 C5 ELECTIVE 1B	**Holistic Health and Wellness**	**Practical**	**2**

Course Objectives:

To enable students to understand:

1. Explain the impact of lifestyle factors such as nutrition, physical activity, stress management, and sleep on health outcomes
2. Apply knowledge of health principles to develop personalized wellness plans for individuals based on different life stages and health needs.

Course Outcomes (CO):

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

Course Outcome No.	Course Outcomes
CO1	List the six dimensions of wellness and provide a brief description of each.
CO2	Explain the concept of stress and its impact on the mind and body.
CO3	Apply strategies for managing and promoting exercise and physical health
CO4	Compare and contrast different types of complementary and alternative medicine (CAM) therapies.
CO5	Evaluate the effectiveness of different health promotion campaigns and programs.
CO6	Design a wellness program for a specific population group, such as seniors or adolescents.

Unit	Course Content	Periods
Unit I	**A. Foundations of Holistic Health and Wellness** i. Defining holistic health and wellness ii. The dimensions of wellness iii. The history and philosophy of holistic health iv. The role of lifestyle factors in health and well-being **B. Nutrition and Healthy Eating** i. Principles of healthy eating: macronutrients, micronutrients, dietary guidelines ii. Role of nutrition in disease prevention and management iii. Vegetarian and vegan diets iv. Food allergies and intolerances v. Healthy cooking and meal planning **C. Physical Activity and Exercise** i. Benefits of regular physical activity for physical and mental health ii. Types of exercise: aerobic, strength training, flexibility, balance	30

	iii. Creating and maintaining an exercise routine iv. Exercise safety and injury prevention	
Unit II	**A. Sleep, Hygiene and Rest** i. Importance of quality sleep for health and well-being ii. Sleep disorders: insomnia, sleep apnea iii. Strategies for improving sleep quality: sleep hygiene practices, relaxation techniques **B. Mindfulness and Meditation** i. Principles and practices of mindfulness ii. Different types of meditation: mindfulness meditation, guided meditation, mantra meditation iii. Benefits of mindfulness for stress reduction, emotional regulation, and overall well-being **C. Complementary and Alternative Therapies** i. Introduction to complementary and alternative therapies (CAM) ii. Yoga, tai chi, qigong iii. Acupuncture, acupressure, massage therapy iv. Herbal medicine, aromatherapy v. Homeopathy vi. Ayurveda	30
	Total Hours	60

References:

Essentials of Human Nutrition by Mahan and Escott-Stump: A classic textbook covering all aspects of human nutrition, including reproductive health.
Williams Nutrition for Health, Fitness & Sport by McArdle, Katch, and Katch: A comprehensive text with chapters on nutrition for athletes, which often includes sections on reproductive health and nutrition for women.
Nutrition and Physical Degeneration by Weston A. Price: A historical book exploring the relationship between traditional diets and human health, including reproductive health.
The Fifth Vital Sign: Women's Health in the 21st Century by Christiane Northrup: A holistic approach to women's health, including nutrition, stress management, and emotional well-being.
The Hormone Cure by Sara Gottfried: Focuses on natural approaches to hormone balance for women, including diet and lifestyle modifications.
The Fertility Diet by Lara Briden: A book specifically addressing the role of nutrition in female fertility, including PCOS, endometriosis, and other fertility challenges.
The Men's Health Big Book of Food by Adam Campbell: A practical guide to healthy eating for men, with a focus on improving overall health and well-being, including sexual health.
The Fertility Diet for Men by Allan Pacey: A book dedicated to the role of nutrition in male fertility, covering topics such as sperm quality, testosterone levels, and lifestyle factors.
The Testosterone Factor by Jim Stoppani: Focuses on natural ways to boost testosterone levels through diet, exercise, and lifestyle modifications.

Evaluation Total marks 50 2 credits

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Journal	5
Continuous Evaluation, Test, Class participation	15
Class participation and evaluation	5
Total	**25**

SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3: Viva- voce examination	5
Total	**25**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- I **Major (Elective Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN01C 5 Elective1:B	**Development of Therapeutic Foods**	**Theory**	**2**

Course Objectives:
To enable students:

1. Understand key principles of food science and the role of bioactive compounds in health.
2. Apply techniques of preservation methods to preserve nutrients, ensure safety in therapeutic food production.
3. Grasp ethical, regulatory aspects, explore emerging technologies for personalized therapeutic foods.

Course Outcomes (CO):
On successful completion of the course, the student will be able to:

CO No.	Course Outcome
CO1	Recall fundamental concepts of food science and the irrelevance in therapeutic food development.
CO2	Explain the principles of bioactive compounds and their role in therapeutic foods.
CO3	Interpret the connection between food processing techniques and nutrient retention in therapeutic foods.
CO4	Utilize scientific understanding to address challenges in developing palatable and effective therapeutic foods.
CO5	Compare and contrast the nutritional content and functional attributes of various therapeutic food products.
CO6	Evaluate the impact of processing methods on the nutritional quality and safety of therapeutic foods.

Unit No.	Course Content	No.of Hours
I.	**A. Introduction to Therapeutic Foods** i Definition and scope of therapeutic foods ii Importance of food science in addressing nutritional challenges **B. Bioactive Compounds and Functional Foods** i Overview of bioactive compounds and their health benefits ii Exploration of vitamins, minerals, phytochemicals, and their roles in health iii Functional foods and their impact on disease prevention and management iv Importance of Probiotics, Prebiotics **C. Food Preservation Techniques for Nutrient Retention** i Preservation methods: drying, freezing, fermentation ii. Minimizing nutrient loss during food processing	**15**
II.	**A. Sensory Evaluation and Safety of Therapeutic Foods** i Sensory attributes and consumer acceptance of therapeutic foods ii Ensuring food safety and quality in therapeutic food production **B. Ethical and Regulatory Considerations** i Ethical challenges in marketing and labeling therapeutic foods ii Regulatory frameworks and guidelines for therapeutic food development C. **Food Packaging and Labeling** Definition, Principles of packaging. Importance, relationship between Packaging and food Functional requirements for food packaging, Labeling of Food Products: Components – Nutritional information, factors to be considered, design and graphics, nutrition facts Labelling- Purpose, type, regulations, market survey on food labelling	**15**
	Total hours	**30**

Evaluation:

2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	**Marks**
Written and oral presentations on assigned topic / Literature review with class discussion/ Creating learning resources (videos or posters or brochures)	10
Class test/ Quiz/ Group Discussion	10
Class participation and evaluation	5
Total	**25**
Semester-end Examination	

All questions are compulsory with internal choice.	
Question1fromUnit1	10
Question2fromUnit2	10
Question3from multiple units	5
Total	**25**

References:

Giovanni Brunazzi, Salvatore Parisi and Amina Pereno, The importance of packaging design for the chemistry of food products, Springer, 2014. 2.

Aaron L. Brody, Eugene R. Strupinsky and Lauri R. Kline, Active packaging for food applications, CRC Press LLC, 2001. 3.

Luciano Piergiovanni and Sara limbo, food packaging materials, springer briefs in molecular science chemistry of foods, Springer 2016.

Amerine, Pangborn & Roessler (1965).Principles of Sensory Evaluation of food, Academic Press, London.

deMan J.(2007).PrinciplesofFoodChemistry,3rded.,Springer.

Jameson K. (1998).Food Science– A Laboratory Manual, New Jersey: Prentice Hall Inc. Lawless, H. and Heymann, H.

Mc William, M. (2001). Foods – Experimental Perspectives (4th Ed.), New Jersey: Prentice Hall Inc.USA: CRC Press Inc.

Meilgard (1999). Sensory Evaluation Techniques, 3rded.CRCPressLLC, 1999.

Pomeranz Y and Meloan CE (2002). Food Analysis – Theory and Practice, CBS Publishers and Distributors, New Delhi.

Rao E.S.(2013).Food Quality Evaluation. Variety Books.

Sensory Evaluation of Food–Principles and Practices, Kluwer Academic/Plemer Publishers. Weaver, C. (1996), Food Chemistry Laboratory – A manual for Experimental Foods.

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
Level- 6.0
(Under NEP)

Semester-I **Major (Elective Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN01C 5 Elective1:B	**Food Product Development**	**Practical**	**2**

Course Objectives:
To help students:

1. Understand the application of principles of food science in the development of innovative food products.
2. Gain knowledge on the use functional foods, novel (less utilized) ingredients in development of products.
3. Develop skills in identifying a suitable packaging label and storage conditions for a developed product.
4. Gain knowledge on principles of sensory evaluation and its application.

Course Outcomes (CO):
On successful completion of the course, the student will be able to:

CO No.	Course Outcome
CO1	Recall the fundamental steps involved in developing food products.
CO2	Explain the role of different ingredients in enhancing the nutritional value of food products.
CO3	Apply food processing techniques to create food prototypes.
CO4	Demonstrate the ability to incorporate bioactive compounds into food products effectively.
CO5	Utilize sensory evaluation methods to assess the palatability of food products.
CO6	Creation of food products that are accepted, feasible and profitable.

