

**B.SC.,
NUTRITION AND DIETETICS**

SYLLABUS

FROM THE ACADEMIC YEAR

2023-2024

**TAMILNADU STATE COUNCIL FOR HIGHER
EDUCATION, CHENNAI – 600 005**

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**TANSICHE REGULATIONS ON LEARNING OUTCOMES-BASED CURRICULUM
FRAMEWORK GUIDELINES BASED REGULATIONS FOR UNDER GRADUATE
PROGRAMME**

Programme:	B.Sc., Nutrition and Dietetics
Programme Code:	
Duration:	UG - 3 years
Programme Outcomes:	<p>PO1: Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate Programme of study</p> <p>PO2: Communication Skills: Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one’s views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups.</p> <p>PO3: Critical thinking: Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development.</p> <p>PO4: Problem solving: Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one’s learning to real life situations.</p> <p>PO5: Analytical reasoning: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.</p> <p>PO6: Research-related skills: A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesising and articulating; Ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation</p> <p>PO7: Cooperation/Team work: Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause and work efficiently as a member of a team</p>

PO8: Scientific reasoning: Ability to analyse, interpret and draw conclusions from quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.

PO9: Reflective thinking: Critical sensibility to lived experiences, with self awareness and reflexivity of both self and society.

PO10 Information/digital literacy: Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data.

PO 11 Self-directed learning: Ability to work independently, identify appropriate resources required for a project, and manage a project through to completion.

PO 12 Multicultural competence: Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups.

PO 13: Moral and ethical awareness/reasoning: Ability to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. Capable of demonstrating the ability to identify ethical issues related to one's work, avoid unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights; appreciating environmental and sustainability issues; and adopting objective, unbiased and truthful actions in all aspects of work.

PO 14: Leadership readiness/qualities: Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smooth and efficient way.

PO 15: Lifelong learning: Ability to acquire knowledge and skills, including „learning how to learn“, that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development/reskilling.

<p>Programme Specific Outcomes:</p>	<p>PSO1 – Placement:</p> <p>To prepare the students who will demonstrate respectful engagement with others’ ideas, behaviors, beliefs and apply diverse frames of reference to decisions and actions.</p> <p>PSO 2 - Entrepreneur:</p> <p>To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations</p> <p>PSO3 – Research and Development:</p> <p>Design and implement HR systems and practices grounded in research that comply with employment laws, leading the organization towards growth and development.</p> <p>PSO4 – Contribution to Business World:</p> <p>To produce employable, ethical and innovative professionals to sustain in the dynamic business world.</p> <p>PSO 5 – Contribution to the Society:</p> <p>To contribute to the development of the society by collaborating with stakeholders for mutual benefit</p>
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Credit Distribution for UG Programmes

Sem I	Credit	H	Sem II	Credit	H	Sem III	Credit	H	Sem IV	Credit	H	Sem V	Credit	H	Sem VI	Credit	H
Part 1. Language – Tamil	3	6	Part..1. Language – Tamil	3	6	Part..1. Language – Tamil	3	6	Part..1. Language – Tamil	3	6	5.1 Core Course – \CC IX	4	5	6.1 Core Course – CC XIII	4	6
Part.2 English	3	6	Part..2 English	3	6	Part..2 English	3	6	Part..2 English	3	6	5.2 Core Course – CC X	4	5	6.2 Core Course – CC XIV	4	6
1.3 Core Course – CC I	5	5	2..3 Core Course – CC III	5	5	3.3 Core Course – CC V	5	5	4.3 Core Course – CC VII Core Industry Module	5	5	5. 3.Core Course CC -XI	4	5	6.3 Core Course – CC XV	4	6
1.4 Core Course – CC II	5	5	2.4 Core Course – CC IV	5	5	3.4 Core Course – CC VI	5	5	4.4 Core Course – CC VIII	5	5	5. 4.Core Course –/ Project with viva-voce CC -XII	4	5	6.4 Elective -VII Generic/ Discipline Specific	3	5
1.5 Elective I Generic/ Discipline Specific	3	4	2.5 Elective II Generic/ Discipline Specific	3	4	3.5 Elective III Generic/ Discipline Specific	3	4	4.5 Elective IV Generic/ Discipline Specific	3	3	5.5 Elective V Generic/ Discipline Specific	3	4	6.5 Elective VIII Generic/ Discipline Specific	3	5
1.6 Skill Enhancement Course SEC-1	2	2	2.6 Skill Enhancement Course SEC-2	2	2	3.6 Skill Enhancement Course SEC-4, (Entrepreneurial Skill)	1	1	4.6 Skill Enhancement Course SEC-6	2	2	5.6 Elective VI Generic/ Discipline Specific	3	4	6.6 Extension Activity	1	-

1.7 Skill Enhancement - (Foundation Course)	2	2	2.7 Skill Enhancement Course – SEC-3	2	2	3.7 Skill Enhancement Course SEC-5	2	2	4.7 Skill Enhancement Course SEC-7	2	2	5.7 Value Education	2	2	6.7 Professional Competency Skill	2	2
						3.8 E.V.S.	-	1	4.8 E.V.S	2	1	5.8 Summer Internship /Industrial Training	2				
	23	30		23	30		22	30		25	30		26	30		21	30
Total – 140 Credits																	

