



Thiruvalluvar University

Serkadu, Vellore – 632 115.

[State University Accredited with B+ Grade by NAAC]

Website: www.tvu.edu.in, Tel. 0416-2539 9561

Undergraduate Programme in Home Science- Nutrition, Food Service Management and Dietetics

**Curriculum and Syllabus
(With effect from the Academic Year 2023-24)**

June 2023

Learning Outcome Based Curriculum Framework

Undergraduate Programme in Home Science - Nutrition, Food Service Management and Dietetics

Model Curriculum and Syllabus

JUNE 2023

Model Curriculum and Syllabus for B. Sc Home Science- Nutrition, Food Service Management and Dietetics

(With effect from the Academic Year 2023-24)

I. Preamble

Home Science is a broad area with a focus on inter-disciplinary perspectives. Subjects which fall under the umbrella of Home Science include Foods and Nutrition, Textiles and Clothing, Community Nutrition, Food Service Management and Dietetics, Interior Decoration and Human Development. The branch of *Nutrition, Food Service Management and Dietetics* offers a wide array of courses which can equip graduates to be engaged as dietitian or nutritionists in healthcare industry or fitness centres, as entrepreneurs in food and hospitality sectors or serve as interior decorators. Thus, this programme offers courses which can synergistically promote the quality of lives of the community as a whole. Nutrition professionals are in high demand due to the fast-paced lifestyle, and an increasing incidence of lifestyle related diseases affecting all segments of the population. With an increasing focus on healthier lifestyles, a well- trained nutritional professional can contribute significantly in designing community-based intervention programs for the betterment of the society. For a Home maker, this programme will give an insight into effective management of different resources in daily life. Globalization has created a market for jobs with different skills in the areas of food industries which has been duly considered in this course curriculum. This programme can also lay foundation to evidence based research and qualify the student to pursue higher education in any field of specialization arising from the branch of Home Science.

Nature and Extent of the Programme

Home Science has adopted an ecological approach in its curriculum that engages the student through teaching, research and extension. Nutrition, Food service Management and Dietetics is a programme that enhances the quality of life in a holistic manner. Students develop professional skills in areas relating to food, nutrition, product making, communication technologies and human development. The programme offers courses

such as Physiology, Biochemistry, Nutrition which will help students understand the human system in an effective manner to plan diets for various clinical conditions, and thus provide opportunities for serving in hospitals as dietitian. Courses related to Food service management offers an insight into different food outlets, their organization, and management of human and financial resources. Courses such as Interior decoration, Human development and resource management opens up avenues for entrepreneurial ventures.

The new structure of the curriculum includes 15 Core papers that give solid foundation in the specialization of Nutrition, Food Service Management and Dietetics, which are ably supported by 8 Elective papers that give insight into related subjects of study under the branch Home Science which include Food Preservation, Sports Nutrition, Basics in Research, Human Development, Interior Decoration and resource management, Special focus on enhancing the skills is provided through 8 Skill enhancement courses that ensure acquisition of transferrable skills that increase the employability readiness of the student in multiple avenues that are either closely or distantly related to the centric subject of Home Science. Emphasis on professional competency is offered through course papers in soft skill, ability enhancement and competitive exams preparedness is an additional highlight of the newly framed curriculum. Thus, the programme offers a wide scope for various career options, and also paves the way for specialization in a wide variety of post graduate programmes under the umbrella of Home Science.

Aim of the Programme

The aim of the programme is to provide students in-depth knowledge and skill that can find them suitable placement in a wide variety of fields under the domain of Home Science. It also encourages students to venture into entrepreneurship in areas related to food, nutrition counselling, interior decoration, human development and resource management. Training in professional competency is an added feature that prepares students to face competitive examinations quite comfortably.

PROGRAMME OBJECTIVES

| | |
|---------------------------|---|
| Programme | B.Sc Home Science - Nutrition Food Service Management and Dietetics |
| Code | U27 |
| Duration | 3 years [UG] |
| Programme Outcomes | <p>PO1: Disciplinary Knowledge and Skills Demonstrates theoretical and practical knowledge and understanding of subjects related to Food Science, Nutrition and Food Service Management/ Interior Design and Decoration</p> <p>PO2: Effective Communicator Capable of effective communication of subject specific scientific information through oral and written formats using ICT wherever necessary. Explores communication skill set to engage key stakeholders such as the family, food service institutions and community.</p> <p>PO3: Critical thinking, Analytical reasoning and problem solving Applies disciplinary knowledge, understanding and transferable skills to the given context. Capable of identifying and analysing problems and issues and seek solutions to real-life problems;</p> <p>PO4: Research and Scientific Reasoning Demonstrates skills in research through collection of relevant qualitative and quantitative data, analysis and interpretation of data using appropriate methodologies for formulating evidence based solutions and arguments</p> <p>PO5: Co-operation/ Team Work Capable of contributing significantly and working enthusiastically both independently and in a group</p> <p>PO6: Digital Literacy Demonstrates competency in accessing relevant and authentic information and data from electronic media with a motive to learn and synthesize information for academic and extension work presentation; prepare computer aided designs and use specific software to plan and calculate nutrient content of diets; for academic presentations;</p> <p>PO7: Multicultural competence Recognizes and assesses societal, environmental and cultural issues related to area of study within the local and global context</p> <p>PO8: Moral and Ethical awareness/reasoning: Displays moral responsibility and values; Has a professional approach, is objective, unbiased and truthful in all aspects of work and refrains from unethical practices such as plagiarism, fabrication, falsification, misinterpretation of the data and breaching intellectual property rights</p> <p>PO9: Leadership readiness/qualities Develops leadership skills, takes initiative, mobilizes resources has the capacity to lead community based projects and initiatives successfully</p> <p>PO10: Lifelong learning Capable of staying motivated to be updated consistently with content, concepts, theories, specializations, fields, technologies, books and avenues to meet professional and personal needs at any given instant.</p> |

| | |
|--------------|--|
| | Programme Specific Outcomes: On successful completion of the program the student; |
| PSO 1 | Acquires knowledge and understanding of concepts in core areas such as Foods, Nutrition, Dietetics and Food Service Management and in supporting courses such as Physiology, Microbiology, Biochemistry and Community Nutrition as well as related disciplines such as Interior Decoration, Resource Management and Human Development. |
| PSO2 | Develops ability to articulate subject knowledge effectively both orally or written, to all categories of stake holders/beneficiaries such as patients, clients, professionals and layperson. |
| PSO3 | Is competent in the use of ICT for collecting and disseminating scientific Information |
| PSO4 | Acquires skill to translate knowledge of food and nutrition to select foods, structure meal plans to meet the nutritional requirements of an individual under conditions of normal health and disease |
| PSO5 | Is capable of pursuing higher education, research or engaging in teaching, entrepreneurship or rendering service in government, public or corporate sector. |