Unit No.	Course Content	No.of Hours
I.	**A. Sensory evaluation of foods** i Threshold concentrations of primary tastes ii Effect of Temperature on taste iii Identification of samples through Difference, Descriptive and Affective testing	**30**

	iv Describing sensory attributes requiring modification in various clinical conditions **B. Generation of idea and evaluation of sensory quality** i Concept development and testing based on market research ii Product development iii Determination of sensory evaluation methods for evaluating quality iv Developing scorecard as an evaluation tool	
II.	**A.** Food Product Formulation addressing health concern Enhancement of nutritive value, waste utilization, cost effectiveness, value addition of anyone of the product categories – Yoghurt, Beverage, Salad dressing, Low fat/low calorie/high fibre products, Desserts using artificial/low calorie sweeteners, Low sodium, low fat and high fibre products containing functional foods , Preserved foods: Kanji, Sauerkraut, Pickles etc. **B.** Identifying suitable packaging material and designing nutrition labels	**30**
	Total hours	**60**

References:

Amerine, Pangborn& Roessler (1965).Principles of Sensory Evaluation of food, Academic Press, London.

deManJ. (2007). Principles of Food Chemistry, 3rd ed., Springer.

JamesonK. (1998).Food Science– A Laboratory Manual, New Jersey: Prentice Hall Inc. Lawless, H. and Heymann, H. (1998).

McWilliam, M. (2001). Foods – Experimental Perspectives (4th Ed.), New Jersey: Prentice Hall Inc.USA: CRC Press Inc.

Meilgard (1999).Sensory Evaluation Techniques, 3rded.CRCPressLLC, 1999.

Pomeranz Y and Meloan CE (2002). Food Analysis – Theory and Practice, CBS Publishers and Distributors, New Delhi.

Rao E.S. (2013).Food Quality Evaluation. Variety Books.

Sensory Evaluation of Food–Principles and Practices, Kluwer Academic/ Plemer Publishers.

Weaver, C. (1996), Food Chemistry Laboratory – A manual for Experimental Food

Evaluation:

2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Journal	5
Development of a new food product in groups (Writing the research proposal for development new product, standardization, packaging, labelling, marketing and sales)	20
Total	**25**
Semester-end Examination:	**Marks**
All questions are compulsory with internal choice.	
Question 1 Applications of food science from Unit 1	10
Question 2 Plan an experiment from Unit 2	10
Question 3 : Viva-voce examination	5
Total	**25**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- I **Major (Mandatory Course)**

Course Code	Course Title	Th/Pr	Credits
DAN 01 C6 A	**Public Health Nutrition (Th)**	**Theory**	**2**

Course Objectives:

To enable students to

1. Understand the significance and scope of public nutrition.
2. Have knowledge about the nutritional problems of public health significance.
3. Be acquainted with the government programmes that are in operation to tackle important nutritional problems.
4. Describe the role and functions of a public health nutritionist.
5. Explain the knowledge and skills required for a career in public health nutrition

Course Outcomes (CO):

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

CO No.	Course Outcomes
CO1	Define key terms and concepts in public health nutrition (e.g., malnutrition, food security, dietary guidelines, nutritional epidemiology).
CO2	Interpret and explain the impact of nutritional factors on public health outcomes, demonstrating comprehension of underlying social, economic, and environmental determinants.
CO3	Apply public health nutrition principles to analyze real-world scenarios and develop appropriate interventions for improving population health.
CO4	Differentiate between different types of malnutrition, identify risk factors for nutritional deficiencies in specific populations, and break down complex public health nutrition problems into their constituent parts.
CO5	To critique public health nutrition policies and programs, assess the effectiveness of nutrition interventions and formulate judgments about the ethical and social implications of different approaches to improving dietary intake.
CO6	To design and implement community-based nutrition programs, develop innovative strategies for addressing food insecurity, and generate new approaches to improving the nutritional status of vulnerable populations.

UNIT	Contents	Contact Hours
Unit-I	**Public Health Nutrition- An Overview** Public health nutrition -Concept and importance. Concept of health and disease. Dimensions, determinants and indicators of health. Public health and nutritional issues- Global and Indian perspectives. Health care system in India. Role of public nutritionist in health care delivery.	**15**
	Nutritional Epidemiology Epidemiology –Concept, approaches, types and significance. Principles of Nutritional Epidemiology. Measurement issues. Epidemiology of communicable and non-communicable diseases. Design and planning of nutritional epidemiological studies-Assessing and evaluating epidemiological studies**.**	
Unit - II	**Public Health Nutrition - Strategies and Approaches** Global and national public health nutrition approaches. Theories of behaviour change and their application to public health nutrition. Developing public health nutrition strategies in the community. Evaluation of public health interventions and policies. Formative research approaches to develop malnutrition interventions. Nutrition education- principle, methods and significance in maintaining public health nutrition **National and International Organizations to Combat Malnutrition** National organizations- ICMR-NIN, ICAR, ICAR, CHEB, CSWB, SSWB, NNMB, CFTRI, DFRL, NFI and NIPCCD. International organizations- FAO, WHO, UNICEF, WFP, CARE, GAIN, AFPRO, CWS, CRS, and World Bank. Economics of Nutrition. Malnutrition and its economic consequences. Food security. Food production and food pricing.	**15**
	TOTAL	**30**

References:

Srilakshmi, B (2022). Nutritional Science. 2nd edition. New Age International Publishers.
Buttriss, J. L.,Welch,A., Kearney,J. M. and Public Health Nutrition. (2017) 2nd Edition. Wiley-Blackwell. Public Health Nutrition. 2nd Edition. Wiley-Blackwell.

Srilakshmi, B. Dietetics (2019).New Age International Publishers. New Delhi

Gajalakshmi, R (2018). Nutrition Science. CBS Publishers (Paperback).

Calder, P.C. and Kulkarni, A.D (2017). Nutrition, Immunity and Infection. CRC Press.

E RESOURCE: https://courses.nextgenu.org/course/view.php?id=126

Evaluation:

2 credits (Total marks 50)

CONTINUOUS INTERNAL EVALUATION:	Marks
Written and oral presentations on assigned topic / Literature review with class discussion/ Creating learning resources (videos or posters or brochures)	10
Class test/ Quiz/ Group Discussion	10

Class participation and evaluation	5
Total	**25**
SEMESTER-END EXAMINATION	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	25

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- I **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 01 C6 B	**Public Health Nutrition (Pr)**	**Practical**	**2**

Course Objectives:

1. To develop within the students an understanding and appreciation of the need for nutrition assessment in public health .
2. To enable students to assess nutritional status in a clinical setting and familiarize students with community setting.
3. To help students understand the process of monitoring nutritional status.
4. To orient the students in understanding of the appropriateness of assessment methods for specific populations or health goals.

Course Outcomes (CO):

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

CO No.	Course Outcome
CO1	Recall and identify key components of public health protocols.
CO2	Interpret the significance of various assessment parameters in evaluating health and nutritional status.
CO3	Demonstrate the ability to use various nutritional assessment tools to estimate nutrient intake.
CO4	Compare and contrast assessment results with established reference standards.
CO5	Evaluate potential limitations and sources of error in public health nutrition.
CO6	Assess the appropriateness of assessment methods for specific populations or health goals.

Unit No.	Course Content	No. of Hours
I.	**A. Introduction to concepts used in nutritional assessments** **B. Demonstration of direct methods to assess nutritional status** i Assessment of Nutritional status: • Anthropometry, Body Composition assessment (various methods - direct and indirect), BIA, Growth monitoring for children, Use of standard values; Interpretations of the result, comparisons with the standards, suggestions/ recommendations • Biochemical assessment (Practical aspects)- Need for Biochemical tests, Types of Biochemical markers, Nutrient specific biochemical markers, Interpretation of Biochemical markers, Limitations of	**30**

	biochemical assessments, Interpretations of the result, comparisons with the standards, suggestions/ recommendations • Clinical signs and symptoms: Disease specific clinical signs & symptoms; Clinical signs of nutritional deficiencies; Interpretations of the results • Dietary assessment of nutrition status: Types of dietary assessment techniques: FFQ, 24-Hour Dietary Recalls, Food Diaries or Food Records, Dietary History, Diet Quality Indices, Photographic Food Records, Food Frequency Cards, Dietary Interviews; Analysis & interpretation of data, Problems in diet surveys and solutions; Calculation of Dietary Diversity scores; Interpretations of the results using ABCD methods **C. Development of nutrition assessment tools: formulation of nutrition assessment questionnaire** **D. Exposure to recent and advanced techniques for specific nutrient status assessment** i Online tools or software that estimate nutrient intake based on food consumption data ii Digital Food and Nutrition Apps	
II	**A. Practical aspects of tests used in biochemical assessment** i Need, indications for use, limitations and interpretations of the following tests and development of biochemical assessment protocols with respect to the following tests: • Tests of gastro intestinal function: Gastric Functions tests, Blood glucose levels, urine and stool examination, enzyme tests • Tests for hormone levels • Tests for reproductive hormones • Tests for cardiovascular function: Lipid Profile, enzyme tests, inflammatory markers, cardiac biomarkers, electrocardiogram (ECG/EKG), Echocardiogram, Stress Test, Coronary Angiography • Tests for Lung Function • Renal function tests (blood and urine), enzyme tests • Serological tests and tests for allergies • Biochemical tests for muscle and bone (enzyme like ALP, CK and blood tests like calcium, magnesium, phosphate, 25-Hydroxyvitamin D, uric acid, vitamin B12, folate, iron and ferritin) and DEXA • Biomarkers for neurological disorders: Amyloid Beta (Aβ) and Tau Proteins, Cerebrospinal fluid, Dopamine • Tumour markers and Cancer diagnostics • Tests for inborn errors of metabolism **B. Role of Ethics in Assessment of Nutritional Status**	**30**
	Total hours	**60**

Evaluation:
2 credits (Total marks 50)

Continuous Internal Evaluation:	Marks
Journal	5
Development of summary documents on the interpretation of nutrient-specific biochemical tests as resource material for healthcare professionals	10
Construction of a dietary assessment questionnaire	10
Total	**25**

Semester-end Examination:	Marks
Construction of case specific assessment protocol	20
Viva-voce examination	5
Total	**25**

References:

Charney, P., & Malone, A. (2017). Nutritional Assessment. Lippincott Williams & Wilkins.