**Choice Based Credit System (CBCS), Learning Outcomes Based Curriculum Framework
(LOCF) Guideline Based Credit and Hours Distribution System**

for all UG courses including Lab Hours

First Year – Semester-I

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses [in Total]	13	14
Part-4	Skill Enhancement Course SEC-1	2	2
	Foundation Course	2	2
		23	30

Semester-II

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses including laboratory [in Total]	13	14
Part-4	Skill Enhancement Course -SEC-2	2	2
	Skill Enhancement Course -SEC-3 (Discipline / Subject Specific)	2	2
		23	30

Second Year – Semester-III

Part	List of Courses	Credit	No. of Hours
Part-1	Language - Tamil	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses including laboratory [in Total]	13	14
Part-4	Skill Enhancement Course -SEC-4 (Entrepreneurial Based)	1	1
	Skill Enhancement Course -SEC-5 (Discipline / Subject Specific)	2	2
	E.V.S	-	1
		22	30

Semester-IV

Part	List of Courses	Credit	No. of Hours
Part-1	Language - Tamil	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses including laboratory [in Total]	13	13
Part-4	Skill Enhancement Course -SEC-6 (Discipline / Subject Specific)	2	2
	Skill Enhancement Course -SEC-7 (Discipline / Subject Specific)	2	2
	E.V.S	2	1
		25	30

Third Year - Semester-V

Part	List of Courses	Credit	No. of Hours
Part-3	Core Courses including Project / Elective Based	22	26
Part-4	Value Education	2	2
	Internship / Industrial Visit / Field Visit	2	2
		26	30

Semester-VI

Part	List of Courses	Credit	No. of Hours
Part-3	Core Courses including Project / Elective Based & LAB	18	28
Part-4	Extension Activity	1	-
	Professional Competency Skill	2	2
		21	30

Consolidated Semester wise and Component wise Credit distribution

Parts	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Total Credits
Part I	3	3	3	3	-	-	12
Part II	3	3	3	3	-	-	12
Part III	13	13	13	13	22	18	92
Part IV	4	4	3	6	4	1	22
Part V	-	-	-	-	-	2	2
Total	23	23	22	25	26	21	140

***Part I, II, and Part III components will be separately taken into account for CGPA calculation and classification for the under graduate programme and the other components. IV, V have to be completed during the duration of the programme as per the norms, to be eligible for obtaining the UG degree.**

METHODS OF EVALUATION		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments / Snap Test / Quiz	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
Total		100 Marks
METHODS OF ASSESSMENT		
Remembering (K1)	<ul style="list-style-type: none"> • The lowest level of questions require students to recall information from the course content • Knowledge questions usually require students to identify information in the text book. 	
Understanding (K2)	<ul style="list-style-type: none"> • Understanding off acts and ideas by comprehending organizing, comparing, translating, interpolating and interpreting in their own words. • The questions go beyond simple recall and require students to combine data together 	
Application (K3)	<ul style="list-style-type: none"> • Students have to solve problems by using /applying a concept learned in the classroom. • Students must use their knowledge to determine a exact response. 	
Analyze (K4)	<ul style="list-style-type: none"> • Analyzing the question is one that asks the student to break down something into its component parts. • Analyzing requires students to identify reasons causes or motives and reach conclusions or generalizations. 	
Evaluate (K5)	<ul style="list-style-type: none"> • Evaluation requires an individual to make judgment on something. • Questions to be asked to judge the value of an idea, a character, a work of art, or a solution to a problem. • Students are engaged in decision-making and problem- 	

	<p>solving.</p> <ul style="list-style-type: none"> • Evaluation questions do not have single right answers.
Create (K6)	<ul style="list-style-type: none"> • The questions of this category challenge students to get engaged in creative and original thinking. • Developing original ideas and problem solving skills

Highlights of the Revamped Curriculum:

1. Student-centric, meeting the demands of industry & society, incorporating industrial components, hands-on training, skill enhancement modules, industrial project, project with viva-voce, exposure to entrepreneurial skills, training for competitive examinations, sustaining the quality of the core components and incorporating application oriented content wherever required.
2. The Core subjects include latest developments in the education and scientific front, advanced programming packages allied with the discipline topics, practical training, devising statistical models and algorithms for providing solutions to industry / real life situations. The curriculum also facilitates peer learning with advanced statistical topics in the final semester, catering to the needs of stakeholders with research aptitude.
3. The General Studies and Statistics based problem solving skills are included as mandatory components in the ‘Training for Competitive Examinations’ course at the final semester, a first of its kind.
4. The curriculum is designed so as to strengthen the Industry-Academia interface and provide more job opportunities for the students.
5. The Statistical Quality Control course is included to expose the students to real life problems and train the students on designing a mathematical model to provide solutions to the industrial problems.
6. The Internship during the second year vacation will help the students gain valuable work experience, that connects classroom knowledge to real world experience and to narrow down and focus on the career path.
7. Project with viva-voce component in the fifth semester enables the student, application of conceptual knowledge to practical situations. The state of art technologies in conducting a Explain in a scientific and systematic way and arriving at a precise solution is ensured. Such innovative provisions of the industrial training,

project and internships will give students an edge over the counterparts in the job market.

8. State-of Art techniques from the streams of multi-disciplinary, cross disciplinary and inter disciplinary nature are incorporated as Elective courses, covering conventional topics to the latest DBMS and Computer software for Analytics.