THIRUVALLUVAR UNIVERSITY
B.SC. DEGREE COURSE IN HOME SCIENCE – NUTRITION, FOOD
SERVICE MANAGEMENT AND DIETETICS

W.E.F. 2023-2024 and thereafter

CURRICULUM DESIGN FOR UG DEGREE PROGRAMME

Credit Distribution for UG Degree Programme

(B.Sc. Home Science - Nutrition, Food Service Management and Dietetics)

First Year
Semester-I

| Part | List of Courses | Credit | Hours per week (L/T/P) |
|-------------|--|---------------|-------------------------------|
| Part-I | Language | 3 | 6 |
| Part-II | English | 3 | 6 |
| Part-III | Core 1 – Human Physiology | 5 | 5 |
| | Core 2 –Basics in Food Microbiology | 5 | 5 |
| | Elective 1 - Chemistry-I | 3 | 4 |
| Part-IV | Skill Enhancement Course SEC-1 (Non-Major Elective – Women’s Health and Wellness) | 2 | 2 |
| | Foundation Course FC- Foundation Course in Home Science- Nutrition, Food Service Management and Dietetics | 2 | 2 |
| | | 23 | 30 |

Semester-II

| Part | List of Courses | Credit | Hours per week (L/T/P) |
|-------------|--|---------------|-------------------------------|
| Part-I | Language | 3 | 6 |
| Part-II | English | 3 | 6 |
| Part-III | Core 3 – Food Science | 5 | 5 |
| | Core 4 – Basic Cookery Practical | 5 | 5 |
| | Elective 2 – Chemistry-II | 3 | 4 |
| Part-IV | Skill Enhancement Course -SEC-2 (Non-Major Elective – Life skill strategies and techniques) | 2 | 2 |
| | Skill Enhancement Course -SEC-3 (Discipline Specific – Basics in Food Product Development) | 2 | 2 |
| | | 23 | 30 |

**6. CREDIT DISTRIBUTION FOR UG PROGRAMME
(B.Sc. Home Science-Interior Design and Decor)**

| Sem I | Cre Dit | Sem II | Cre dit | Sem III | Cre dit | Sem IV | Cre dit | Sem V | Cre dit | Sem VI | Cre dit |
|--|-----------|---|-----------|---------|---------|--------|---------|-------|---------|--------|------------|
| 1.1. Language | 3 | 2.1. Language | 3 | | | | | | | | |
| 1.2 English | 3 | 2.2 English | 3 | | | | | | | | |
| 1.3 Core Course – CC I: Human Physiology | 5 | 2.3 Core Course – CC III: Food Science | 5 | | | | | | | | |
| 1.4 Core Course – CC II: Basics in Food Microbiology | 5 | 2.4 Core Course – CC IV: Basic Cookery Practical | 5 | | | | | | | | |
| 1.5 Elective I Generic/ Discipline Specific: Chemistry | 3 | 2.5 Elective II Generic/ Discipline Specific: Chemistry | 3 | | | | | | | | |
| 1.6 Skill Enhancement Course SEC-1 (NME): Women’s Health and Wellness | 2 | 2.6 Skill Enhancement Course SEC-2 (NME): Life skill strategies and techniques | 2 | | | | | | | | |
| | | 2.7 Skill Enhancement Course –SEC-3: Basics in Food Product Development | 2 | | | | | | | | |
| 1.8 Skill Enhancement - (Foundation Course in Home Science – Nutrition, Food Service Management and Dietetics) | 2 | | | | | | | | | | |
| | 23 | | 23 | | | | | | | | |
| Total Credit Points | | | | | | | | | | | 140 |

**7. 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 | 11 | 11 | 11 | 11 | 22 | 18 | 84 |
| Part IV | 6 | 6 | 5 | 8 | 2 | 4 | 31 |
| Part V | - | - | - | - | - | 1 | 1 |
| Total | 23 | 23 | 22 | 25 | 24 | 23 | 140 |

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

| Methods of Evaluation Theory and Practical | | |
|---|-------------------------------------|------------------|
| Internal Evaluation | Continuous Internal Assessment Test | 25 Marks |
| | Assignments | |
| | Seminars | |
| | Model examination | |
| | Attendance and Class Participation | |
| External Evaluation | End Semester Examination | 75 Marks |
| | Total | 100 Marks |

| Title of the Course | | HUMAN PHYSIOLOGY | | | | | | | | |
|---------------------|--------|------------------|---|---|---|---------|----------|-------|----------|-------|
| Category | Year I | L | T | P | O | Credits | Inst Hrs | Marks | | |
| | Sem | | | | | | | CIA | External | Total |
| Core CC1 | I | Y | | Y | | 4 | 5 | 25 | 75 | 100 |

Learning Objectives

To enable the students to :

Gain basic understanding of human anatomy and physiology

Discuss fundamental relationship between anatomy and physiology

Use familiarity with the human body and its functioning to make healthful choices with regard to nutrition and take appropriate action when signs of illness arise

| UNIT | CONTENT | HOURS |
|----------|--|-------|
| UNIT I | <p>Cell and tissues - Structure and function of cell and its organelles. Cell Division Classification, structure and functions of tissues.</p> <p>Blood- Constituents of blood- RBC, WBC and Platelets and its functions. Erythropoiesis, Blood clotting, Blood groups and Histocompatibility</p> <p>Immune system- Antigen, Antibody, Cellular and Humoral Immunity (in brief)</p> | 12 |
| UNIT II | <p>Nervous system Structure and functions of brain (cerebrum, brain stem, cerebellum), Spinal cord structure and function; Functions of Autonomic Nerves and Cranial nerves Structure and functions of Eye, Ear, Skin. Physiology of Taste and Smell-(in brief)</p> | 12 |
| UNIT III | <p>Heart and circulation Anatomy of the heart and blood vessels, origin and conduction of heartbeat, cardiac cycle, blood pressure - definition and physical factors affecting blood pressure, and description of normal ECG.</p> <p>Respiratory system Anatomy and physiology of respiratory organs. Mechanism of respiration; Gaseous exchange in the lungs and tissues.</p> | 12 |