Gibson, R. S. (2016). Nutrition Assessment: A Comprehensive Guide for Planning Intervention. Oxford University Press.

Gibson, R., & Leroy, B. (Eds.). (2016). Assessment of Nutritional Status. Oxford University Press.

Gropper, S. S., Smith, J. L., & Carr, T. P. (2017). Advanced Nutrition and Human Metabolism. Cengage Learning.

Koh-Banerjee, P., & Bray, G. A. (2008). Assessment of Nutrient Intakes. CRC Press.

Lee, R. D., Nieman, D. C., & Young, J. C. (2019). Nutrition Assessment. McGraw-Hill Education.

Mahan, L. K., & Raymond, J. L. (2016). Krause's Food & the Nutrition Care Process. Elsevier.

Ross, A. C., Caballero, B., & Cousins, R. J. (2019). Modern Nutrition in Health and Disease. Lippincott Williams & Wilkins.

Webb, G. P., & Worsley, A. (2019). Clinical Nutrition: A Functional Approach. Oxford University Press.

Willett, W. (2012). Nutritional Epidemiology. Oxford University Press.

Syllabus:
P.G. Diploma in Home Science – Dietetics and Applied Nutrition

(Semester II)

Semester-II
Mandatory Courses

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- II **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 02 C1A	**Critical Care Nutrition**	**Theory**	**2**

Course Objectives:
To help students:

1. Gain a deep understanding of nutritional needs and metabolism in critically ill patients and their significance in tackling disease burden.
2. Understand the etiological factors and physiological changes associated with specific disease conditions and develop an insight into the role of modified diets in specific conditions.
3. Acquire the basic skills required to modify the normal diet to suit individuals suffering from specific diseases and lifestyle disorders.
4. Apply concepts of dietetics in clinical settings.

Course Outcomes (CO):
On successful completion of the course, the student will be able to:

CO No.	Course Outcome
CO1	Describe the pathophysiology of critical, hypercatabolic diseases and their effects on nutrition.
CO2	Outline evidence-based guidelines to create theoretical nutritional care plans for patients with critical, hypercatabolic and renal diseases
CO3	Critically use research articles and guidelines related to intensive care nutrition
CO4	Identify dietary modification techniques to address the nutritional needs of patients with specific medical conditions.
CO5	Justify the effectiveness of different nutritional interventions and support strategies.
CO6	Design patient education materials and strategies for communicating nutritional interventions effectively.

Unit No.	Course Content	No. of Hours
I.	**Nutrition Support –** **A. Enteral and Parenteral Nutrition** **a. Enteral Nutrition** i. Algorithm for choice and access route, indications and contraindications and ethical considerations.	**15**

	ii. Enteral nutrition formulas, components and routes of administration iii. Methods of delivery: bolus, intermittent, continuous iv. Documentation and communication in patient care v. Complications of enteral nutrition (Gastrointestinal; Metabolic; Mechanical complications) and strategies for prevention and management **b. Parenteral Nutrition** i. Indications, contraindications, comparison with enteral nutrition, ethical considerations in parenteral nutrition ii. Components and formulations of parenteral nutrition iii. Compounding, access routes and administration of parenteral nutrition solutions iv. Monitoring and management of Parenteral Nutrition **v.** Complications of Parenteral Nutrition and its prevention and management strategies (Metabolic; Infectious; Mechanical complications) **B. Hypercatabolic states** i. Guidelines for nutrition support for hypermetabolic starved patients and hypermetabolic stressed patient ii. Nutrition Support with a focus on Etiology, pathophysiology, screening, diagnosis, assessment, medical management and drug-nutrient interaction, medical nutrition therapy for the following hypercatabolic conditions: • ARDS, MODS and Sepsis • Burns • Trauma • Ventilatory support and SARS • Critical care for SAM	
II.	**A. Cancer** Types and classification, prevalence, etiology, pathophysiology, symptoms, screening, diagnosis and assessments, chemotherapy, radiation therapy, surgery and other medical therapies for the management of cancer, medical nutritional therapy, use of dietary supplements, Nutraceuticals**,** drug-nutrient interaction and functional foods for cancer **B. Renal Diseases** • Prevalence, etiology, pathophysiology and symptoms, screening, diagnosis and assessments, medical and surgical management, medical nutritional therapy, use of dietary supplements, Nutraceuticals, drug-nutrient interaction and functional foods, For the following renal diseases: i) Acute Kidney Injury (Acute Renal Failure) ii) Chronic Kidney Disease	**15**

	iii) Glomerular nephritis and nephrotic syndrome iv) End-Stage Renal Disease v) Dialysis vi) Kidney Transplant vii) Renal stones	
	Total hours	**30**

References:

Mahan, L. K., & Raymond, J. L. (2021). Krause's Food & the Nutrition Care Process. 15th edition. Elsevier.

Bendich, A., & Deckelbaum, R. J. (Eds.). (2006). Preventive Nutrition: The Comprehensive Guide for Health Professionals. Springer.

Bendich, A., & Deckelbaum, R. J. (Eds.). (2016). Preventive Nutrition: The Comprehensive Guide for Health Professionals. Humana Press.

Nutrition: Concepts and Controversies by Gropper, Smith, & Groff

Blake, J. S. (2020). Nutrition and You: Core Concepts for Good Health. Pearson.

Brown, J. E. (2019). Nutrition Through the Life Cycle. Cengage Learning.

Lutz, C. A., Przytulski, K. R., & Rutherford, K. L. (2015). Nutrition and Diet Therapy. F.A. Davis Company.

Pediatric Nutrition by Brown, Ogden, & Winter 2nd Edition

Research article:

Recent published guidelines from ESPEN, ASPEN

Evaluation:

2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Literature review on Critical Care/ Quiz/ Debate/ Class discussion/ Debate	10
Class Test	10
Attendance/Class Participation	5
Total	**25**

Semester-end Examination:	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	**25**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- II **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 02 C1B	**Critical Care Nutrition**	**Practical**	**2**

Course Objectives:

1. To provide a detailed practical aspect of the clinical conditions studied in theory.
2. To enable students to:
   - Do a detailed study of Medical Nutrition Therapy with appropriate literature review.
   - Analyze the given case.
   - Make a nutritional diagnosis with problem, etiology and symptom (PES) Statement and outline the goals of therapy.
   - Study of medical and surgical interventions which require nutritional management.
   - Propose a nutrition plan for the patient – with suggested outline of medical nutrition therapy with appropriate literature review, diet plan with detailed calculations and suggested supplements and adjuncts.
   - Prepare the selected meal.
   - Evaluate the suggested diet plans.
   - Prepare patient education resources.

Course Outcomes (CO):

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

CO No.	Course Outcome
CO1	Describe key principles of critical care, hypercatabolic and renal dietetics and their application in clinical settings.
CO2	Explain the rationale behind different diets and their effects on health.
CO3	Apply knowledge of dietary modifications to create personalized meal plans for different medical conditions.
CO4	Compare and contrast various dietary approaches for managing similar health conditions.
CO5	Evaluate the suitability of therapeutic diets for patients with comorbidities or special dietary requirements.
CO6	Design comprehensive dietary plans that integrate therapeutic requirements, patient preferences, and cultural considerations.

Note - The topics address all aspects of Pediatric, adult and geriatric populations.

Unit No.	Course Content	No. of Hours
I.	**A. Planning of Enteral and Parenteral Nutrition for Critical Conditions:** i. Planning diets using Medical Nutrition Therapy with allocation of	**30**

	macronutrients ii. Introduction to the preparation of tube feeds (NGT, NJT and PEG) iii. Planning of feeds (detailed nutrient calculation, volume, consistency and frequency) iv. Supplement usage along with tube feed v. Outline recommendations in an easily understood format Planning Enteral and Parenteral Nutrition for the following conditions: i. Surgery, Burns, Trauma, Sepsis, Multiorgan failure ii. SAM in hospital **B. Preparation of the prescribed therapeutic food samples with respect to the above cases**	
II.	**A. Planning of Diets for Cancer and Renal Diseases:** I. Cancer i. Medical Nutrition Therapy with allocation of macronutrients ii. Menu Planning iii. Detailed calculation to understand the efficacy of the plan iv. Supplement usage II. Renal disease i. Medical Nutrition Therapy with allocation of macronutrients ii. Menu Planning iii. Detailed calculation to understand the efficacy of the plan iv. Supplement usage for the following diseases: o Glomerulonephritis, o Nephrotic Syndrome, o Nephrolithiasis and o CRF **B. Preparation of the prescribed therapeutic food samples with respect to the above cases**	**30**
	Total hours	**60**

References:

Barrer. K. (2007) Basic Nutrition Counselling Skill Development. Wadsworth Pub

Bendich, A., & Deckelbaum, R. J. (Eds.). (2006). Preventive Nutrition: The Comprehensive Guide for Health Professionals. Springer.

Bendich, A., & Deckelbaum, R. J. (Eds.). (2016). Preventive Nutrition: The Comprehensive Guide for Health Professionals. Humana Press.

Blake, J. S. (2020). Nutrition and You: Core Concepts for Good Health. Pearson.

Brown, J. E. (2019). Nutrition Through the Life Cycle. Cengage Learning.

Journal of American Dietetic Association.

