**ANNAMALAI UNIVERSITY**

**(Affiliated Colleges)**

**220 – B. Sc. Home Science - Nutrition, Food Service Management and Dietetics**

Programme Structure and Scheme of Examination (under CBCS)

(Applicable to the candidates admitted from the academic year 2023 -2024 onwards)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Part | Course Code | Study Components & Course Title | Credit | Hours/Week | Maximum Marks | | |
| CIA | ESE | Total |
|  |  | SEMESTER – I |  |  |  |  |  |
| I | 23UTAML11/  23UHINL11/  23UFREL11 | Language– I  பொதுதமிழ் I: தமிழிலக்கியவரலாறு-1/  Hindi-I/  French-I | 3 | 6 | 25 | 75 | 100 |
| II | 23UENGL12 | General English – I | 3 | 6 | 25 | 75 | 100 |
| III | 23UNFDC13 | Core – I: Human Physiology (Theory & Practical) | 5 | 5 | 25 | 75 | 100 |
| 23UNFDC14 | Core – II : Basics of Food Microbiology (Theory & Practical) | 5 | 5 | 25 | 75 | 100 |
| 23UNFDE15 | Elective – I: Foundations of Baking and Confectionery | 3 | 4 | 25 | 75 | 100 |
| IV | 23UTAMB16  23UTAMA16 | Skill Enhancement Course- I\*  NME-I /  Basic Tamil – I /  Advanced Tamil – I | 2 | 2 | 25 | 75 | 100 |
| 23UNFDF17 | Foundation Course:  Nutrition for the Family | 2 | 2 | 25 | 75 | 100 |
|  |  | Total | 23 | 30 |  |  | 700 |
|  |  | SEMESTER – II |  |  |  |  |  |
| I | 23UTAML21/  23UHINL21/  23UFREL21 | Language– II  பொதுதமிழ் -II: தமிழிலக்கியவரலாறு-2/  Hindi-II  French-II | 3 | 6 | 25 | 75 | 100 |
| II | 23UENCL22 | General English – II | 3 | 6 | 25 | 75 | 100 |
| III | 23UNFDC23 | Core –III: Food Science | 5 | 5 | 25 | 75 | 100 |
| 23UNFDP24 | Core – IV: Basic Cookery Practical | 5 | 5 | 25 | 75 | 100 |
| 23UNFDE25 | Elective – II: Food Product Development | 3 | 4 | 25 | 75 | 100 |
| IV | 23UTAMB26  23UTAMA26 | Skill Enhancement Course-II\*  NME-II /  Basic Tamil – II /  Advanced Tamil - II | 2 | 2 | 25 | 75 | 100 |
| 23USECG27 | Skill Enhancement Course – III  Internet and its Applications  (Common Paper) | 2 | 2 | 25 | 75 | 100 |
| 23UNMSD01 | Language Proficiency for employability: Overview of English Communication\*\* | 2 | - |  |  | 100 |
|  |  | Total | 25 | 30 |  |  | 800 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | SEMESTER – III |  |  |  |  |  |
| I | 23UTAML31/  23UHINL31/  23UFREL31 | Languages-III  பொது தமிழ் -III: தமிழக வரலாறும், பண்பாடும்/  Hindi-III  French-III | 3 | 6 | 25 | 75 | 100 |
| II | 23UENGL32 | General English - III | 3 | 6 | 25 | 75 | 100 |
| III | 23UNFDC33 | Core – V: Human Nutrition | 5 | 5 | 25 | 75 | 100 |
| 23UNFDC34 | Core – VI : Nutritional Biochemistry  (Theory & Practical) | 5 | 5 | 25 | 75 | 100 |
| 23UNFDE35 | Elective – III:  Fundamentals of Art and Design  (Theory & Practical) | 3 | 4 | 25 | 75 | 100 |