| | | |
|----------------|--|-----------|
| UNIT IV | Digestive system Anatomy of Gastro-intestinal tract, Structure and functions of Liver and Pancreas .Digestion and absorption of carbohydrates, proteins and fats. Excretory system Structure of kidney, structure of nephron, physiology of urine Formation | 12 |
| UNIT V | Endocrine system Functions, hypo and hyper secretions of hormones secreted by Pancreas, Pituitary gland, thyroid, parathyroid and adrenal glands. Reproductive system Anatomy of male and female reproductive organs, Menstrual cycle | 12 |
| | PHYSIOLOGY PRACTICALS | 15 |
| | <ol style="list-style-type: none"> 1. Microscopic studies of different tissues epithelial tissue connective tissue, muscular tissue and nervous tissue 2. Microscopic study of blood smear, WBC, RBC estimation 3. Haemoglobin estimation 4. Identification of blood groups 5. Determination of Blood pressure 6. Respiratory rate and pulse rate 7. Study of structure of brain, heart, lung, kidney liver, pancreas, stomach, male and female reproductive organs using models/charts /videos | |
| | TOTAL | 75 |

COURSE OUTCOMES

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

| COs | Description |
|------------|--|
| CO1 | Recall the structure and functions of the cell, its organelles and the various tissues |
| CO2 | Describe the structure and functions of the various organs and systems in the body |
| CO3 | Identify the microscopic structure of basic tissues, label the parts of primary physiological systems in the body such as nervous, respiratory, digestive, endocrine and reproductive systems. |
| CO4 | Evaluate the role of the nervous and endocrine system in regulating the activities of other systems. |
| CO5 | Perform haematological study of blood such as blood smear, blood count and blood grouping, record pulse, blood pressure and interpret a normal ECG. |

REFERENCES

1. Beck, W.S. (1971) Human Design. Harcourt Brace Jovanovich Inc., New York.
2. Best, C. H. and Taylor, N. B. (1980) Living Body. 4th ed. BIP, Bombay.
3. Creager, J. G. (1992) Human Anatomy and Physiology. 2nd ed. WMC Brown Publishers, England.
4. Guyton, A.C. (1979) Physiology of the Human Body. 5th ed. Saunders College of

Publishing, Philadelphia.

5. Subramaniam, S. and Madhavan Kutty, K. (1971) The Text Book of Physiology. Orient Longman Ltd., Madras.
6. Tortora G. J. Anagnostakos N.P. (1984) Principles of Anatomy and Physiology, 4th edition, Harper and Row Publishers, New York.
7. Waugh A and Grant A. (2012) Ross and Wilson Anatomy and Physiology in Health and Illness. 11th ed. Churchill and Livingstone, Elsevier
8. Wilson, K. J. W. (1987) Anatomy and Physiology in Health and Illness. 6th ed. ELBS, Churchill Livingstone, London.

E - LEARNING RESOURCES



- <https://youtu.be/uFf0zxQ3rBU>
- <http://epgp.inflibnet.ac.in/Home/Download>

Mapping with Programme Outcomes

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

Mapping with Programme Specific Outcomes

| CO/PSO | PSO1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 |
|---|------|-------|-------|-------|-------|
| CO1 | 3 | 3 | 3 | 1 | 3 |
| CO2 | 3 | 3 | 3 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 1 | 3 |
| CO4 | 3 | 3 | 3 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 3 |
| Weightage | 15 | 15 | 15 | 5 | 15 |
| Weighted percentage (rounded of) of Course Contribution to POs | 3 | 3 | 3 | 1 | 3 |

| Title of the Course | | BASICS OF FOOD MICROBIOLOGY | | | | | | | | |
|---------------------|--------|-----------------------------|---|---|---|---------|----------|-------|----------|-------|
| Category | Year I | L | T | P | O | Credits | Inst Hrs | Marks | | |
| | Sem | | | | | | | CIA | External | Total |
| Core CC2 | I | Y | | Y | | 4 | 5 | 25 | 75 | 100 |

| Learning Objectives |
|--|
| To enable the students to : |
| Understand the interaction between micro-organisms and food |
| Discuss the factors that favor or inhibit the growth of microbes |
| Understand the role of microbes in fermentation, spoilage and food borne diseases. |

| UNIT | CONTENT | HOURS |
|----------|--|-------|
| UNIT I | <p>Introduction to Food Microbiology History and Development of Food Microbiology. Definition and Scope of food microbiology. Inter-relationship of microbiology with other sciences.</p> <p>Characteristics of Microorganisms in Food Types of microorganisms(Bacteria, Molds and yeasts) associated with food, their morphology and structure Significance of spores in food Microbiology</p> | 12 |
| UNIT II | <p>Microbial Growth in Food Bacterial growth curve and microbial growth in food • Factors affecting the growth of micro organisms in food. Methods for the destruction of bacteria- application of dry heat, moist heat, filtration, radiation</p> <p>Cultivation of Micro-organisms Pure culture technique .Methods of isolation and cultivation. Enumeration of Microorganisms- qualitative and quantitative</p> | 12 |
| UNIT III | <p>Microbial Food Spoilage Sources of Microorganisms in foods .Some important food spoilage microorganisms. Spoilage of specific food groups- Milk and dairy products, Meat, poultry and seafoods, Cereal and cereal products, Fruits and vegetables and Canned products</p> | 12 |

| | | |
|----------------|---|-----------|
| UNIT IV | Food Fermentations Fermentation –definition and types • Microorganisms used in food fermentations • Dairy Fermentations-starter cultures and their types , concept of probiotics, Fermented Foods-types, methods of manufacture of vinegar, sauerkraut, tempeh, miso , soya sauce ,beer,wine and traditional Indian foods | 12 |
| UNIT V | Foodborne Illnesses Types – foodborne infections(Salmonellosis, Shigellosis, Vibrio para haemolyticus gastroenteritis, Entero pathogenic Escherichia coli diarrhea, Hepatitis A) Foodborne bacterial intoxications(Staphylococcal, Bacillus cereus, Botulism) and toxin infection(Clostridium perfringens gastroenteritis, Enterotoxigenic E. coli gastroenteritis, Cholera, Listeriosis). Trends in Food Microbiology Rapid methods for detection of microorganisms in food- Nucleic acid-based, biosensor-based, and immunological-based approaches | 12 |
| | BASICS OF FOOD MICROBIOLOGY PRACTICALS | 15 |
| | <ol style="list-style-type: none"> 1. Laboratory safety rules and precautions 2. Familiarization with Instruments used in Microbiological Lab - Microscope, Autoclave, Laminar Flow Bench, Hot air Oven, Incubator, BOD incubator, Centrifuge, pH meter, Bacterial colony counter, anaerobic jar 3. Preparation of culture media 4. Sterilization methods-Use of autoclave, hot air oven, UV lamp, laminar air flow and Millipore filter 5. Isolation of pure culture-Streaking, plating and serial dilution method 6. Isolation of bacteria and fungi 7. Enumeration of bacteria-Standard plate count 8. Gram staining technique 9. To study bacterial motility by hanging drop method. 10. Wine /yoghurt/sauerkraut Preparation | |
| | TOTAL | 75 |