Lutz, C. A., Przytulski, K. R., & Rutherford, K. L. (2015). Nutrition and Diet Therapy. F.A. Davis Company.

Mahan, L. K., & Raymond, J. L. (2021). Krause's Food & the Nutrition Care Process. 15th edition. Elsevier.

Nutrition Review

Pope, J., & Berman, M. (2017). Nutrition for a Changing World. Wadsworth Publishing.
Shills. M. (2006). Modern Nutrition in Health and Disease.10th ed. Lippincot William and Wilkins.
Sizer, F., & Whitney, E. (2020). Nutrition: Concepts and Controversies. Cengage Learning.

Evaluation:
2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Journal	5
Continuous Evaluation: Take-home booklet for specific diseases	10
Continuous Evaluation: Assessment of Cooking Skills and Techniques	10
Total	**25**

Semester-end Examination:	**Marks**
Construction of a case specific diet plan	20
Viva Voce examination	5
Total	**25**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Course Code	Title of the Course	Th/Pr	Credits
DAN 02 C2A	**Clinical Nutrition and Therapeutic Dietetics 2**	**Theory**	**2**

Semester- II **Major (Mandatory Course)**

Course Objectives:

To help students:

1. Gain a deep understanding of preventive measures and their significance in tackling disease burden.
2. Understand the etiological factors and physiological changes associated with specific disease conditions and develop an insight into the role of modified diets in specific conditions.
3. Acquire the basic skills required to modify the normal diet to suit individuals suffering from specific diseases and lifestyle disorders.
4. Apply concepts of therapeutic dietetics in community/ clinical settings.

Course Outcomes (CO):
On successful completion of the course, the student will be able to:

CO No.	Course Outcome
CO1	Describe key lifestyle factors that contribute to the development of diseases.
CO2	Explain the physiological basis of various diseases and conditions, including their impact on nutrient metabolism and requirements.
CO3	Apply the role of therapeutic diets in the prevention and management of medical conditions.
CO4	Analyze patient case studies to identify nutritional risk factors, assess dietary intake, and recommend appropriate therapeutic diets.
CO5	Evaluate the effectiveness of dietary interventions in improving patient health outcomes and managing medical conditions.
CO6	Design comprehensive nutrition care plans for patients with complex medical conditions, integrating dietary recommendations with medical treatment plans.

References:

Barrer. K. (2007) Basic Nutrition Counselling Skill Development. Wadsworth Pub

Bendich, A., & Deckelbaum, R. J. (Eds.). (2006). Preventive Nutrition: The Comprehensive Guide for Health Professionals. Springer.

Bendich, A., & Deckelbaum, R. J. (Eds.). (2016). Preventive Nutrition: The Comprehensive Guide for Health Professionals. Humana Press.

Blake, J. S. (2018). Nutrition: From Science to You. Pearson.

Blake, J. S. (2020). Nutrition and You: Core Concepts for Good Health. Pearson.

Brown, J. E. (2019). Nutrition Through the Life Cycle. Cengage Learning.

Journal of American Dietetic Association.

Lutz, C. A., Przytulski, K. R., & Rutherford, K. L. (2015). Nutrition and Diet Therapy. F.A. Davis Company.

Unit No.	Course Content	No. of Hours
I.	**A. Gastrointestinal Diseases** Prevalence, etiology, pathophysiology, symptoms, screening, diagnosis and assessments, medical and surgical management, medical nutritional therapy, use of dietary supplements, nutraceuticals, drug-nutrient interaction and functional foods of: **Upper GI Disorders** i. GERD and esophagitis, Hiatal Hernia ii. Gastroparesis iii. Gastritis iv. Peptic Ulcers **Lower GI Disorders** i. Gluten-Induced Enteropathy ii. Lactose intolerance iii. Inflammatory bowel Disease iv. Short Bowel Syndrome v. Small intestinal Bacterial Overgrowth and Dysbiosis vi. Irritable Bowel Syndrome • Constipation, Diverticulitis and Hemorrhoids • Food allergies and food intolerances **B. Respiratory diseases** i. Bronchitis ii. COPD iii. Asthma iv. Cystic Fibrosis v. Pneumonia	**15**
II.	**A. Liver Diseases** Prevalence, etiology, pathophysiology, symptoms, screening, diagnosis and assessments, medical and surgical management, medical nutritional therapy, use of dietary supplements, nutraceuticals, drug-nutrient interaction and functional foods of: i. Hepatitis ii. Acute liver failure iii. Fatty liver, steatosis and steatohepatitis iv. MASH, MASLD v. Alcoholic liver disease vi. Cirrhosis and End stage liver failure vii. Hepatic encephalopathy viii. Liver transplant **B. Gall Bladder and Pancreas** Prevalence, etiology, pathophysiology, symptoms, screening, diagnosis	**15**

	and assessments, medical and surgical management, medical nutritional therapy, use of dietary supplements, nutraceuticals, drug-nutrient interaction and functional foods of: i. Cholecystitis ii. Dyskinesia iii. Cholelithiasis iv. Acute Pancreatitis v. Chronic Pancreatitis **C.** Nutritional management of Infections: i. HIV, ii. Tuberculosis and iii. SARS **D.** Autoimmune and Rheumatic Diseases: i. RA, ii. Gout, iii. Fibromyalgia and iv. SLE **E.** Inborn Error of Metabolism i. PKU, ii. Glycogen storage disorders, iii. MSUD and iv. Hartnup's disease	
	Total hours	**30**

Mahan, L. K., & Raymond, J. L. (2021). Krause's Food & the Nutrition Care Process. 15th edition. Elsevier.
Nutrition Review
Pope, J., & Berman, M. (2017). Nutrition for a Changing World. Wadsworth Publishing.
Shills. M. (2006). Modern Nutrition in Health and Disease.10th ed. Lippincot William and Wilkins.
Sizer, F., & Whitney, E. (2020). Nutrition: Concepts and Controversies. Cengage Learning.
Smolin, L. A., & Grosvenor, M. B. (2018). Nutrition: Science and Applications. Wiley.

Evaluation:
2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Developing nutrition education resources on preventive health for nurses/ doctors/ dietitians	10
Quiz/ Debate/ Class discussion	10
Attendance	5
Total	**25**

Semester-end Examination:	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	**25**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- II **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 02 C2B	**Clinical Nutrition and Therapeutic Dietetics 2**	**Practical**	**2**

Course Objectives:

1. To provide a detailed practical aspect to the clinical conditions studied in theory.
2. To enable students to:
   - Do a detailed study of Medical Nutrition Therapy with appropriate literature review.
   - Analyze the given case.
   - Make a nutritional diagnosis with problem, etiology and symptom (PES) Statement and outline the goals of therapy.
   - Study of medical and surgical interventions which require nutritional management.
   - Propose a nutrition plan for the patient – with suggested outline of medical nutrition therapy with appropriate literature review, diet plan with detailed calculations and suggested supplements and adjuncts.
   - Prepare the selected meal.
   - Evaluate the suggested diet plans.
   - Prepare patient education resources.

Course Outcomes (CO):

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

CO No.	Course Outcome
CO1	Recall key principles of therapeutic dietetics and their application in clinical settings.
CO2	Explain the rationale behind different therapeutic diets and their effects on health.
CO3	Demonstrate the ability to calculate nutrient content in therapeutic diets.
CO4	Compare and contrast various dietary approaches for managing similar health conditions.
CO5	Evaluate the suitability of therapeutic diets for patients with comorbidities or special dietary requirements.
CO6	Design comprehensive dietary plans that integrate therapeutic requirements, patient preferences, and cultural considerations.

Note - The topics address all aspects of Pediatric, adult and geriatric populations.

Unit No.	Course Content	No. of Hours
I.	**A. Planning and Preparation of Diets for the following Gastro-intestinal and respiratory conditions:** **i. Gastro-intestinal Diseases:** GERD, Esophagitis, Gastritis, Peptic Ulcer, Gluten Induced Enteropathy, Irritable Bowel Disease (Ulcerative	**30**

	Colitis and Crohn's disease) and Diverticulitis **ii. Respiratory diseases:** Bronchitis, COPD, Asthma, Cystic Fibrosis, Pneumonia • Allocation of proximate principles • Medical Nutrition Therapy with allocation of macronutrients • Menu Planning • Detailed calculation to understand the efficacy of the plan • Outline recommendations in an easily understood format • Supplement usage **B. Preparation of the prescribed therapeutic food samples with respect to the above cases**	
	A. Planning and preparation of diets for the following diseases of liver, pancreas and gall bladder: i. **Liver, pancreas and gall bladder:** Hepatitis, MASLD, alcoholic cirrhosis, acute and chronic pancreatitis, cholecystitis, cholelithiasis. ii. **Infections:** HIV, Tuberculosis, SARS iii. **Autoimmune and Rheumatic Diseases**: RA, Gout, Fibromyalgia, SLE iv. **Inborn errors of Metabolism**: Glycogen storage diseases and PKU • Allocation of proximate principles • Medical Nutrition Therapy with allocation of macronutrients • Menu Planning • Detailed calculation to understand the efficacy of the plan • Outline recommendations in an easily understood format • Supplement usage **B. Preparation of the prescribed therapeutic food samples with respect to the above cases**	**30**
	Total hours	**60**

References:

Brown, J. (2002). Nutrition through the Lifecycle. Wadsworth Pub Co.
Nutrition in Clinical Practice by Askew & Flint
Gibney, J.M. (2005). Clinical Nutrition Blackwell Publishing House.
Gopalan.C. (2000). Nutritive Value of Indian Foods. NIN ICMR Pub.
Jamison, J. (2003). Clinical Guide to Nutrition and Dietary Supplements in Disease Management Churchill – Livingstone Pub.
King, K. (2003). Nutrition Therapy 2nd ed. Helm Publishing, Texas.
Kathryn Pinna (Author), Sharon Rady Rolfes, Ellie Whitney: Understanding Normal and Clinical Nutrition, 12th Edition. (2020), Brooks/Cole publishers.
Peckenpaugh, N (2003). Nutrition Essentials and Diet Therapy. 9th ed.
Shills, M. (2006). Modern Nutrition in Health and Disease.10th ed.Lippincot.
Clinical Nutrition. Wadsworth publication.
Pediatric Nutrition by Brown, Ogden, & Winter

Evaluation:
2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Journal	5
Continuous Evaluation: Assessment of case studies	10
Continuous Evaluation: Assessment of Cooking Skills and Techniques	10
Total	**25**

Semester-end Examination:	**Marks**
Construction of a case specific diet plan	20
Viva Voce examination	5
Total	**25**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester – II **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 02 C3	Nutrition Across the Life Cycle	**Theory**	**4**

Course Objectives:

1. To understand the changes in human body composition during different stages of life.
2. To study the influence of nutrition on man during the different stages of life cycle.
3. To be aware and update the knowledge in the field of applied nutrition during the life cycle.