Value additions in the Revamped Curriculum:

Semester	Newly introduced Components	Outcome / Benefits
I	<p>Foundation Course To ease the transition of learning from higher secondary to higher education, providing an overview of the pedagogy of learning abstract Statistics and simulating mathematical concepts to real world.</p>	<ul style="list-style-type: none"> • Instil confidence among students • Create interest for the subject
I, II, III, IV	<p>Skill Enhancement papers (Discipline centric / Generic / Entrepreneurial)</p>	<ul style="list-style-type: none"> • Industry ready graduates • Skilled human resource • Students are equipped with essential skills to make them employable • Training on Computing / Computational skills enable the students gain knowledge and exposure on latest computational aspects • Data analytical skills will enable students gain internships, apprenticeships, field work involving data collection, compilation, analysis etc. • Entrepreneurial skill training will provide an opportunity for independent livelihood • Generates self – employment • Create small scale entrepreneurs • Training to girls leads to women empowerment • Discipline centric skill will improve the Technical knowhow of solving real life problems using ICT tools
III, IV, V & VI	<p>Elective papers- An open choice of topics categorized under Generic and Discipline Centric</p>	<ul style="list-style-type: none"> • Strengthening the domain knowledge • Introducing the stakeholders to the State-of Art techniques from the streams of multi-disciplinary, cross disciplinary and inter disciplinary nature • Students are exposed to Latest topics on Computer Science / IT, that require strong statistical background • Emerging topics in higher education / industry / communication network /

		health sector etc. are introduced with hands-on-training, facilitates designing of statistical models in the respective sectors
IV	DBMS and Programming skill, Biostatistics, Statistical Quality Control, Official Statistics, Operations Research	<ul style="list-style-type: none"> • Exposure to industry moulds students into solution providers • Generates Industry ready graduates • Employment opportunities enhanced
II year Vacation activity	Internship / Industrial Training	<ul style="list-style-type: none"> • Practical training at the Industry/ Banking Sector / Private/ Public sector organizations / Educational institutions, enable the students gain professional experience and also become responsible citizens.
V Semester	Project with Viva – voce	<ul style="list-style-type: none"> • Self-learning is enhanced • Application of the concept to real situation is conceived resulting in tangible outcome
VI Semester	Introduction of Professional Competency component	<ul style="list-style-type: none"> • Curriculum design accommodates all category of learners; ‘Statistics for Advanced Explain’ component will comprise of advanced topics in Statistics and allied fields, for those in the peer group / aspiring researchers; • ‘Training for Competitive Examinations’ –caters to the needs of the aspirants towards most sought - after services of the nation viz, UPSC, ISS, CDS, NDA, Banking Services, CAT, TNPSC group services, etc.
Extra Credits: For Advanced Learners / Honors degree		<ul style="list-style-type: none"> • To cater to the needs of peer learners / research aspirants

Skills acquired from the Courses	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill
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COURSE OF STUDY AND SCHEME OF EXAMINATION

SEMESTER I								
Part	Study Component	Course Title	Credit	Exam				Hrs/ week
				Dur. Hrs	CIA	Uni. exam	Total	
I	Language	Language - Tamil	3	6	25	75	100	6
II	Language	English	3	6	25	75	100	6
III	Core I	Human Physiology	5	5	25	75	100	5
III	Core Practical I	Human Physiology Practical	3	3	-	-	-	3
III	Allied I	Chemistry I	3	4	25	75	100	4
III	Allied Practical I	Chemistry Practical	2	2	-	-	-	2
IV	Skill Enhancement Course SEC-1	Public Health Nutrition	2	2	25	75	100	2
IV	Add-on course	Women's Health And Wellness	2	2	25	75	100	2
		TOTAL	23	30	150	450	600	30

SEMESTER II

Part	Study Component	Course Title	Credits	Exam				Hrs/week
				Dur. Hrs	CIA	Uni. exam	Total	
I	Language	Language - Tamil	3	6	25	75	100	6
II	Language	English	3	6	25	75	100	6
III	Core II	Food Science	5	5	25	75	100	5
III	Core Practical II	Food Science Practical	3	3	40	60	100	3
III	Allied I	Chemistry II	3	4	25	75	100	4
III	Allied Practical I	Chemistry Practical	2	2	40	60	100	2
IV	Skill Enhancement Course SEC-II	Introduction to Fashion Designing	2	2	25	75	100	2
IV	Add-on course SEC III	Landscape Design And Ornamental Garden	2	2	25	75	100	2
		TOTAL	23	30	270	630	900	30

SEMESTER I	
Core/Major Course I	Human Physiology
Paper Code:	Theory: 6hrs/week

Course Learning Outcomes:

1. Gain the basic knowledge of human anatomy and physiology.
2. Define the main structures composing human body.
3. Explains structure and functions of cells, tissues and organs, systems of the human body.
4. Relates structure and functions of tissue.
5. Provides excellent preparation for careers in the health professions and/or biomedical research.

Course Content

Unit-I

Cell–Structure of organs and functions. Tissues–Structure, Classification and functions.

Unit-II

Blood – Composition, functions, coagulation, factors affecting coagulation, blood groups. Gastrointestinal and Hepato biliary system – Structure, physiology and functions for different organs and role of hormones and enzymes.

Unit-III

Immune system – Innate, acquired and active immunity, cell mediated immunity, humoral immunity and complement system.

Heart and circulation – Structure, cardiac cycle, cardiac output, factors affecting cardiac output, normal ECG, heart failure, blood pressure, control and factors affecting blood pressure.

Unit-IV

Respiratory system – Structure and functions, Lung volumes and lung capacities, Factors affecting efficacy of respiration.