| IV | 23UNFDS36 | Skill Enhancement Course: IV  Consumer Education | 1 | 1 | 25 | 75 | 100 |
| 23UNFDS37 | Skill Enhancement Course: V  Fundamentals of Research in Nutritional Sciences) | 2 | 2 | 25 | 75 | 100 |
|  | Environmental Studies | - | 1 | - | - | - |
|  |  | Total | 22 | 30 |  |  | 700 |
|  |  | SEMESTER – IV |  |  |  |  |  |
| I | 23UTAML41/  23UHINL41/  23UFREL41 | Languages -IV  பொது தமிழ் -IV: தமிழும் அறிவியலும்/  Hindi-IV  French-IV | 3 | 6 | 25 | 75 | 100 |
| II | 23UENGL42 | General English-IV | 3 | 6 | 25 | 75 | 100 |
| III | 23UNFDC43 | Core –VII: Nutrition through the life cycle (Theory & Practical) | 5 | 5 | 25 | 75 | 100 |
| 23UNFDP44 | Core–VIII: Nutrition Practical (Practical) | 5 | 5 | 25 | 75 | 100 |
| 23UNFDE45 | Elective – IV:  Human Development | 3 | 3 | 25 | 75 | 100 |
| IV | 23UNFDS46 | Skill Enhancement Course -VI  Preschool and Creche Management | 2 | 2 | 25 | 75 | 100 |
| 23UNFDS47 | Skill Enhancement Course - VII  Computer Applications in Home Science | 2 | 2 | 25 | 75 | 100 |
| V | 23UEVSG48 | Environmental Studies | 2 | 1 | 25 | 75 | 100 |
|  |  | Total | 25 | 30 |  |  | 800 |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | SEMESTER – V |  |  |  |  |  |
| III | 23UNFDC51 | Core –IX: Quantity Food Production (Theory & Practical) | 4 | 5 | 25 | 75 | 100 |
| 23UNFDC52 | Core–X: Public Health Nutrition | 4 | 5 | 25 | 75 | 100 |
| 23UNFDC53 | Core–XI: Sports Nutrition | 4 | 5 | 25 | 75 | 100 |
| 23UNFDD54 | Core-XII: Project with viva- voce | 4 | 5 | 25 | 75 | 100 |
| 23UNFDE55 | Elective –V: Principles of Resource Management | 3 | 4 | 25 | 75 | 100 |
| 23UNFDE56 | Elective–VI: Food Preservation (Theory & Practical) | 3 | 4 | 25 | 75 | 100 |
| IV | 23UVALG57 | Value Education | 2 | 2 | 25 | 75 | 100 |
| 23UNFDI58 | Summer Internship ++ | 2 | - | 25 | 75 | 100 |
|  |  | Total | 26 | 30 |  |  | 800 |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | SEMESTER – VI |  |  |  |  |  |
| III | 23UNFDC61 | Core –XIII: Food Service Management | 4 | 6 | 25 | 75 | 100 |
| 23UNFDC62 | Core–XIV: Dietetics | 4 | 6 | 25 | 75 | 100 |
| 23UNFDP63 | Core–XV: Dietetics Practicals | 4 | 6 | 25 | 75 | 100 |
| 23UNFDE64 | Elective-VII: Fibre to fabric | 3 | 5 | 25 | 75 | 100 |
| 23UNFDE65 | Elective –VIII: Foundations of Entrepreneurship | 3 | 5 | 25 | 75 | 100 |
| IV | 23UNFDF66 | Professional Competency Skill:  Aptitude and Reasoning Skills for Competitive Examinations | 2 | 2 | 25 | 75 | 100 |
| V | 23UNFDX67 | Extension Activity | 1 | - | 100 | - | 100 |
|  |  | Total | 21 | 30 |  |  | 700 |
|  |  | Grand Total | 142 |  |  |  | 4500 |