Course Outcomes (CO):

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

CO No.	Course Outcomes
CO1	Recall the nutritional requirements for various age groups, including infants, children, adolescents, adults, and older adults.
CO2	Explain the physiological changes that occur during different life stages and their implications for nutritional needs.
CO3	Develop personalized dietary plans for individuals at different life stages, considering specific nutritional needs and health conditions
CO4	Analyze case studies to identify and address nutritional issues in diverse populations.
CO5	Assess the impact of various factors affecting nutritional choices and health outcomes.
CO6	Design educational materials or interventions to promote healthy nutrition practices in specific life stages or population groups.

Unit No.	Course Content	No. of Hours
I.	Preconceptional Nutrition & Epigenetic Implications -overview Nutrition during Pregnancy & lactation A. Pregnancy: i) Physiology of pregnancy ii) Effect of Nutritional Status on pregnancy outcome iii) Factors affecting fertility iv) Nutritional requirements and dietary guidelines (Macro and micro) v) Nutrition related complications vi) Role of dietary supplements and physical activity vii) Lifestyle recommendations for health B. Lactation: i) Physiology of Lactation- Mammary gland development, Lactogenesis, Let-down reflex ii) Human milk composition iii) Benefits of Breastfeeding iv) Complications of breastfeeding v) Nutritional requirements & dietary guidelines for lactating mothers vi) Supplements and maternal medications	**15**
II.	Nutrition in infancy & childhood A. Nutrition in Infancy: i) Overview of breastfeeding ii) Complementary feeding stages (7-12 months) iii) Nutrition for Preterm babies, LBW, VLBW B. Nutrition in Toddlerhood & Early childhood (4-6 years) i) Physiological changes ii) Nutritional requirements iii) Specific behavioral modifications for (Food jags and aversions) C. Nutrition in Middle (6-8 years) & Late childhood (9-12 years) i) Physiological changes ii) Nutritional requirements iii) Growth monitoring iv) Behavioural modification strategies	**15**
III	**Nutrition in the Adolescence & adulthood** A. Nutrition in Adolescence i) Physiological and Psychosocial changes ii) Growth and Sexual Maturity iii) Nutritional and lifestyle requirements iv) Pubertal concerns impacting nutrition B. Nutrition in Adults i) Definition of adulthood and physiological changes ii) Nutritional requirements of adults (Early and Middle adulthood)	**15**

	iii) Nutritional concerns	
IV	**Nutrition for Geriatrics** i) Theories of Aging ii) The Aging Process and stages of aging iii) Physiological and Psychosocial changes in the elderly iv) Nutritional requirements of the Elderly v) Common nutritional concerns - Sarcopenia, Osteoporosis, Osteoarthritis, fractures, falls, injuries, Dementia, Metabolic syndrome, Respiratory problems – COPD, Pneumonia, tuberculosis and lung cancer. vi) Nutrition care process for elderly- assessment, consultation vii) Food, medicines and nutraceutical interactions.	**15**
	Total Contact Hours	**60**

References:

Nutrition Across the Lifespan for Healthy Aging: Proceedings of a Workshop. (2017). United States: National Academies Press.

Ageing and Nutrition Through Lifespan. (2020). Switzerland: Mdpi AG.

Shepherd, S., Thodis, A. (2020). Food and Nutrition Throughout Life: A Comprehensive Overview of Food and Nutrition in All Stages of Life. United Kingdom

Brown, J. E., Isaacs, J. S. (2011). Nutrition Through the Life Cycle. United Kingdom: Wadsworth Cengage Learning.

Langley-Evans, S. (2013). Nutrition: A Lifespan Approach. Germany: Wiley.

Nutraceuticals in Brain Health and Beyond. (2020). Netherlands: Elsevier Science.

Bernstein, M., McMahon, K. (2022). Nutrition Across Life Stages. United States: Jones & Bartlett Learning.

Bennion, H. (1979) Clinical Nutrition, New York Harper and Raw Publishers

Brown, J. E. (1998). Nutrition Now, West/Wadsworth: International Thomson Pub. Co.

Brown, J. E., Sugarman, I. J. (2002). Nutrition through the Life Cycle, Wadsworth Thomson Learning.

Adolescent Nutritional Disorders.New York:The New York Academy of Science.

Evaluation: 4 credits (Total marks 100)

Continuous Internal Evaluation:	**Marks**
Written and oral presentations on assigned topic / Literature review with class discussion/ Creating learning resources (videos or posters or brochures)	20
Class test/ Quiz/ Group Discussion	20
Class participation and evaluation	10
Total	**50**

Semester-end Examination	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10

Question 3 from Unit 3	10
Question 4 from Unit 4	10
Question 5 from multiple units	10
Total	**50**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- II **Major (Mandatory Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN 02 C 4	**Food Service Management**	**Theory**	**2**

Course Objectives:

1. To help students develop skills to effectively manage food service operations including menu planning, food production, and service delivery.
2. To help students implement quality assurance measures to ensure food safety, sanitation, and compliance with regulatory standards in clinical food service.
3. To enable in students, design and implement patient-centered food service programs that cater to diverse dietary needs, preferences, and therapeutic requirements.
4. To facilitate students in learning resource allocation, including budgeting, staffing, and procurement, to support efficient and sustainable food service operations.

Course Outcomes (CO):

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

CO No.	Course Outcome
CO1	Explain the importance of food service management in supporting patient health and recovery in clinical environments.
CO2	Interpret nutritional needs based on patient conditions and therapeutic diets.
CO3	Implement food safety protocols and sanitation standards in clinical food service operations.
CO4	Evaluate food service operations to identify areas for improvement in efficiency and quality.
CO5	Assess the effectiveness of patient-centered food service programs in meeting diverse dietary needs and preferences.
CO6	Design innovative strategies for enhancing food service quality and patient experience in clinical environments and developing understanding of effective cost management.

Unit No.	Course Content	No. of Hours
I.	**A.The Purpose and Goals of a Food production and service institution** i. Importance of nutrition in healthcare settings ii. Role of food service management and dietitian in clinical setting iii. Styles of service iv. Food Safety and hygiene a) Control of microbial quality b) Food handling and prevention of food borne illness c) Personnel hygiene d) Waste disposal and pest control e) Environmental sanitation	**15**

	v. Food standards and laws: HACCP, FDA, CDC, SOPs, GMP **B. Facility planning of a food production and service institution** i. Overview of space allocation ii. Hospital Kitchen Layout and Design a) Functional areas of a hospital kitchen: • Production area: food preparation, cooking, and assembly • Distribution area: meal transport and delivery systems • Sanitation area: cleaning, dishwashing, and waste management • Receiving and storage area design and layout • Service facilities in hospitals b) Types –centralized and decentralized • Equipment and technology in modern hospital kitchens: o Types of ovens, steamers, refrigeration units, etc. o Automated meal delivery systems o Computerized inventory and ordering systems • Ergonomics and efficiency in kitchen design: o Workflow optimization for seamless operations iii. Compliance with health and safety regulations	
II.	**A. The process of running a food production and service institution** i. Concept of food and work flow: Procurement, Purchasing, Receiving, Storage and inventory ii. Outline of scheduling pre –production, production process and forecasting a) Standardization and stepping up b) Menu planning c) Factors affecting Menu planning d) Modification of diets and dietary restrictions: texture modified diets, religious and cultural preferences, blenderized enteral feeds e) Avoidance of waste and waste disposal **B. Financial management and marketing**: Definition, application of management Accounts of catering operators, cost concepts, book keeping and accounting – systems of book keeping, book of account maintenance of account books, balance sheets, inventor budgetary control. Marketing the products, challenges ahead	**15**
	Total hours	**30**

References:

Mohini Shetty, Institutional food management, New age International Publishers, 2016.
Sethi and Mahan S.-Catering Management and integrated approach, Johnwiley&Sons,New York .
American Dietetic Association. (2011). *The Food Service Professional Guide to Controlling Restaurant & Food Service Operating Costs* (2nd ed.). Wiley.
Clarke, D., & Pinto, B. M. (Eds.). (2020). Food Service Management: A Healthcare Perspective. Nova Science