Excretory system - (A) Urinary System: - Structure and functions of organs of urinary system (In brief), Mechanism of urine formation. (B) Skin: - Structure and functions, Regulation of body temperature.

Unit-V

Reproductive system—(A) Female reproductive system--Structure and functions, menstrual cycle, menarche and menopause.

Male Reproductive system—Structure and functions.

Endocrine system - Thyroid, Parathyroid, Adrenal gland, Pituitary and Sex glands – Structure and functions.

References

1. Ross and Wilson (2011), Anatomy and physiology in Health and Illness, 11th Edition, Church Hill Livingstone.
2. West, J.B. (2007), Best and Taylor's Physiological Basis of Medical Practice, 11th Edition.
3. Gyton (1996), Test Book of Medical Physiology, 9th Edition, Prism Books Pvt. Ltd., W.B. Sanders Company, USA.
4. Chatterjee C.C (2016), Human Physiology Volume I, Medical Allied Agency, Kolkata.
5. Chatterjee C.C (2004), Human Physiology Volume II, Medical Allied Agency, Kolkata.
6. Sembulingam, K. (2000) Essentials of Medical Physiology, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.
7. Chaudhri, K. (1993) Concise Medical Physiology, New Central Book Agency (Parental) Ltd., Calcutta.

SEMESTER I	
Core/Major Practical I	Human Physiology
PaperCode:	Theory:3hrs/week

Course Learning Outcomes:

1. Gain the basic knowledge of the different vital organs, glands and tissues under a microscope.
2. To estimate the blood parameters like hemoglobin, blood group, bleeding time, clotting time and platelet count

Course content

1. Microscopic study of tissues- epithelial, connective and muscular.
2. Collection of blood sample-Capillary blood from finger tips and venous blood.
3. Separation of blood components (Centrifugation).
4. Estimation of hemoglobin -Sahli's Acidhematin method.
5. Determination of Hematocrit (Wintrobe method).
6. Preparation and examination of stained blood smear (Wedge or glass slide method).
7. Determination of Erythrocyte Sedimentation Rate(Wintrobe method).
8. Determination of blood group.
9. Determination of bleeding time (Duke method) and coagulation time(Capillary tube method).
10. Platelet count (Rees Ecker method by hemocytometry).
11. Clinical examination of radial pulse(pulse rate).
12. Measurement of blood pressure (Sphygmomanometry).
13. Effect of exercise on blood pressure and heart rate.
14. Microscopic structure of heart, digestive system and kidney.
15. Microscopic structure of reproductive organs- ovary, uterus, mammary glands and testis.
16. Microscopic structure of endocrine glands -thyroid, pituitary and adrenal.

Reference: G.K.Pal and Pravati pal, Text book of practical physiology, Orient Longman Ltd. 2001.

Title of the Course		PUBLIC HEALTH NUTRITION								
Category	Year I	L	T	P	O	Credits	Inst Hrs	Marks		
	Sem I							CIA	External	Total
SEC I		Y		Y		2	2	25	75	100

Learning Objectives

To enable the students to:

Gain knowledge about nutritional policies, programs and agencies involved in combating malnutrition.

Acquire knowledge and skills in assessment of nutritional status.

Create awareness on improving health and nutrition of the community

UNIT	CONTENT	HOURS
UNIT I	<p>Concept and scope of public nutrition Definition, concept, scope and multidisciplinary nature of public nutrition</p> <p>Nutritional problems affecting the community. Etiology, prevalence, clinical features and preventive strategies for malnutrition related problems and deficiency disorders- Under nutrition (Protein energy malnutrition, Wasting, Stunting), Over nutrition (obesity and related risks), Nutritional anemia, Vitamin A deficiency, Iodine deficiency disorders, Fluorosis.</p>	15
UNIT II	<p>Assessment of nutritional status Objectives and importance, Methods of assessment: Direct (Clinical signs, Anthropometry, Biochemical tests); Indirect (Diet surveys, vital statistics)</p>	10
UNIT III	<p>Nutrition policy and programs National nutritional policy; Integrated child development scheme (ICDS), Midday Meal Program- State and National (Poshan Abhyan), National programs for the prevention of anemia, Vitamin A deficiency, Iodine deficiency disorders, Fortification of Foods and Public Distribution System as a preventive approach.</p>	15
UNIT IV	<p>Nutrition education Objectives, principles and scope of nutrition and health education, creating awareness on current public health issues and devising strategies for prevention and management.</p>	10

UNIT V	Role of National and International agencies in combating malnutrition WHO,FAO, UNICEF; National: FSSAI, ICAR, ICMR, NIN, FNB, CFTRI, NNMB- Role, Target groups (if specified),Policies and Programs.	10
Practical	Practical/experiential learning Planning low-cost nutritious recipes for infants, pre-schoolers, pregnant/ lactating mothers for nutrition education. Assessment of nutritional status <ul style="list-style-type: none"> - Anthropometry: Weight and height measurements - Plotting and interpretation of growth charts for children below 5 years - Identification of clinical signs of common nutritional disorders - Dietary assessment: 24-hour recall, Food Frequency Questionnaire, Diet Diversity Score Planning a Nutrition Education Program, and imparting nutrition education to the community	15
TOTAL		75

COURSE OUT COME

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

CO1. Define terms related to Public Health nutrition.

CO2. Describe the nutritional problems prevalent in the community.

CO3. Explain the significance of assessment of nutritional status.