COURSE OUTCOMES

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

| COs | Description |
|------------|---|
| CO1 | Understand the interaction between micro-organisms and food |
| CO2 | Obtain a basic understanding of the microbial phenomena occurring in food products and factors affecting the growth of microbes |
| CO3 | Recognize the microbes causing food spoilage and food borne illnesses. |
| CO4 | Explain sources of contamination, principles of preservation and types of spoilage of different foods. |
| CO5 | Evaluate the role of microorganisms in food safety |

REFERENCES

1. Adams, M.R. and M.O. Moss.” Food Microbiology”. New Age International, 2002
2. Bamforph,C.W. 2005. Food, Fermentation and Microorganisms. Blackwell Pubs
3. Banwart, G.J. “Basic Food Microbiology” 2nd Edition. CBS Publishers, 1998.
4. Frazier William C and Westhoff, Dennis C. Food Microbiology, TMH, New Delhi, 2004
5. Harrigan,W.P. 1988. Laboratory Methods in Food Microorganism. 3rd. Ed. Academic Press. San Diego.
6. Jay, J.M. “Modern Food Microbiology”. 4th Edition. CBS Publishers, 2003.
7. Khetarpaul, Neelam. “Food Microbiology” Daya Publishing House, 2006.
8. Vijaya Ramesh. “ Food Microbiology”. MJP Publishers, Chennai, 2007

E- LEARNING RESOURCES

- <http://ecoursesonline.iasri.res.in/course/view.php?id=107>
- <http://epgp.inflibnet.ac.in/Home/Download>

Mapping with Programme Outcomes

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

Mapping with Programme Specific Outcomes

| CO/PSO | PSO1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 |
|---|------|-------|-------|-------|-------|
| CO1 | 3 | 3 | 3 | 1 | 3 |
| CO2 | 3 | 3 | 3 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 1 | 3 |
| CO4 | 3 | 3 | 3 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 3 |
| Weightage | 15 | 15 | 15 | 5 | 15 |
| Weighted percentage (rounded of) of Course Contribution to POs | 3 | 3 | 3 | 1 | 3 |

| Title of the Course | | WOMEN'S HEALTH AND WELLNESS | | | | | | | | |
|---------------------------------|--------|-----------------------------|---|---|---|---------|----------|-------|----------|-------|
| Category | Year I | L | T | P | O | Credits | Inst Hrs | Marks | | |
| | Sem | | | | | | | CIA | External | Total |
| Skill Enhance ment Course SEC 1 | I | Y | | Y | | 2 | 2 | 25 | 75 | 100 |

| Learning Objectives |
|--|
| To enable the students to: |
| Understand the diverse factors that has a bearing on women's health. |
| Highlight the factors that contribute to a healthy lifestyle among women across the globe. |

| UNIT | CONTENT | HOURS |
|----------|---|-------|
| UNIT I | <p>Nutrition for Women - Dietary Guidelines for a healthy lifestyle, Current concepts pertaining to balanced diets, Nutrient requirements for adolescents, pregnant, nursing mother and older women with special focus on Protein, Iron, Vitamin D, Vitamin C, Folic acid and Calcium, Factors affecting nutrient intake in women- Socioeconomic, Environmental conditions, Health conditions; Consequences of Eating disorders in young women.</p> <p>Practical: Preparation of simple healthy recipes, Planning Meals based on Balanced diets</p> | 6 |
| UNIT II | <p>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. Yoga and Fitness practices- benefits for a holistic life.</p> <p>Practical: A practical exposure to administering First Aid as a safety measure in maintaining physical health.</p> | 6 |
| UNIT III | <p>Reproductive Health</p> <p>Menstrual Health- safe and hygienic practices to be followed, Pre- and Post-Menopausal concerns- preventive measures, sexually transmitted diseases- an overview</p> <p>Practical :Preparing any one of the visual aid like pamphlet, slides, diagrammatic representation or chart on any one of the above topics to create health awareness among women</p> | 6 |
| UNIT IV | <p>Mental - Common mental health problems - Depression, Anxiety and coping with Stress, Strategies to improve mental health- learning new skills and hobbies.</p> <p>Practical: Practice stress management/mental health promotion</p> | 6 |

| | | |
|---------------|---|-----------|
| | techniques. Attempt effective use of social media in communicating health and wellness message. | |
| UNIT V | Social Health Balancing home and career, strengthening relationships, enhancing communication skills, and leadership skills. Practical: Practice self-improvement techniques to enhance one's personality health and wellness | 6 |
| | Suggested Activity Workshop on flexibility and strength training exercises, fitness, relaxation techniques of yoga and meditation. | |
| | TOTAL | 30 |

COURSE OUTCOMES

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

| CO's | Description |
|------|---|
| 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, Californi
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 lifeevents 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.nlm.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 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | S | S | M | L | M | M | M | L | L | S |
| CO2 | S | S | S | M | M | M | S | M | M | S |
| CO3 | S | S | M | S | M | S | S | S | M | S |
| CO4 | S | S | S | S | S | S | S | S | S | S |
| CO5 | S | S | M | M | S | S | S | M | S | S |

Mapping with Programme Specific Outcomes

| CO/PSO | PSO1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 |
|---|------|-------|-------|-------|-------|
| CO1 | 3 | 3 | 2 | 3 | 1 |
| CO2 | 3 | 3 | 2 | 3 | 3 |
| CO3 | 3 | 3 | 3 | 3 | 3 |
| CO4 | 3 | 3 | 3 | 3 | 3 |
| CO5 | 3 | 3 | 3 | 3 | 3 |
| Weightage | 15 | 15 | 13 | 15 | 13 |
| Weighted percentage (rounded of) of Course Contribution to POs | 3 | 3 | 3 | 3 | 3 |

| Title of the Course | | Foundations of Homescience-Nutrition, Food Service Management and Dietetics | | | | | | | | |
|---------------------|-----------|---|---|---|---|---------|-----------|-------|----------|-------|
| Category | Year I | L | T | P | O | Credits | Inst Hrs. | Marks | | |
| | Sem I | | | | | | | CIA | External | Total |
| Foundation | Course FC | Y | | | | 2 | 2 | 25 | 75 | 100 |