Publishers.
Hossain, M., & Al-Obeidat, F. (2021). Food Service Management in Hospitals: A Practical Approach. Springer.
Institute of Food Technologists. (2016). *Food Service Manual for Health Care Institutions*. John Wiley & Sons.
Johnston, J., &Foskett, D. (Eds.). (2023). Principles of Food and Beverage Management in Healthcare. Routledge.
Lendrum, L. (Ed.). (2017). *Food Service Manual for Health Care Institutions* (4th ed.). John Wiley & Sons.
McWilliams, M., & Schuler, J. (2018). *Nutritional Foundations and Clinical Applications: A Nursing Approach* (7th ed.). Elsevier.
Mehta, K., & Patel, M. (Eds.). (2021). Handbook of Foodservice Management in Healthcare. CRC Press
Morris, A., & Porter, J. (Eds.). (2022). Food Service Management: Principles and Practices for Healthcare Settings. Wiley.
National Health Service. (2015). *Food Standards and Nutrition in Hospitals: Guidelines for Food and Beverage Supply in NHS Hospitals*. NHS England.
Pollock, A., & Allen, D. (2021). Managing Food Service Operations in Healthcare: Key Principles and Practices. Springer.
Rainer, M., & Bell, C. (2021). Advanced Principles of Foodservice Management in Healthcare. Wiley-Blackwell.
Ryder, A. (2020). Healthcare Foodservice Management. Jones & Bartlett Learning.
Stegall, J. (Ed.). (2023). Nutrition and Food Service Management in Healthcare: A Comprehensive Guide. Elsevier.
Trubey, R., &Zabatiero, J. (2022). Foodservice Operations Management in Healthcare: A Strategic Approach. Routledge.

2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Report on field visit for practical application	15
Critical analysis/ Preparation of learning resources (videos/ posters/ brochures) for student/ Group discussion/ Quiz/ Class Test	10
Total	**25**

Semester-end Examination:	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	**25**

Semester-II
Elective Courses

P.G.Diploma in Home Science–Dietetics and Applied Nutrition
Level 6.0
(Under NEP)

Semester-II **Major (Elective Course)**

CourseCode	Title of the Course	Th/Pr	Credits
DAN02 C5 Elective1:A	**Sports Nutrition and Fitness**	**Theory**	**2**

Course Objectives-

1. Expose students to the field of sports Nutrition
2. Understand key terminologies in exercise and sports nutrition, to facilitate better communication with trainers and fitness specialists.
3. Create a foundation for exercise science, to help students with parallel career options.

Course Outcomes (CO):

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

Course Outcome No.	Course Outcomes
CO1	Define the fundamental principles of nutrition and their relevance to athletes in various sports.
CO2	Identify the relationship between nutrition and sports performance and fitness .
CO3	Implement proper techniques for fitness exercises in real-world scenarios.
CO4	Communicating effectively with athletes regarding nutrition and fitness
CO5	Evaluate research studies in the field to inform best practices in sports nutrition.
CO6	Design innovative strategies and interventions to address emerging trends and challenges in sports nutrition.

Unit No.	Course Content	No. of Hours
I.	**Unit 1:** Introduction and classification of Sports. Nutritional requirement of athletes indulged in various sports: Endurance, strength training, power and combat etc. **A. Macronutrient needs of athletes** i) Sport specific nutritional guidelines ii) Carbohydrates-Type & Timing of carbohydrate ingestion, Glycogen loading techniques iii) Lipids- Use of ketogenic diets, Fat loading, strategies to enhance fat utilization/ Fat burners	**15**

	iv) Proteins-Requirements, Role of protein in different types of sports exercise v) Dietary guidelines for training & competition vi) Dietary guidelines on season and off season **B. Micronutrient needs of athletes** i) Vitamins a. Fat Soluble vitamins- A,D,E,K b. Water soluble vitamins- B Complex, Vitamin C ii) Antioxidant micronutrients iii) Minerals: Micronutrients that regulate energy metabolism, iv) Use of supplements v) Phytochemicals and Functional foods of benefit	
II.	**A. Unit 2: Anthropometric Assessments** i) Weight and line arm measurements ii)Circumference measurements **B. Body Composition Assessments** i) Components of body composition ii) Human Body composition-Changes during the lifecycle iii) Factors influencing Body composition–Gender, Age, Exercise • Methods of measuring body composition Pre-participation Examination • Common Musculoskeletal Injuries in Sports • Cardiopulmonary Conditions in Sports **C. Biochemical & Clinical assessment of nutritional status of various age groups & gender:** Measurement of total body protein & fat using standard formulae & Interpretation	**15**
	Total Contact Hours	**30**

References:

Brotzman, S. B., &Manske, R. C. (2011). *Clinical orthopaedic rehabilitation: An evidence-based approach* (3rd ed). Elsevier Mosby.

Brukner, P., & Khan, K. (2017). *Brukner& Khan's clinical sports medicine. Volume 1: Injuries* (B. Clarsen, J. Cook, A. Cools, K. Crossley, M. Hutchinson, P. McCrory, & R. Bahr, Eds.; 5th edition). McGraw-Hill Education (Australia).

Taylor & Francis (2020). .Nutrition for Sport, Exercise and Performance: A Practical Guide for Students, Sports Enthusiasts and Professionals. United Kingdom

Bushman, B. A., Battista, R., & American College of Sports Medicine (Eds.). (2014). *ACSM's resources for the personal trainer* (4th ed). Wolters Kluwer/Lippincott Williams & Wilkins Health.

Jacobs, P. L., & National Strength & Conditioning Association (U.S.) (Eds.). (2017). *NSCA's essentials of training special populations*. Human Kinetics.

Kisner, C., Colby, L. A., &Borstad, J. (2018). *Therapeutic exercise: Foundations and techniques* (Seventh edition). F.A. Davis Company.

Magee, D. J., &Manske, R. C. (2020). *Orthopedic physical assessment* (7th ed.). Elsevier, Inc.
O'Sullivan, S. B., Schmitz, T. J., &Fulk, G. D. (Eds.). (2019). *Physical rehabilitation* (Seventh edition). F.A. Davis Company.
Porter, S. B., & Tidy, N. M. (2013). *Tidy's physiotherapy* (15th ed). Elsevier.
Prentice, W. E. (Ed.). (2020). *Rehabilitation techniques for sports medicine and athletic training* (Seventh edition). SLACK Incorporated

Evaluation:
2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Written and oral presentations on assigned topic / Literature review with class discussion/ class test	10
Swayam/ MOOC/ any online certification course conducted by qualified practitioner with submission of completion certificate	10
Class participation and evaluation	5
Total	**25**

Semester-end Examination	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	5
Total	25

P.G.Diploma in Home Science – Dietetics and Applied Nutrition Level- 6.0

(Under NEP)

Semester-II **Major (Elective Course)**

Course Code	Title of the Course	Th/Pr	Credits
DAN02C 5 Elective2:A	**Sports Nutrition and Exercise Physiology**	**Practical**	**2**

Course Objectives-

1. Expose students to the practical applications of Sports Nutrition and exercise.
2. Learn the different forms and techniques for exercises.
3. Understand the nutritional requirements of athletes.

Course Outcomes (CO):

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

Course Outcome No.	Course Outcomes
CO1	Design personalised nutrition plans for athletes involved in various sports based on individual needs and training regimens.
CO2	Interpret client assessments, including medical history, fitness evaluations, and injury profiles, to develop personalized training and exercise plans.
CO3	Implement proper techniques for injury prevention and exercises in real-world scenarios.
CO4	Evaluate research studies in the field to inform best practices in sports nutrition and fitness.
CO5	To develop and refine practical skills in assessing body composition, cardiorespiratory fitness, and muscular strength and endurance in individuals involved in sports and exercise.
CO6	Design innovative strategies and interventions to address emerging trends and challenges in sports nutrition and exercise physiology.

Unit No.	Course Content	No. of Hours
I.	**Unit 1:** **A Dietary assessment of nutritional status** Conduction of Dietary surveys -Tools of dietary surveys: FFQ, Interview schedules, questionnaires, SGA, Recall and record methods, Food diary, dietary recall: 24-hour recall and 3-day recall. Basics of nutrition and diet planning, balanced diet. **B. Planning & preparation of diets for** **i)** Distance Running, Marathon, Ultra marathon, Obstacle racing and Triathlon, Gymnastics.	**15**

	ii) Road Cycling, Mountain Biking, Track Cycling, and Cyclo-Cross, Cross-country skiing, Rowers and swimmers iii) Diet Planning for Gym Clients	
II.	**Unit 2:** **C. Health Screening & Risk Stratification** Theoretical explanation, demonstration and assessment of cardiorespiratory fitness - Treadmill stress test - Spirometry - Step tests - Resting assessments: Heartrate monitoring, Blood Pressure, Body Composition **D. Assessment of skeletomuscular fitness – Measurement of**: i) BMD (Visit/Demonstration) ii) Muscle strength iii) Endurance iv) Strength v) Flexibility & agility (Bench press Jumps, Pushups, Sit and Reach Test), Sit-ups, Shuttle run, Hand grip dynamometer)	
	Total Contact Hours	**30**

References:

Brotzman, S. B., &Manske, R. C. (2011). *Clinical orthopaedic rehabilitation: An evidence-based approach* (3rd ed). Elsevier Mosby.

Brukner, P., & Khan, K. (2017). *Brukner& Khan's clinical sports medicine. Volume 1: Injuries* (B. Clarsen, J. Cook, A. Cools, K. Crossley, M. Hutchinson, P. McCrory, & R. Bahr, Eds.; 5th edition). McGraw-Hill Education (Australia).