CO4. Assess the role of various organizations in combating nutritional problems.

CO5. Conduct nutrition education programs to create awareness on improving health and nutrition of the community at large.

Reference:

1. Wadhwa A and Sharma S (2003). Nutrition in the Community –A text book. Elite Publishing House Pvt. Ltd. New Delhi.
2. Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasisdas Bhanot Publishers, Jabalpur, India.
3. Jelliffe DB, Jelliffe ERP, Zervas A and Neumann CG (1989). Community nutritional assessment with special reference to less technically developed countries. Oxford University Press. Oxford.
4. WHO (2006). Child Growth Standards: Methods and development: height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age (<http://www.who.int/childgrowth/standards/en/>).
5. Gupta, MC and Mahajan BK. (2003) Text book of Preventive and Social Medicine 3rd Ed Jaypee brothers, Medical Publishers (p) Ltd.

WebReferences:

- Mohfw.nic.in/NRHM/NIDD
- www.nrhmorissa.gov.in/NIDDCP.html
- www.Scripts.mit.edu

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	L	L	L	L	S	L	L	S
CO2	S	S	S	S	M	S	S	S	M	S
CO3	S	S	S	S	M	S	S	S	M	S
CO4	S	S	S	S	M	M	S	S	M	S
CO5	S	S	S	S	S	S	S	S	S	S

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	3	1	3
CO2	3	3	3	3	3
CO3	3	3	2	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	14	14	13	15
Weightedpercentage(roundedof) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		WOMENS HEALTH AND WELLNESS								
Category	Year	L	T	P	O	Credits	Inst Hr s	Marks		
	Se m							CIA	External	Total
Elective / SEC		Y				2	2	2 5	7 5	100

Learning Objectives

To enable the students to:

Understand the diverse factors that has a bearing on women's health.

Highlight different aspects of health that contributes to a good lifestyle for women across the globe.

UNIT	CONTENT	HOURS
UNIT I	Nutrition for Women - Dietary Guidelines for a healthy lifestyle, Current concepts pertaining to Balanced Diets, Nutrient requirements for young and older women with special focus on Protein, Iron, Vitamin D and Calcium, Factors affecting nutrient intake in women- Socioeconomic, Environmental conditions, Health conditions; Consequences of Eating disorders in young women.	8
UNIT II	Physical Health - Significance of Body weight and Body composition parameters, Benefits of Aerobic, Flexibility and Strength training exercises- on General health, Bone health, and risks associated with NCD's.	8
UNIT III	Reproductive Health - Menstrual Health, Pregnancy and Lactation, Pre- and Post-Menopausal concerns- preventive measures, sexually transmitted diseases- an overview.	8
UNIT IV	Mental Health - Common mental health problems - Trends and issues relating to women, Depression, Anxiety and coping with Stress, Strategies to improve mental health- learning new skills and hobbies, Relaxation techniques such as yoga and meditation.	8
UNIT V	Social Health - Balancing home and career, strengthening relationships, enhancing communication skills and Personality Development, technological advancements and its impact, Dealing with domestic violence, and harassment issues.	8
	TOTAL	40

Activity:

- Preparation of simple healthy recipes, Planning Meals based on Balanced diets,
- Workshop on Fitness, Yoga and Meditation,
- Seminars pertaining to Reproductive Health, Communication Skills, Personality Development

COURSE OUTCOMES

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

CO1. Define terms related to nutrition, physical, reproductive, mental and social health. **CO2.** Discuss the need for right nutrition, exercises and skills needed for the overall well-being of women.

CO3. Explain the significance of maintaining physical, reproductive, mental and social health for the overall well-being of women.

CO4. Devise strategies to improve women's health in a holistic manner.

CO5. Recommend simple measures for a healthy lifestyle.

References:

1. Lanza di Scalea T, Matthews KA, Avis NE, et al. (2012) Role stress, role reward, and mental health in a multiethnic sample of midlife women: results from the Study of Women's Health Across the Nation (SWAN). *J Women's Health*; 21(5):481-489.
2. Mahan K and Sylvia E. Stump (2000) *Krause's Food Nutrition and Diet Therapy*, Saunders, USA.
3. Minkin M. J. and Wright C. V. (2003) *The Yale Guide to Women's Reproductive Health from menarche to menopause*. Yale University Press, London
- 4.Sizer F. S. and Whitney E. (2014) *Nutrition: Concepts & Controversies*. 13th Ed., Wadsworth, Cengage Learning, USA.
5. Sperry L. (2016) *Mental Health and Mental Disorders*. ABC-Clio, California
6. Williams M.H., Anderson D.E., Rawson E.S. (2013) *Nutrition for Health, Fitness and Sport*. McGraw Hill, New York.
7. Wrzus C, Hänel M, Wagner J, Neyer FJ. (2013) Social network changes and life events across the life span: a meta-analysis. *Psychol Bull*;139(1):53-80.

e-Learning Resources:

- https://www.nhp.gov.in/social-health_pg
- <https://ncert.nic.in/textbook/pdf/jehp112.pdf>
- <https://ncert.nic.in/textbook/pdf/iehp113.pdf>
- <https://ncert.nic.in/textbook/pdf/lebo104.pdf>
- <https://www.nih.gov/health-information/social-wellness-toolkit>

- <https://www.cdc.gov/reproductivehealth/womensrh/index.htm>
- <https://www.nimh.nih.gov/health/topics/caring-for-your-mental-health>
- <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>
- <https://www.cdc.gov/mentalhealth/learn/index.htm>