Learning Objectives

To enable the students to:

Understand the basics in Nutrition, Food Service Management &

Dietetics Gain awareness on the career opportunities in Homescience

| UNIT | CONTENT | HOURS |
|----------|---|-------|
| UNIT I | Introduction to Food Science – Definition, Food groups and their nutritional composition. Functions of food- physiological, psychological and social. Relationship between food, nutrition and health. | 4 |
| UNIT II | Introduction to Nutrition and Dietetics a. Definition of Nutrition, Nutrients. Basic function of Carbohydrates, Lipids, Proteins, Fat soluble vitamins, Water Soluble vitamins and Minerals. Deficiency/excess of nutrients - Definition. Significance of Nutrition through different stages of life. b. Definition of balanced diet, Importance of menu planning. Difference between normal and therapeutic diets c. Role of diet and lifestyle changes in health promotion and disease prevention | 7 |
| UNIT III | Introduction to Food Service Management - a. Definition of Food Service and Food Service Management; types of food service establishments- commercial and non-commercial b. Food service- Types(in brief) c. Introduction to concepts of management, functions of manager in managing resources like manpower, materials, money, time, machinery and methods | 6 |
| UNIT IV | Introduction to electives under Home Science Definition, broad outline and scope of a. Human Development b. Interior Decoration c. Sports Nutrition. d. Principles of Resource Management | 7 |

| | | |
|---------------|--|-----------|
| UNIT V | Career Opportunities in Home Science- Nutrition, Food Service Management and Dietetics a. Seeding importance of higher studies and its role in enhancing job opportunities b. Exposure to Job opportunities-Role and Responsibilities of Nutritionist and Dietitian, Research scientist, Fitness coach, Certified Nutrition specialist, Health coach, Health educator and Community Nutritionist, CDPO, Food Safety Officer, Registered Dietitian, Rehabilitation Counsellor, Lactation Consultant and Sports Nutritionist, Manager of Food/Hospitality Services, Interior Designer, Colour Consultant, , Special Educators, Montessori trainers, c. Startup with their own basic-business knowledge | 7 |
| | TOTAL | 30 |

COURSE OUTCOME

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

| COs | Description |
|-----|---|
| CO1 | Describe basic concepts in Food Science, Nutrition, Dietetics and Food Service Management |
| CO3 | Identify the relationship between food, nutrition, diet and health |
| CO2 | Explain the concept of Food Services and Food Service Management |
| CO4 | Analyze the importance of the study of Food Service Management, Human Development, Interior Decoration and Textiles |
| CO5 | Summarize the career opportunities available in Home Science, Nutrition, Dietetics and Food Service Management |

REFERENCES

1. Anastasia Snelling (2014), Introduction to Health Promotion, Wiley Publications
2. Premlata Mullick (2012), Textbook of Homescience, Kalyani Publishers.
3. Emie Cohen (2021), How Food Heals: A Look into Food as Medicine for Our Physical and Mental Health, New Degree Press
4. Gurie Hughes(2021), Food and Mental Health: A Guide for Health Professionals, Routledge Publishers
5. Kaveri Chakrabarthy and A.S.Chakrabarthy,(2021), Textbook of Nutrition in Health and Disease , Springer Publications
6. Sunetra Roday (2018) Food Science and Nutrition, Oxford University Press

E-LEARNING RESOURCES

- https://www.researchgate.net/publication/322886774_Changing_perspective_of_Home_Science_Education_in_India
- <https://epgp.inflibnet.ac.in/>
- <https://www.nature.com/subjects/nutrition>

Mapping with Programme Outcomes

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

Mapping with Programme Specific Outcomes

| CO/PSO | PSO1 | 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 | 2 | 3 |
| CO5 | 3 | 3 | 3 | 3 | 3 |
| Weightage | 15 | 15 | 15 | 14 | 15 |
| Weighted percentage (rounded of) of Course Contribution to POs | 3 | 3 | 3 | 3 | 3 |

| Title of the Course | | FOOD SCIENCE | | | | | | | | |
|---------------------|--------|--------------|---|---|---|---------|----------|-------|----------|-------|
| Category | Year I | L | T | P | O | Credits | Inst Hrs | Marks | | |
| | Sem | | | | | | | CIA | External | Total |
| Core CC3 | II | Y | | | | 4 | 5 | 25 | 75 | 100 |

| Learning Objectives |
|--|
| To enable the students to: |
| Understand the classification of foods according to their functions. |
| Gain knowledge on the composition and nutritive value of foods. |
| Know the basic methods of cooking and its influence on food. |

| UNIT | CONTENT | HOURS |
|----------|---|-------|
| UNIT I | <p>Introduction to Food and Cooking Methods Definition - Food, food science, nutrients, balanced diet; Need for grouping foods - Basic IV and V food groups, food pyramid and my plate. Functional classification of foods- Energy yielding, body building, protective and regulatory foods.</p> <p>Cooking - Objectives, cooking methods- Moist and Dry heat methods of cooking, merits and demerits. Microwave cooking, ohmic cooking, induction cooking and solar cooking</p> | 12 |
| UNIT II | <p>Cereals, Millets, Pulses, Legumes and Nuts: Cereal and Millets – Structure, composition and nutritive value of rice, wheat and millets. Milling of wheat and rice, parboiling of rice. Effect of cooking on the nutritive value of cereals. Dextrinization, gelatinization, retrogradation and gluten formation.</p> <p>Pulses and legumes - Types, nutritive value, methods of cooking, factors affecting cooking quality of pulses, effect of germination on the nutritive value of pulses, cereal and pulse combination and its significance. Toxic constituents of pulses and methods of inactivation. Textured Vegetable Protein.</p> <p>Nuts - Types, composition, role of nuts in cookery</p> <p>Oilseeds - Types, methods of processing, uses and shelf life</p> | 15 |
| UNIT III | <p>Vegetables, Fruits and Milk : Vegetables - Classification, nutritive value, types of pigments, selection of vegetables, effect of cooking on colour, texture, flavour, appearance and nutritive value.</p> <p>Fruits - Classification, nutritive value, changes that occur during ripening, enzymatic browning and its prevention.</p> <p>Milk - Composition and nutritive value, types of milk, pasteurization homogenization and coagulation of milk , Effect of cooking and processing on milk. Non- fermented milk products – Skimmed milk and milk powder; fermented milk products – cheese and curd.</p> | 15 |