Non-major (NME) courses offered to other Department

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| IV | 23UNFDN16 | Clinical Nutrition | 2 | 2 | 25 | 75 | 100 |
| 23UNFDN26 | Hospital Food Service Administration | 2 | 2 | 25 | 75 | 100 |

\* PART-IV: NME / Basic Tamil / Advanced Tamil (Any one)

Students who have not studied Tamil upto 12th Standardand have taken any Language other than Tamil in Part-I, must choose Basic Tamil-I in First Semester & Basic Tamil-II in Second Semester.

Students who have studied Tamil upto 10th& 12th Standardand have taken any Language other than Tamil in Part-I, must choose Advanced Tamil-I in First Semester and Advanced Tamil-II in Second Semester.

\*\* The course “23UNMSD01: Overview of English Communication” is to be taught by the experts from Naan Mudhalvan Scheme team. However, the faculty members of Department of English should coordinate with the Naan Mudhalvan Scheme team for smooth conduct of this course.

++Students should complete two weeks of internship before the commencement of V semester.

**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 I | Language – Tamil | 3 | 6 |
| Part II | English | 3 | 6 |
| Part III | Core Theory, Practical & Elective Courses | 13 | 14 |
| Part IV | Skill Enhancement Course SEC-1 (NME-I) | 2 | 2 |
| Foundation Course | 2 | 2 |
|  |  | **23** | **30** |

**Semester-II**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **List of Courses** | **Credit** | **No. of Hours** |
| Part I | Language – Tamil | 3 | 6 |
| Part II | English | 3 | 6 |
| Part III | Core Theory, Practical & Elective Courses | 13 | 14 |
| Part IV | Skill Enhancement Course -SEC-2 (NME-II) | 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 I | Language - Tamil | 3 | 6 |
| Part II | English | 3 | 6 |
| Part III | Core Theory, Practical & Elective Courses | 13 | 14 |
| Part IV | 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 I | Language - Tamil | 3 | 6 |
| Part II | English | 3 | 6 |
| Part III | Core Theory, Practical & Elective Courses | 13 | 13 |
| Part IV | 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 III | Core Theory, Practical, Project & Elective Courses | 22 | 28 |
| Part IV | Value Education | 2 | 2 |
| Internship / Industrial Visit / Field Visit | 2 | - |
|  |  | **26** | **30** |

**Semester-VI**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **List of Courses** | **Credit** | **No. of Hours** |
| Part III | Core Theory, Practical & Elective Courses | 18 | 28 |
| Part IV | Professional Competency Skill | 2 | 2 |
| Part V | Extension Activity | 1 | - |
|  |  | **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 | 2 | 23 |
| **Part V** | - | - | - | - | - | 1 | 1 |
| **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 Part IV, V have to be completed during the duration of the programme as per the norms, to be eligible for obtaining the UG degree.**

**CREDIT DISTRIBUTION FOR U.G. PROGRAMME**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Part** | **Course Details** | **No. of Courses** | **Credit per course** | **Total**  **Credits** |
| **Part I** | Tamil | 4 | 3 | 12 |
| **Part II** | English | 4 | 3 | 12 |
| **Part III** | Core Courses | 15 | 4/5 | 68 |
| Elective Courses: Generic / Discipline Specific  (3 or 2+1 Credits) | 8 | 3 | 24 |
| **Part I, II and III Credits** | | | | 116 |
| **Part IV** | Skill Enhancement Courses / NME / Language Courses | 7 | 1/2 | 15 |
| Professional Competency Skill Course | 1 | 2 | 2 |
| Environmental Science (EVS) | 1 | 2 | 2 |
| Value Education | 1 | 2 | 2 |
| Internship | 1 | 2 | 2 |
| **Part IV Credits** | | | | **23** |
| **Part V** | Extension Activity (NSS / NCC / Physical Education) | 1 | 1 | 1 |
| **Total Credits for the UG Programme** | | | | **140** |

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| --- | --- | --- |
| **Methods of Evaluation** | | |
| **Internal Evaluation** | Continuous Internal Assessment Test | 25 Marks |
| Assignments |
| Seminars |
| Attendance and Class Participation |
| **External Evaluation** | End Semester Examination | 75 Marks |
|  | Total | 100 Marks |
| **Methods of Assessment** | | |
| **Recall (K1)** | Simple definitions, MCQ, Recall steps, Concept definitions | |
| **Understand/Comprehend (K2)** | MCQ, True/False, Short essays, Concept explanations, Short summary or overview | |
| **Application (K3)** | Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain | |
| **Analyze(K4)** | Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge | |
| **Evaluate(K5)** | Longer essay/Evaluation essay, Critique or justify with pros and cons | |
| **Create(K6)** | Check knowledge in specific or off beat situations, Discussion, Debating or Presentations | |

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| **Programme Outcomes** | **PO1: Disciplinary Knowledge and Skills**  Demonstrates theoretical and practical knowledge and understanding in subjects related to Food Science and Nutrition/ Textiles and Clothing/ Resource Management / Extension and Communication/Human Development and Family Studies |
| **PO2: Effective Communicator**  Is 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 and community. |
| **PO3: Critical thinking, Analytical reasoning and problem solving**  Applies disciplinary knowledge, understanding and transferable skills to the given context. Is capable of identifying and analysing problems and issues and seek solutions to real-life problems |
| **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 |
| **PO5: Co-operation/Team Work**  Is capable of contributing significantly and working enthusiastically both independently and in a group |
| **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 |
| **PO7: Multicultural competence**  Recognizes and assesses societal, environmental and cultural issues related to area of study within the local and global context |
| **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 |
| **PO9: Leadership readiness/qualities**  Possesses leadership skills, takes initiative, mobilizes resources has the capacity to lead community based projects and initiatives successfully |
| **PO10: Lifelong learning**  Is 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. |