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	S	S	M	M	M	L	S	L	L	S
C02	S	S	S	M	M	M	S	L	M	S
C03	S	S	M	S	M	M	S	S	M	S
C04	S	S	M	S	S	S	S	S	S	S
C05	S	S	M	M	S	S	S	S	S	S

Mapping with Programme Specific Outcomes

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
C01	3	3	3	3	3
C02	3	3	3	3	3
C03	3	3	3	3	3
C04	3	3	3	3	3
C05	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage (rounded of) of Course Contribution to Pos	3	3	3	3	3

SEMESTER II	
Core/Major Course II	Food Science
Paper Code:	Theory: 6hrs/week

Course Learning Outcomes:

1. Summarize and critically discuss and understand both fundamental and applied aspects of Food Science.
2. Identifying nutrient specific force and apply the principles from the various factors of foods and related disciplines to solve practical as well as real world problems.
3. Understand the food groups and their functions, acquire knowledge on different methods of cooking and apply process of different foods.
4. Use combination of foods in the development of food products. 5. Identify and control adulterants in various foods and evaluate food quality.
5. Use current information Technologies to locate and apply evidence- based guidelines and protocol and get imported with critical thinking to take leadership roles in the field of health, diet and special nutritional needs.

Course Content

Unit-I

Food: Definition, functional classification, groups (4, 5, 7 and 11), food pyramid.

Cooking: Definition and objectives; Methods- Moist heat methods, dry heat methods, combination of both and micro wave cooking; Effect of cooking on nutrients.

Beverages: Classification; Coffee beverage- Constituents and method of preparation; Tea-Types, preparation; Cocoa- Composition, nutritive value and preparation of cocoa beverage; Fruit beverages- Types; Introduction to vegetable juices, milk based beverages, malted beverages, carbonated non-alcoholic beverages and alcoholic beverages.

Unit-II

Cereals and millets: Structure, composition and nutritive value of rice, wheat and oats; Nutritive value of maize, jowar, ragi and bajra. Cereal cookery: Effect of moist heat- Hydrolysis, Gelatinization and factors affecting gelatinization, gel formation, retrogradation and syneresis; Effect of dry heat; Role of cereals in cookery.

Pulses: Composition, nutritive value, toxic constituents; Pulse cookery- Effect of cooking, factors affecting cooking quality, role of pulses in cookery, germination and its advantages.

Unit-III

Milk and milk products: Composition and nutritive value of milk; Milk cookery- Effect of heat, effect of acid and effect of enzymes; Milk products- Non fermented and fermented products (does not include preparation); Role of milk in cookery.

Egg: Structure, composition, nutritive value; Egg cookery- Effect of heat, factors affecting coagulation of egg proteins and effect of other ingredients on egg protein; Role of egg in cookery; Home scale method for detecting egg quality.

Meat: Classification, composition, nutritive value, rigor mortis, ageing and tenderizing; Meat cookery- Changes during cooking.

Poultry: Classification, composition and nutritive value.

Fish: Classification, composition, nutritive value, selection and principles of fish cookery.

Unit-IV

Vegetables: Classification (nutritional), composition, nutritive value; Pigments in vegetables- Water soluble and water insoluble; Enzymes, flavor compounds and bitter compounds; Vegetable cookery- Preliminary preparation, changes during cooking, loss of nutrients during cooking, effect of cooking on pigments, role of vegetables in cookery.

Fruits: Classification, composition, nutritive value, ripening of fruits; Browning- Types and preventive measures.

Spices: General functions, role in cookery; Medicinal value of commonly used spices.

Unit-V

Fats and oils: Composition and nutritive value, basic knowledge about commonly used fats and oils (lard, butter, margarine, cotton seed oil, ground nut oil, coconut oil, soya bean oil, olive oil, rice bran oil, sesame oil, rape seed oil, mustard oil and palm oil); Spoilage of fat- Types and prevention; Effect of heating, role of fats and oils in cookery.

Sugar and related products: Nutritive value, characteristics and uses of various types of sugars; Sugar cookery- Crystallization and factors affecting crystallization; Stages of sugar cookery; Role of sugar in cookery.

Reference

1. Maney S (2008). Foods, Facts and Principles, 3 rd Edition Publishedby Wiley Eastern, New Delhi.
2. Usha Chandrasekhar (2002) Food Science and Application in Indian Cookery, Phoenix Publishing House P. Ltd., NewDelhi.
3. Raina U, Kashyap S, Narula V, Thomas S Suvira, VirS, Chopra S (2010) Basic Food Preparation: A CompleteManual, 4th Edition, Orient Black Swan Ltd, Mumbai.
4. Srilakshmi, B. (2017) Nutrition Science, New Age International (P) Ltd., New Delhi,.
5. Mahtab, S. Bamji, Kamala Krishnasamy, Brahmam G.N.V (2012) Text Book of Human Nutrition, Third Edition, Oxford and IBH Publishing Co. P. Ltd., New Delhi.
6. SunetraRoday (2017). Food Science and Nutrition, Oxford University Press, New Delhi.