| | | |
|----------------|---|-----------|
| UNIT IV | <p>Flesh foods and Egg Meats – structure, nutritive value, cuts of meat, selection of meat, postmortem changes in meat, ageing, factors affecting tenderness of meat, changes during cooking. Poultry-types, nutritive value, selection, changes during cooking. Fish - classification, nutritive value, selection, changes during cooking. Eggs- Structure, nutritive value, selection, uses in cookery; foam formation and factors affecting foam formation, changes during cooking.</p> | 18 |
| UNIT V | <p>Fats and Oils - Types - difference between cold pressed and regular cooking oils, hydrogenated fat, emulsification, rancidity, smoking point. Factors affecting absorption of oils while frying foods, harmful effects of reheated oils. -uses of fat in cookery - factors affecting absorption of fats - smoking point - Rancidity. Sugar - Types of sugars, stages of sugar cookery, crystallization, factors affecting crystallization. Spices and Condiments – Classification, uses in Indian cookery Beverages -Classification-fruit based beverages; milk-based beverages nutritive value and uses, alcoholic beverages, coffee, tea and cocoa, malted beverages.</p> | 15 |
| TOTAL | | 75 |

COURSE OUTCOMES

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

| COs | Description |
|------------|--|
| CO1 | Identify and classify foods based on the food grouping system and illustrate their use. |
| CO2 | Define the foods, describe its structure and distinguish their composition. |
| CO3 | Demonstrate ability to appraise nutritive value of different food groups and select good quality foods. |
| CO4 | Compare the nutrients present in different types of food and choose foods rich in specific nutrients. |
| CO5 | Analyse the effect of cooking on the quality of food and discriminate the desirable and undesirable changes. |

REFERENCES:

1. Brow, A., (2000), Understanding Food, Thomson Learning Publications,
2. Chandrasekhar, U., (2002), Food Science and Application in Indian Cookery, Phoenix Publishing House P. Ltd., New Delhi.
3. Mehas, K.Y. and Rodgers, S.L. (2000), Food Science and You, Mc Millan Mc Graw Company, New York.
4. Parker, R. (2000), Introduction to food Science, Delmer, Thomson Learning Co., Delma.

5. Peckham, G.C. and Freeland-Graves, J.H. (1979), Foundations of Food Preparation, 4th edition, Macmillan Publishing Co. Inc., New York.
6. Potter, N., and Hotchkiss, J.H., (1995), Food Science, 5th edition, Chapman & Hall, New York.
7. Shakuntala, M. and Shadaksharaswamy. M., (2000), 2nd Edition, Foods, Facts and Principles, New Age International Pvt. Ltd., Publishers, New Delhi.
8. Shewfelt R.L. (2015), Introducing Food Science, CRC Press, Taylor and Francis Group. Boca Raton.
9. Srilakshmi, B., (2010), Food Science, 6th edition New Age International (P) Limited, New Delhi.
10. Sunetra, R., (2007), Food Science and Nutrition, Oxford University Press, India.
11. Thangam E.Philip, (2010), Modern Cookery for Teaching and the Trade Volume - 1&2 (6th Revised Edition), Orient Black, Telangana.
12. Vaclavik, V.A. and Elizabeth, W.C. (2013), Essentials of Food Science 2nd ed. , Springer Publication, New Delhi.

E – LEARNING RESOURCES

- <https://www.pdfdrive.com/food-science-books.html>
- <https://archive.org/details/textbookoffoodsc0000khad>
- <https://himitepa.lk.ipb.ac.id/e-book/>
- https://lib.rudn.ru/file/Food_Science_Nutrition_Catalogue_ebook.pdf
- <https://www.vet-ebooks.com/food-science-and-technology/>

Mapping with Programme Outcomes

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | S | S | S | S | M | M | L | S | M | S |
| CO2 | S | S | S | S | M | M | L | S | M | S |
| CO3 | S | S | S | S | M | M | L | S | M | S |
| CO4 | S | S | S | S | M | M | L | S | M | S |
| CO5 | S | S | S | S | M | M | L | S | M | S |

Mapping with Programme Specific Outcomes

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|--|------|------|------|------|------|
| CO1 | 3 | 3 | 2 | 2 | 3 |
| CO2 | 3 | 3 | 2 | 2 | 3 |
| CO3 | 3 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 3 |
| CO5 | 3 | 3 | 2 | 2 | 3 |
| Weightage | 15 | 15 | 10 | 10 | 15 |
| Weighted percentage (rounded off) of Course Contribution to POs | 3 | 3 | 2 | 2 | 3 |

| Title of the Course | | BASIC COOKERY PRACTICAL | | | | | | | | |
|---------------------|--------|-------------------------|---|---|---|---------|-----------|-------|----------|-------|
| Category | Year I | L | T | P | O | Credits | Inst Hrs. | Marks | | |
| | Sem II | | | | | | | CIA | External | Total |
| Core CC4 | | | | Y | | 4 | 5 | 25 | 75 | 100 |

Learning Objectives

To enable the students to:

Understand the scientific principles underlying the preparation of food

Apply the principles of cookery in cooking foods to preserve its nutrient content and minimize cooking time.

Acquire skills in preparation of foods with good palatability and preservation of nutritive value

| UNIT | CONTENT | HOURS |
|---------|--|-------|
| UNIT I | <p>Introduction to Basic Cooking Skills Introduction to different cooking methods, cooking terminology; equipment and techniques used for pre-preparation and for different cooking methods.</p> <p>Methods of measuring and weighing liquids and dry ingredients. The use and care of simple kitchen equipment.</p> <p>Introduction to food safety, sanitation and hygiene in the kitchen, Safe practices in handling knives, sharp instruments, fuels and materials at high temperature.</p> | 10 |
| UNIT II | <p>Cereals, Millets and pulses Cereals and Millets: Methods of combining fine and coarse cereal with Liquid (eg. Ragi porridge, rava upma) Method of cooking cereals and factors influencing texture and nutritive value- cooking rice by boiling and straining, absorption method, steaming, pressure cooking, microwave cooking; Gelatinization and dextrinization Preparation of recipes using rice-puttu, dosai, idli/idiappam, lemon rice, curd rice, coconut rice, fried rice, tamarind rice, tomato rice, mint pulao- a few Wheat and Millet preparations - Kesari, Phulka, poori, paratha, naan, ragi adai, samai curd rice, thinai uppuma, -a few Pulses: Factors influencing texture, digestibility and nutritive value of whole gram/legumes and pulses -soaking, addition of sodium bicarbonate, addition of salt, water quality- hard and soft water, pressure cooking, boiling and straining. Pulse preparations- Sundal, sambhar, sprouted green gram patchadi, Vadai, pongal, ompodi, green gram payasam, masala vadai, medhu vadai-a few</p> | 15 |