Taylor & Francis (2020). .Nutrition for Sport, Exercise and Performance: A Practical Guide for Students, Sports Enthusiasts and Professionals. United Kingdom

Burke, L., &Deakin, V. (2015). *Clinical sports nutrition* (Fifth Edition). McGraw Hill Education.

Bushman, B. A., Battista, R., & American College of Sports Medicine (Eds.). (2014). *ACSM's resources for the personal trainer* (4th ed). Wolters Kluwer/Lippincott Williams & Wilkins Health.

Jacobs, P. L., & National Strength & Conditioning Association (U.S.) (Eds.). (2017). *NSCA's essentials of training special populations*. Human Kinetics.

Kisner, C., Colby, L. A., &Borstad, J. (2018). *Therapeutic exercise: Foundations and techniques* (Seventh edition). F.A. Davis Company.

Magee, D. J., &Manske, R. C. (2020). *Orthopedic physical assessment* (7th ed.). Elsevier, Inc.

O'Sullivan, S. B., Schmitz, T. J., &Fulk, G. D. (Eds.). (2019). *Physical rehabilitation* (Seventh edition). F.A. Davis Company.

Porter, S. B., & Tidy, N. M. (2013). *Tidy's physiotherapy* (15th ed). Elsevier.

Prentice, W. E. (Ed.). (2020). *Rehabilitation techniques for sports medicine and athletic training* (Seventh edition). SLACK Incorporated.

Evaluation:

2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Method of work, precision and use of various skills while performing the practical, Class participation and evaluation	10
Diet planning for gym goers and rehabilitation clients	10
Journal	5
Total	25

Semester-end Examination	**Marks**
All questions are compulsory. Up to 50% choice to be given within each question.	
Question 1: Unit 1	10
Question 2: Unit 2	10
Question 3 Viva	5
Total	25

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester – II **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
DAN 02 C5 ELECTIVE 2A	Entrepreneurship and Digital Technology in Nutrition and Dietetics	**Theory**	**2**

Course Objectives:

1. To help students:
   - Understand the principles of entrepreneurship and innovation in the context of clinical nutrition and healthcare.
   - Explore various forms of healthcare entrepreneurship, such as private practice, consulting, and product development.
   - Develop skills in creating business plans and strategies for launching clinical nutrition services or innovative nutrition-related products.
   - Understand and use digital tools and applications for dietary assessment, analysis, and client communication.
   - Collect dietary data digitally and ensure accuracy, completeness, and data privacy.
   - Analyze nutrition information generated by digital tools to provide evidence-based recommendations.
   - Evaluate the reliability and usability of digital dietary assessment tools.
   - Explore innovations in digital technology and their impact on dietetics and nutrition research.

Course Outcomes (CO):

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

CO No.	Course Outcome
CO1	Recall the fundamental concepts of entrepreneurship and innovation in the context of clinical nutrition.
CO2	Explain the importance of entrepreneurship and innovation in addressing challenges and improving healthcare outcomes in clinical nutrition.
CO3	Apply entrepreneurial principles to develop business plans or strategies for launching clinical nutrition services or products.
CO4	Analyze the significance of digital technology in dietetics for data collection, analysis, and communication with clients.
CO5	Evaluate the various digital tools and software commonly employed in dietary assessment and nutrition planning.
CO6	Apply digital technology to collect and analyze dietary intake data from clients or research participants.

Unit No.	Course Content	No. of Hours

I.	**A. Introduction to Entrepreneurship in Nutrition** i. Overview of Entrepreneurship: Concepts, Characteristics, and Mindset ii. Identifying Opportunities in the Nutrition Industry iii. Current Trends and Innovations in the Nutrition Market iv. Market Analysis and Dynamics in the Health and Wellness Industry **C. Business Planning for Nutrition Ventures** i. Developing a Business Idea in the Nutrition Sector ii. Creating a Business Plan: Structure and Components iii. Financial Planning and Budgeting for Nutrition Start-ups: Loans and other government schemes for Entrepreneurs, Pitching to Investors: Strategies and Techniques **D. Market Research Strategies in Nutrition** i. Introduction to Market Research in Nutrition in various areas: Clinical set-up, Food Service management, Food product development, Catering for industries with issues, Nutrition Education **E. Consumer Behavior in Nutrition** i. Understanding Consumer Preferences in Nutrition ii. Influencing Factors in Purchasing Decisions **F. Branding and Marketing for Nutrition Start-ups** i. Branding Strategies for Nutrition Products ii. Digital Marketing in the Nutrition Industry iii. Building a Strong Online Presence **G. Legal and Regulatory Considerations in the Nutrition Sector** i. Intellectual Property Protection ii. Ethical Considerations in Nutrition Entrepreneurship	**15**
II.	**Digital Technology in Dietetics** **A.Introduction** i. Principles, ethics and scope **B. Digital tools for nutrition assessment, monitoring and Education** i. Data collection for nutrition assessment, ii. Food choice and lifestyle monitoring iii. Fitness tracking and continuous health monitoring: ambulatory BP, blood sugar monitoring, wearable trackers, apps and face scans **B. Digital tools for content creation, community engagement and nutrition education** i. Generative AI for content creation ii. Use of social media for nutrition education	**15**

	C. Digital tools for diet planning and nutrition counselling i. Software for diet recall, documentation and diet planning (hospitals and clinics) ii. AI based Nutrition platform and counselling iii. Digital consultations and coaching **D. Sustainable digital innovations for hospital kitchens** **Exposure/ Inputs with new emerging technology/ innovation**	
	Total hours	**30**

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Evaluation:

2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Literature review with class discussion	15
Critical analysis/ Preparation of learning resources (videos/ posters/ brochures) for student/ Group discussion/ Quiz/ Class Test	10
Total	**25**

Semester-end Examination:	**Marks**
All questions are compulsory with internal choice.	
Question 1 from Unit 1	10
Question 2 from Unit 2	10
Question 3 from multiple units	10
Total	**25**

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester – II **Major (Elective Course)**

Course Code	Course Title	Th/Pr	Credits
DAN 02 C5 ELECTIVE 2B	Entrepreneurship in Nutrition and Dietetics	**Practical**	**2**

Course Objectives:

1. To help students:
   - Understand the principles of entrepreneurship and innovation in the context of clinical nutrition and healthcare.
   - Explore various forms of healthcare entrepreneurship, such as private practice, consulting, and product development.
   - Develop skills in creating business plans and strategies for launching innovative nutrition-related products.

Course Outcomes (CO):

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

CO No.	Course Outcome
CO1	Recall the fundamental concepts of entrepreneurship and innovation in the context of clinical nutrition.
CO2	To understand the ethical and legal aspects of an entrepreneurial venture.
CO3	Apply entrepreneurial principles to develop business plans or strategies for launching food services or products.
CO4	Analyze the basic principles of entrepreneurship and its relevance in the field of food and nutrition.
CO5	Evaluate the various entrepreneurship tools and software commonly employed in food planning.
CO6	Create entrepreneurial venture and executing the plan.

I.	**A. Idea Generation with Market Research** i. Brainstorming Techniques: Individual and group brainstorming, mind mapping, SWOT analysis. ii. Market Research Techniques: Primary and secondary research methods, competitive analysis, customer segmentation, value proposition development. iii. Trend Analysis: Identifying and analyzing market trends, technological advancements, and consumer behavior. iv. Idea Validation: Testing and validating business ideas through surveys, interviews, and prototypes. **B. Project Selection and Evaluation** i. Feasibility Analysis: Assessing the technical, financial, and market feasibility of business ideas. ii. Risk Assessment and Mitigation: Identifying and mitigating potential risks associated with the business venture. iii. Decision-Making Frameworks: Using data and analysis to make informed decisions about project selection. iv. Value Proposition Development: Crafting a compelling value proposition that differentiates the business from competitors.	**30**
II.	**A.Executing the Proposed Plan** i. Project Management Fundamentals: Project planning, scheduling, and resource allocation. ii. Product Development Process: From concept to launch, including design, prototyping, and testing. iii. Operations Management: Supply chain management, inventory control, and quality assurance. **B. Marketing the Developed Product/Service** i. Marketing Mix: Understanding the 4Ps of marketing (Product, Price, Place, Promotion). ii. Digital Marketing Strategies: Social media marketing, content marketing, search engine optimization (SEO), online advertising. iii. Branding and Positioning: Developing a strong brand identity and positioning the product/service in the market. iv. Sales and Customer Relationship Management (CRM): Sales strategies, customer service, and building customer loyalty.	**30**
	Total hours	**60**

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Evaluation:
2 credits (Total marks 50)

Continuous Internal Evaluation:	**Marks**
Planning and organizing an entrepreneurial project and making a detailed report and presentation of its impact	10
Journal	10
Viva-Voce examination	5
Total	**25**

Semester-end Examination:	**Marks**
Developing a plan of action for an entrepreneurial venture	10
Submission of a business proposal	10
Viva-voce examination	5
Total	**25**

Semester-II:
On the Job Training

P.G. Diploma in Home Science – Dietetics and Applied Nutrition
(Under NEP)

Semester- II Type of Course**: OJT/ FP**

Course Code	Course Name	Th/Pr	Credits	Hours
DAN 02 C6	**On Job Training/Field Project**	**Practical**	**4**	**120**

Course Objectives:

1. To introduce students to Dietetics and Applied Nutrition related agency/organization and understand the nature of work offered.
2. To enhance subject related knowledge base development and learn to apply theoretical learnings on field.
3. To develop ethics and skill-sets required to be a Dietetics professional.
4. To develop a creative/innovative and entrepreneurial mind-set through working in and observing the organisation.
5. To become well versed in positive group dynamics and learn strategies for effective team work, leadership development and responsibility completion.