SEMESTER II	
Core/Major Practical II	Food Science
PaperCode:	Theory:3hrs/week

Course Learning Outcomes:

1. Demonstrate skills on determination of edible portion, effect of cooking on volume and weight.
2. Choose appropriate cooking method to conserve nutrients.
3. Acquire skills on different methods of cooking.
4. Understand experimental cookery.
5. Develop recipes by applying knowledge on cooking methods and properties of food

Course Content

1. Grouping of foods according to ICMR classification.
2. Measurement of food materials using standard measuring cups, spoons and weighing.
3. Find the percentage of edible portion of foods.
4. Observe the microscopic structure of different starches before and after gelatinization (rice, wheat and corn).
5. Study the effect of temperature, time of heating, concentration, addition of sugar and acid on gelatinization of starch.
6. Prepare recipes using the following processes- Gelatinization, gluten formation and gel formation.
7. Demonstrate the best method of cooking rice.
8. Demonstrate the effect of soaking, hard water, sodium bicarbonate and papaya on cooking quality of pulses.
9. Prepare recipes using whole gram, dhal, pulse flours, sprouted pulses and cereal pulse combination.
10. Demonstrate the factors affecting coagulation of milk protein.
11. Prepare recipes using milk and its products.
12. Demonstrate the formation of ferrous sulphide in boiling egg and its preventive measures.

13. Demonstrate the effect of addition of acid, fat, salt, water and sugar on the texture of omelettes.
14. Prepare recipes where egg acts as – thickening agent, binding agent, emulsifying agent and enriching agent.
15. Demonstrate the effect of acid, alkali and over cooking on vegetables containing different pigments.
16. Demonstrate the effects of different amounts of water added to vegetables during cooking on flavor and appearance.
17. Demonstrate enzymatic browning in vegetables and fruits and any four methods of preventing it.
18. Prepare the following using fruits and vegetables- salads, soups and curries.
19. Determine the smoking point of any 4 cooking oils.
20. Prepare recipes using shallow fat and deep fat frying methods.
21. Demonstrate the stages of sugar cookery
22. Prepare recipes using various stages of sugar cookery and jaggery.
23. Preparation of any one beverage under the following types- refreshing, nourishing, stimulating, soothing and appetizing.

Reference

1. Srilakshmi. B. Food Science, New Age International (P) Ltd. Publishers, Sixth edition. 2016.
2. Khanna K, Gupta S, Seth R, Mahna R, Rekhi T (2004). The Art and Science of Cooking: A Practical Manual, Revised Edition. Elite Publishing House Pvt Ltd.
3. Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S (2010). Basic Food Preparation: A Complete Manual, Fourth Edition. Orient Black Swan Ltd.
4. Bamji MS, Krishnaswamy K, Brahmam GNV (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd.

Title of the Course		INTRODUCTION TO FASHION DESIGNING								
Category	Year I	L	T	P	O	Credits	Inst Hrs	Marks		
	Sem II							CIA	External	Total
SEC	III	Y		Y		2	2	25	75	100

Learning Objectives
To enable the students to:
Understand the basic concepts of fashion design clothing psychology and wardrobe planning.
Acquire knowledge on design elements and colour psychology.

UNIT	CONTENT	HOURS
UNIT I	Introduction of fashion designing Terms related to the fashion industry – fashion, style, fad, classic, and collection, chic, Custom made, mannequin, fashion show, trend, forecasting, high fashion, fashion cycle, haute couture, fashion director, fashion editor, line, knock-off, avant-garde, bridge, buying house, apparel, fashion merchandising, pret- a- porter.	8
UNIT II	Design a) Design- definition and types– structural and decorative design, requirements of a good structural and decorative design. Application of structural and decorative design in dress, selection and application of trimmings and decorations. b) Elements of design– line, shape or form, colour, size and texture. c) Principles of design -balance–formal and informal, rhythm-through repetition, radiation and gradation, emphasis, harmony and proportion. Application of principles of design in dress..	10
	Practical 1. Application of structural and decorative design in a dress. 2. Application of elements of design in apparel. 3. Application of Principles of design in apparel.	8
UNIT III	Colour a) Colour - definition, colour theories-prang colour chart and Munsell colour system, b) Dimensions of colour-hue, value, and intensity. c) Colour harmonies- types and its application in dress design.	7
	Practical 1. Colour theories- prang colour chart and Munsell colour system. 2. Application of colour harmonies in apparel designing.	5

UNIT V	Figure drawing and analysis a) Basic human proportions, Anatomy and model drawing 8,10,12 head theory, Straight, flesh, motion posture. b) Figure analysis and designing dresses for stout figure, thin figure, slender figure, narrow shoulders, broad shoulders, round shoulders, large bust, flat chest, large hip, large abdomen, round face, large face, small face, prominent chin and jaw, prominent forehead.	8
	Practical-Model drawing 8 and 10 head figure	6
UNIT V	Wardrobe planning c) Wardrobe planning for different age groups, factors influencing wardrobe selection, Fashion and season, d) Designing dresses based on different occasions –business meetings, parties/ dinners, evenings/leisure hours, wedding, functions, sports, uniforms for civil service, airhostess, hoteliers, schools–girls and boys.	8
	Total	60

COURSE OUTCOME

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

CO1. Identify the right choice of colour, design used in apparel designing

CO2. Explain the concepts related to the design and colour in apparel designing

CO3. Demonstrate the methodology to be followed in effectively using the principles of design, elements of design and colour harmonies while designing a garment.

CO4. Identify suitable designs according to the figure of the wearer and the occasion intended.

CO5. Develop skills to draw design suitable according to the body type and plan wardrobe.