| | | |
|------------------------|---|------------------|
| <p>UNIT III</p> | <p>Vegetables and Fruits Vegetables: Basic cuts of vegetables-Slice and mince (onions) Shred (cabbage, spinach),dice (carrot), chop (tomato), grating (beetroot), and their uses in dishes. Changes in colour , texture and nutritive value of vegetables due to different methods of cooking, cooking medium and addition of acid/alkali. Vegetable preparations – Poriyal, Aloo methi curry, vegetable cutlet, thoran, vegetable kurma, avial, keerai maseal, vegetable salad, vegetable soup, vegetable sandwich, kootu, mint chutney and carrot halwa-a few Fruits: Enzymatic browning in fruits and methods to prevent it. Fruit preparations- stewed apple, banana fritters, fruit salad, fruit punch, fruit yoghurt and fruit smoothie, preserve/jam - a few</p> | <p>20</p> |
| <p>UNIT IV</p> | <p>Eggs, milk and milk products ,meat and fish: Egg Cookery: Boiling of eggs-hard and soft boiled eggs. Best method of boiling eggs. Prevention of Ferrous sulphide formation on the yolk. Poaching and frying. Coagulation of egg protein-stirred and baked custard Egg preparations - egg curry, omelet, French toast, caramel custard (steamed), scrambled eggs and fried eggs- a few Factors affecting whipping quality of egg white – effect of salt, sugar, vinegar, fat and milk, type of container used and beaters, Stages of foam formation in whipped egg whites and their uses in cookery. Milk and milk products Curdling of milk using lime juice, butter milk, tomato juice. Milk preparations Cream of tomato soup, paneer masala, payasam, patchadi, thayir vadai, morkulumbu, basundhi, lassi, spiced buttermilk and baked macaroni and cheese-a few. Meat and Fish Methods of tenderizing meat-Pounding, mincing addition of acids like curd/lime juice in marinade, addition of proteolytic enzymes-raw papaya Effect of different methods of cooking on flavour, texture and appearance of meat and fish. Meat preparations - mutton ball curry, mutton vindaloo, mutton keema, liver fry, chicken spring roll, chicken sweet corn soup, chicken biriyani. Sea food preparations- fish fry, fish moilee, fish cutlet, sweet and sour prawns- a few</p> | <p>15</p> |
| <p>UNIT V</p> | <p>Sugar cookery, Fats and oils and Beverages Sugar Cookery - Stages of sugar cookery and uses. Preparations of sweets using different stages of sugar cookery Fats and oils - Effect of temperature of oil on texture and palatability of foods- Frying pooris at different temperatures</p> | |

Mapping with Programme Specific Outcomes

| CO/PSO | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|-------------|-------------|-------------|-------------|-------------|
| CO1 | 3 | 2 | 1 | 3 | 3 |
| CO2 | 3 | 2 | 1 | 3 | 3 |
| CO3 | 3 | 2 | 3 | 3 | 3 |
| CO4 | 3 | 3 | 1 | 3 | 3 |
| CO5 | 3 | 3 | 3 | 3 | 3 |
| Weightage | 15 | 12 | 9 | 15 | 15 |
| Weighted percentage (rounded of) of Course Contribution to POs | 3 | 2 | 1 | 3 | 3 |

| Title of the Course | | LIFE SKILL STRATEGIES AND TECHNIQUES | | | | | | | | |
|---------------------|------|--------------------------------------|---|---|---|---------|----------|-------|----------|-------|
| Category | Year | L | T | P | O | Credits | Inst Hrs | Marks | | |
| | Sem | | | | | | | CIA | External | Total |
| Elective / SEC | | Y | | Y | | 3 | 4 | 25 | 75 | 100 |

Learning Objectives

To enable the students to:

Develop skills for a healthy personal and professional approach to life.

Gain competency and confidence through mastery of skills needed for holist living

| UNIT | CONTENT | HOURS |
|-----------------|--|-----------|
| UNIT I | Communication Skills Developing Listening, Speaking and Reading Skills, An introduction to Scientific Writing, Letter Writing, Usage of Non-verbal Communication. Writing for Grants- a brief Proposal, Statement of Purpose (SoP). Effective use of social media in communicating messages. | 10 |
| UNIT II | Professional Skills Resume Writing. Interview Skills. Group Discussions, Presentation Skills. Work-Life Balance- Strategies to achieve them, Time Management. | 10 |
| UNIT III | Leadership/ Management Skills Leadership skills, Managerial skills, Team building, Entrepreneurial skills, Ethics and Integrity. | 10 |
| UNIT IV | Basic Lifestyle-related Skills Healthy eating using simple cooking practices, Home makeover skills, Basics in Gardening, Stress Management- Yoga and Fitness practices- benefits for a Holistic Life, An introduction to Martial Arts as a protective strategy. | 10 |
| UNIT V | Human Value Skills Strategies and techniques to promote Non-Violence, Service to the community, developing skills pertaining to administering First Aid. | 10 |
| | Practical 1. Workshops on Leadership/ Writing Skills, Yoga and Martial Arts. 2. Developing Listening and Speaking Skills. 3. Practical Demonstration on healthy recipes. 4. A practical exposure to administering First Aid. | 10 |
| | TOTAL | 60 |

COURSE OUTCOME

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

- CO1.** Describe different skills and techniques needed to maintain a healthy personal and professional approach to life.
- CO2.** Identify skills needed for a healthy lifestyle.
- CO3.** Explain the need to develop various skillsets for a holistic life.
- CO4.** Develop confidence with respect to emotional competency, personal and professional life.
- CO5.** Recommend life skill strategies for the holistic development of the individual.