Course Outcomes (CO):

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

CO No.	Course Outcome
CO 1	Identify different agencies/organizations related to Dietetics catering to people with different ages and needs.
CO 2	Enhance knowledge of the subject and be able to apply theories of Foods, Nutrition and Dietetics in the professional space
CO 3	Develop and demonstrate skill-sets and ethics expected out of a Dietetics professional.
CO 4	Apply creative, innovative and /or entrepreneurial concepts into professional practical settings
CO 5	Work effectively in teams with collaboration and responsibility.

Content of OJT:

1. **Understanding the Vision, Mission, and Goals of the Organization**

- Organizational Aspects: Familiarize oneself with the organogram, hierarchy, chain of command, and overall organizational structure.
- Roles and Responsibilities: Understand the specific roles and responsibilities of employees in the Dietetics Department.
- Acquaintance with Human Resource and Resource Management Policies (specifically with Dietetics) management, inventory control, standard operating procedures and any other services offered.
- HR Policies: Comprehend policies related to human resource management, ensuring a thorough understanding of employee rights and responsibilities.
- Inventory Control and SOPs: Learn the intricacies of inventory control, standard operating procedures, and other services offered within the department.

2. **Aspects related to increasing the existing knowledge and skills; and specialised training to gain expertise in specific aspects in the field of Dietetics.**

- Clinical Internship: Gain theoretical and practical insights in clinical settings, understanding patient nutrition requirements and therapeutic diets.

3. **Hands-On Training and Skill Development**

- Equipment Use: Gain hands-on experience with equipment and tools related to the area of Dietetics – nutritional assessment; workflow process and counselling software.
- Technology Application: Understand the application of technology – mechanical/AI/Robotics in nutritional assessment and diagnosis; utilizing relevant tools, equipment, and interpretation software.
- Hands-On Projects and Case Studies: (One or more as applicable)
    - Diet Planning and Management: Apply tools and methods for diet assessment, planning and managing food production and service in real-world scenarios.
    - Counseling Experience: Engage in counseling sessions in both in-patient (IPD) and out-patient (OPD) settings.
    - Action research in: Dietetics/Nutrition Communication.
    - Content Development for consumer/patient awareness and education in print, voice or digital formats

4. Development of Interpersonal Skills and Leadership

- Participation in Organizational Activities
- Teamwork: Collaborate with organizational teams on existing or new projects, fostering interpersonal skills and leadership qualities.
- Learning to work for consumer/ client satisfaction/ management
- Community and Social Engagement: Plan and execute community and social engagement projects related to Dietetics.

5. Inculcation of a mind-set of Research, Creativity, Innovation, and Entrepreneurship (One or more as applicable)

- Make a study of the organisation's initiatives in research, creativity, innovation and entrepreneurship.
- Nutrition Communication Resources: Create communication resources, prototypes, or models to convey nutritional information effectively.
- Entrepreneurial Venture: Develop a feasible product or service for entrepreneurial ventures, emphasizing unique features and feasibility, addressing specific needs and problems in the relevant field.
- Case Studies and Project Work: Prepare and present case study reports or work on a research project aligned with industry needs.

Process Outline:

1. Preparation:

- Identifying the age and target group the student wants to work for; contacting different Human Development agencies/organisations catering to them and co-ordinating with staff in-charge to get approval and seek permission with the organisation.
- Procuring job profile and assisting the employer with tasks assigned within the framework of their job profile.
- Maintaining comprehensive observations/records of tasks accomplished.
- Making a self-reflection report at the end of every week.

2. Enhancing Practical Skills through OJT:

- The On-the-Job Training (OJT) program spans 4-6 weeks, requiring a minimum of 120 hours of physical presence at the organization.
- Students are expected to find their own OJT placements, although the institution provides support and guidance in securing positions with reputable organizations.

- OJT must be conducted outside the home institution to expose students to real-world work environments.
- OJT covers any subject within the syllabus, allowing students to align their experience with their academic interests.
- In recognition of changing dynamics, some OJT sessions can be conducted online to accommodate virtual work environments.
- OJT will offer students the opportunity to apply classroom learning in a real-world setting, fostering the development of technical and non-technical skills.
- Mutual Benefits: Organizations gain insights into the program's curriculum and industry requirements, enabling them to provide constructive feedback and enhance course relevance.
- OJT bridges the gap between theoretical knowledge and practical application, preparing students for successful careers in Home Science

3. Interning Organizations:

Students have the flexibility to pursue their OJT in various types of organizations, including but not limited to:

- Dietetics organizations working with sustainability concepts
- Governmental and non-governmental organizations pertaining to dietetics
- Diet departments in hospitals
- Nutrition Clinics
- Entrepreneurs
- Global online internship programmes
- Dietetics startups

4. Role of OJT Mentors:

- To enhance the learning experience and ensure the quality of the MSc programme, each student participating in the OJT will be assigned two mentors:

i. A faculty mentor from the institution
ii. An industry mentor from the organization where the student is interning.

- By having both an industry mentor and a faculty mentor, students benefit from a comprehensive guidance system that combines industry expertise and academic support.

5. Role of Industry Mentor:

The industry mentor plays a crucial role in:

- Guiding the student during the internship.
- Ensuring that the intern fulfils the requirements of the organization and successfully meets the demands of the assigned project.
- Providing valuable insights into real-work practices and industry expectations through their expertise and experience.

6. Role of Faculty Mentor:

The faculty mentor serves as the overall coordinator of the OJT program.

- Oversee the entire internship process.
- Evaluate the quality of the OJT in a consistent manner across all students.
- Ensures that the OJT aligns with the programme objectives by providing valuable learning opportunities.
- Facilitates communication between the institution, industry mentor, and student ensuring a fruitful OJT experience.

7. Submission of Documentation for OJT

The student will make two documents as part of the OJT:

a. Online Diary: This ensures that the student updates daily activity, which could be accessed by both the mentors. Daily entry can be of 3- 4 sentences giving a very brief account of the

learning/activities/interaction taken place. The faculty mentor will be monitoring the entries in the diary regularly.

b. OJT Report: A student is expected to make a report based on the OJT he or she has done in an organization. It should contain the following:

- ✓ **Certificate:** A certificate in the prescribed Performa from the organization where the OJT was done.
- ✓ **Title:** A suitable title giving the idea about what work the student has performed during the OJT.
- ✓ **Description of the organization:** A small description of the organization where the student has interned.
- o Description of the activities done by the section where the intern has worked: A description of the section or cell of the organization where the intern worked. This should give an idea about the type of activity a new employee is expected to do in that section of the organization.
- o Description of work allotted and done by the intern: A detailed description of the work allotted, and actual work performed by the intern during the OJT (Online/In Person/Onsite) period. It shall be the condensed and structured version of the daily report mentioned in the online diary.
- ✓ **Self-assessment:** A self-assessment by the intern on what he or she has learned during the OJT period. It shall contain both technical as well as interpersonal skills learned in the process.

8. Interaction between mentors:

- To ensure the smooth conduct of the OJT a meet-up involving the intern, industry mentor, and the faculty mentor will be scheduled as a mid-term review.
- The meeting can preferably be online to save time and resources.
- The meeting ensures the synergy between all stakeholders of the OJT.
- A typical meeting can be of around 15 minutes where at the initial stage the intern brief about the work and interaction goes for about 10 minutes.
- This can be followed by the interaction of the mentors in the absence of the intern. This ensures that issues between the intern and the organization, if any, are resolved.

9. OJT Workload for the Faculty: Every student is provided with a faculty member as a mentor. So, a faculty mentor will have a few students under him/her. A faculty mentor is the overall in charge of the OJT of the student. He/she constantly monitors the progress of the OJT by regularly overseeing the diary, interacting with the industry mentor, and guiding on the report writing etc. Considering the time and effort involved, a faculty mentor who is in-charge of 10-12 students shall be provided by a workload of 3 hours.

Evaluation:
4 credits (Total marks 100)

Continuous Internal Evaluation:	**Marks**
Online Diary	25
Mid-term interaction and case study presentation	25
Total	**50**

External Evaluation:	**Marks**
OJT Documentation	25
Case Study Presentation	10
OJT Viva	15
Total	**50**

Letter Grades and Grade Points:

Semester GPA/ Programme CGPA Semester/ Programme	% of Marks	Alpha-Sign/ Letter Grade Result
9.00 - 10.00	90.0 - 100	O (Outstanding)
8.00 - < 9.00	80.0 - < 90.0	A+ (Excellent)
7.00 - < 8.00	70.0 - < 80.0	A (Very Good)
6.00 - < 7.00	60.0 - < 70.0	B+ (Good)
5.50 - < 6.00	55.0 - < 60.0	B (Above Average)
5.00 - < 5.50	50.0 - < 55.0	C (Average)
4.00 - < 5.00	40.0 - < 50.0	P (Pass)
Below 4.00	Below 40.0	F (Fail)
Ab (Absent)	-	Absent

Sd/-

Sign of the BOS Chairman
Dr. Mira Desai
Ad-hoc Board of Studies in Home Science

Sd/-

Sign of the Offg. Associate Dean
Dr. C.A.Chakradeo
Faculty of Interdisciplinary Studies

Sd/-

Sign of the Offg. Associate Dean
Dr. Kunal Ingle
Faculty of Interdisciplinary Studies

Sd/-

Sign of the Offg. Dean
Prof. A. K. Singh
Faculty of Interdisciplinary Studies