Reference:

1. Sumathi, G.J. (2002) Elements of Fashion and Apparel Design. New Age International Publishers, New Delhi.
2. Gini Stephens Frings (1999) Fashion – From Concept to Consumer. 6th edition, Prentice Hall.
3. Gerry Cooklin (2003) Pattern grading for women's clothes, the technology of sizing, Blackwell Science Ltd, USA
4. Kaur N (2010) Comdex Fashion Design: Fashion Concepts - Vol. 1, Dream Tech Press, Delhi

e-learningResources:

1. <https://purushu.com/2010/08/elements-of-design-in-fashion.html>
2. <https://vanseodesign.com/web-design/color-meaning/>
3. <http://bieap.gov.in/Pdf/FGMPaperI.pdf>
4. <http://textilelearner.blogspot.com/2015/07/drafting-procedures-of-line-frock.html>
5. <http://textilelearner.blogspot.com/2015/06/drafting-procedures-of-ladies-kurti.html>

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	L	L	M	M	S
CO2	S	S	S	M	M	L	L	M	M	S
CO3	S	S	S	M	M	L	L	M	M	S
CO4	S	S	S	M	M	L	L	M	M	S
CO5	S	S	S	M	M	L	L	M	M	S

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weightedpercentage(roundedof) ofCourseContributiontoPos	3	3	3	3	3

Title of the Course		LANDSCAPE DESIGN AND ORNAMENTAL GARDEN								
Category	Year	L	T	P	O	Credits	Inst t Hr s	Marks		
	Sem							CIA	External	Total
Elective / SEC		Y		Y		2	2	2 5	7 5	100

Learning Objectives

To enable the students to:

Acquire skill in identifying the ornamental flowers, shrubs and trees.

Develop a conceptual understanding of landscape design principles and gardening

components for various built forms.

Create designs in integrating landscape and ornamental gardening with built environment.

UNIT	CONTENTS	HOURS
UNIT I	Landscape Design - Definition, Importance and Principles of Design in Landscaping. Requirements in Landscape Area- Site & Location, Site Evaluation, Soil Properties, Water Systems, Climatic Conditions and Lighting. Public and Private Garden. Importance of Kitchen Garden.	6
	Practicals: Identifying and Selection of ornamental plants.	2
UNIT II	Ornamental Garden - Definition, Components of Garden- Arboretum. Shrubbery, Fernery, Arches and Pergolas, Edges and Hedges. Integral Elements of Garden- Climbers and Creepers, Cacti & Succulents, Herbs, Annuals & Perennials, Flower Borders & Beds. Supplementary Elements of Garden- Ground Covers, Carpet Beds, Bamboo Grooves, Topiary and Garden Adornments.	6
	Practicals: Practices in preparing home garden designs	2
UNIT III	Styles and Types of Landscape Garden - Garden Styles: Formal, Informal and Freestyle, Wild Gardening, Types of Gardens: Persian, Mughal, Japanese, English, Italian, Buddha and Spanish garden.	6
	Practicals: Practices in preparing any one style of garden design.	2
UNIT IV	Special Types of Gardens - Vertical Garden, Roof Garden, Bog Garden, Sunken Garden, Rock Garden, Clock Garden, Bonsai Gardens, Temple Garden & Sacred Groves.	6
	Practicals: Project on landscaping	2
UNIT V	Indoor-Outdoor Plants - Kinds and Classification, Factors Influencing Growth of Plants. Planning and Execution of Landscape Design Based on the Styles and Kinds of Plants.	6
	Practicals: Visit to parks and botanical gardens.	2
	Total	40

COURSE OUTCOME

After successful completion of the course the student will be able

CO1: Classify different kinds of indoor and outdoor plants.

CO2: Apply principles of design to create best suited design in landscaping

CO3: Evaluate the integral and supplementary elements for creating ornamental garden design

CO4: Assess, understand, and evaluate the different styles and kinds of garden.

CO5: Create designs in urban landscape applying various styles

References:

1. A K Tiwari (2012) Fundamentals of Ornamentals Horticulture and Landscape Gardening, NIPA publisher
2. Alka Singh (2015) A colour handbook: Landscape gardening, NIPA publisher
3. Desh Raj (2017) Floriculture at a glance, Kalyani publishers
4. G. S. Randhawa, A.N. Mukhopadhyay, A. Mukhopadhyay (1998) Floriculture in India, Jaideep publishers Delhi.
5. Harikrishnan Paliwal (2013) Ornamental Gardening- A user's Companion, Jain Publishing Company, New Delhi
6. [M Kannan](#) , [P Ranchana](#) , [S Vinodh](#) (2016) Ornamental Gardening and Landscaping, NewIndia publishing agency

e-Learning Resources:

- http://www.megagriculture.gov.in/PUBLIC/floriculture_objectives.aspx
- <http://ncert.nic.in/vocational/pdf/kegr101.pdf>
- http://agritech.tnau.ac.in/horticulture/horti_Landscaping_freshflower.html
- <https://www.basicsofgardening.com/types-of-garden>
- <https://www.designcad.com.au/wp/Docs/Landscape%20Design%20and%20CAD.pdf>

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	M	M	S	M	S	M	M
CO2	S	M	M	L	S	L	S	M	L	S
CO3	S	L	S	S	S	M	S	L	M	M
CO4	S	L	S	S	S	S	S	S	S	S
CO5	S	S	S	M	M	S	S	M	M	S

Mapping with Programme Specific Outcomes

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage (rounded of) of Course Contribution to Pos	3	3	3	3	3