Reference:

1. Ashokan, M. S. (2015). Karmayogi: A biography of E. Sreedharan. Penguin,UK.
2. Hanson C.W. (2021). Resume Writing 2021: The ultimate guide to writing a resume that lands you the job. Independently Published, Kindle.
3. Jane E., Burt S., and Nudelman G. (2018). Professional Communication: Deliver effective written, spoken and visual messages. 4th ed. Juta and Company Pvt. Ltd., Cape Town, South Africa.
4. Kelly T., and Kelly D. (2014). Creative Confidence: Unleashing the Creative Potential Within Us All. William Collins
5. Kumar S., and Lata P. (2015). Communication Skills. 2nd ed. Oxford University Press, India.
6. Kurien V., and Salve G. (2012). I Too Had a Dream. Roli Books Private Limited
7. O'Toole J. (2019) The Enlightened Capitalists: Cautionary Tales of Business Pioneers Who Tried to Do Well by Doing Good. Harpercollins.
8. Sullivan D. R. E. (2022). Effective Leadership Skills for Teachers of Young Children. 3rd ed. Redleaf Press.

e-Learning Resources:

1. Fries, K. (2019). 8 Essential Qualities That Define Great Leadership. Forbes. Retrieved 2019- 02-15
from <https://www.forbes.com/sites/kimberlyfries/2018/02/08/8-essential-qualities-that-define-great-leadership/#452ecc963b63>
2. How to Build Your Creative Confidence, Ted Talk by David Kelly
- https://www.ted.com/talks/david_kelley_how_to_build_your_creative_confidence
3. India's Hidden Hot Beds of Invention Ted Talk by Anil Gupta
- https://www.ted.com/talks/anil_gupta_india_s_hidden_hotbeds_of_invention
- 4 Knowledge @ Wharton Interviews Former Indian President APJ Abdul Kalam - . "A Leader Should Know How to Manage Failure" <https://www.youtube.com/watch?v=laGZaS4sdeU>

- 5 Martin, R. (2007). How Successful Leaders Think. Harvard Business Review, 85(6): 60.
- 6 NPTEL Course on Leadership - <https://nptel.ac.in/courses/122105021/9>

Mapping with Programme Outcomes

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

Mapping with Programme Specific Outcomes

| CO/PSO | PSO1 | 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 |

| Title of the Course | | BASICS IN FOOD PRODUCT DEVELOPMENT | | | | | | | | |
|-------------------------------|--------|------------------------------------|---|---|---|---------|----------|-------|----------|-------|
| Category | Year I | L | T | P | O | Credits | Inst Hrs | Marks | | |
| | Sem | | | | | | | CIA | External | Total |
| Skill Enhancement Course SEC3 | II | Y | | | | 2 | 2 | 25 | 75 | 100 |

| Learning Objectives |
|---|
| To enable the students to : |
| Determine customers' needs and desires that can lead to new product development |
| Discuss the preparation of new products based on utility, convenience, and unique dietary requirements. |
| Recognize the novelty in traditional Indian foods |

| UNIT | CONTENT | HOURS |
|-----------------|--|-----------|
| UNIT I | Introduction to the development of food products Concepts, definitions & characteristics. Factors to consider for food product development (external and internal factors). | 3 |
| UNIT II | Phases of food product development Development of product prototype- market research, concept testing approaches, product formulation and specification, product optimization, process development & optimization, product attributes, scale up requirements; Product prototype testing - consumer testing, packaging testing, shelf life testing, product integrity and conformance to standards; Marketing plans - price structure, place & distribution system, promotional program, market positioning, test marketing, results evaluation | 10 |
| UNIT III | Concepts in sensory evaluation of foods Sensory attributes of foods: Chemical senses (olfactory and gustatory); physical, kinesthetic and tactile senses (appearance, color, texture, & overall taste). | 5 |
| UNIT IV | Sensory evaluation methods Definition, advantages, and disadvantages. Subjective tests: Analytical tests (sensitivity tests, difference tests, ranking tests), descriptive tests, and consumer/ preference tests. | 5 |
| UNIT V | Objective and instrumental evaluation methods Objective methods for appearance, size, shape, volume, specific gravity, refractive index, moisture, fat, and others. Instrumental methods for evaluation of color, viscosity, texture & aroma | 7 |
| | TOTAL | 30 |

COURSE OUTCOMES

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

| COs | Description |
|-----|--|
| CO1 | Identify, categorize, and analyze major trends in product development . |
| CO2 | Identify the processes & stages for new product development from conception to commercialization. |
| CO3 | Understand the role of sensory and objective evaluation in product development, quality control, and research in the food and other consumer industries. |
| CO4 | Explain the adequate theoretical background and practical understanding of sensory evaluation of food. |
| CO5 | Develop a new food product from concept to prototype or pilot-scale production with the inclusion of a critical analysis of the quality, safety, shelf-life, packaging, labeling, and cost of the product. |

REFERENCES

1. Awasthi D, Jaggi R and Padmanand V. A Manual for Entrepreneurs: Food Processing Industry. Tata McGraw-Hill Publishing Limited. 2006.
2. Bedekar SJ. Marketing Concepts and Strategies, Oxford University Press. 1991.
3. Connie M. Weaver and James R. Daniel. The Food Chemistry Laboratory – A manual for Experimental Foods, Dietetics and Food Scientists, CRC Press, New York. (Practical). 2003.
4. Fuller GW. New Food Product Development- From concept to marketplace. CRC Press, Taylor & Francis Inc., USA. 2005.
5. Lyon DH, Francombe MA, Hasdell TA and Lawson K (eds). Guidelines for Sensory Analysis in Food Product Development and Quality Control. Chapman and Hall, London. 1992.
6. Moskowitz HR. New Directions for Product Testing and Sensory Analysis of Foods. Food and Nutrition Press, Connecticut. 1985.
7. Moskowitz, HR, Saguy I, Sam and Straus T. An Integrated Approach to New Food Product Development. CRC Press, Taylor & Francis Inc., USA. 2009.
8. Paine FA and Paine HY (eds). A Handbook of Food Packaging, 2nd Edn. Blackie Academic and Professional. 1992.

E- LEARNING RESOURCES

- <http://epgp.inflibnet.ac.in/Home/Download>

Mapping with Programme Outcomes

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

Mapping with Programme Specific Outcomes

| CO/PSO | PSO1 | PSO 2 | PSO 3 | PSO 4 | PSO 5 |
|---|-------------|--------------|--------------|--------------|--------------|
| CO1 | 3 | 3 | 3 | 1 | 3 |
| CO2 | 3 | 3 | 3 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 1 | 3 |
| CO4 | 3 | 3 | 3 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 1 | 3 |
| Weightage | 15 | 15 | 15 | 5 | 15 |
| Weighted percentage (rounded of) of Course Contribution to Pos | 3 | 3 | 3 | 1 | 3 |