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| **Programme Specific Outcomes** | |
| **On successful completion of the programme, the student:** | |
| **PSO1** | Acquires fundamental knowledge in the core areas of Home Science |
| **PSO2** | Develops competency in the application of knowledge in different settings  such as family and community |
| **PSO3** | Displays skills in oral and written communication for effective dissemination of knowledge gained in a particular field of Home Science to benefit society  And mankind |
| **PSO4** | Acquires skills that create professionals in different fields related to Home  Science |
| **PSO5** | Can pursue higher education, research, teaching, entrepreneurship or render  Service in the government, public or corporate sector |

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| SEMESTER: I  PART: III  CORE: I | **23UNFDC13 : HUMAN PHYSIOLOGY**  **(Theory and Practical)** | CREDIT: 5  HOURS: 5/W |

|  |
| --- |
| **Learning Objectives** |
| To enable the students to: |
| * Gain basic understanding of human anatomy and physiology |
| * Learn the integrated function in gofcells, tissues, organs and systems. |
| * Apply the principles of nutrition and dietetics on the basis of thorough understanding of human physiology. |

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| --- | --- | --- |
| **UNIT** | **CONTENT** | **HOURS** |
| **I** | **Cell and tissues-** Structure of Cell and functions of different of different organelles. Classification, structure and functions of tissues.  **Blood-** Constituents of blood- RBC, WBC and Platelets and its functions. Erythropoiesis, Blood clotting, Blood groups and histocompatibility  **Immunesystem-** Antigen, Antibody, Cellular and Humoral Immunity  ( inbrief) | **12** |
| **Practical**  Microscopicstudyofdifferenttissues:epithelial,connective,muscularand nervous tissue  Blood Experiments-Blood Smear, Blood Count and Blood Grouping | **6** |
| **II** | **Nervous system**  General anatomy of nervous system, functions of the different parts  **Sense organs**  StructureandfunctionsofEye,Ear,Skin.PhysiologyofTasteandSmell-inBrief, | **12** |
| **Practical**  Study of the Structure of Brainusingmodel/ specimenand structure of Eye and Ear using models/charts | **2** |
| **III** | **Heart and circulation**  Anatomy of the heart and blood vessels, properties of cardiac muscle, origin and conduction of heartbeat, cardiaccycle, cardiacoutput, bloodpressure –definition and factors affecting blood pressure, and description of ECG.  **Respiratory system**  Anatomy and physiology of respiratory organs. Gaseous exchange in the lungs and tissues, Mechanism of respiration. | **10** |
| **Practical**  Recording of Blood Pressure  Study of the structure of Heart Lungusingspecimen,model/ charts/videos | **5** |
| **IV** | **Digestivesystem**  AnatomyofGastro-intestinaltract,StructureandfunctionsofLiverandPancreas. Digestion and absorption of carbohydrates, proteins and fats.**Excretorysystem**  Structureofkidney,functionsofNephron | **12** |
| **Practical**  Studyofthe StructureofLiver,Pancreas,Stomach usingmodel/charts  /specimen/videos | **2** |
| **V** | **Endocrinesystem**  FunctionsofhormonessecretedbyPancreas,Pituitarygland,thyroid,parathyroid and adrenal glands. Effects of hypo and hyper secretion oftheseglands.  **Reproductivesystem**  Anatomyofmaleandfemalereproductiveorgans,OvarianandUterinecycle, influenceofhormones onpregnancyandlactation. | **12** |
| **Practical**  Microscopic studyoftissuesofthe Pituitary,Thyroid,OvaryandTestisStudyofthestructureofthemaleandfemalereproductiveorgansusing models/charts/videos | **2** |
|  | **TOTAL** | **75** |

# COURSEOUTCOMES

**Aftersuccessfulcompletion of thecoursethestudentwillbeableto:**

**CO1.** Describethestructureandfunctionsofacell,varioustissues,primaryorgansandsystemsinthebody.

**CO2.** Explaintheinterrelationshipbetweensystemsformaintenanceofequilibrium.

**CO3**. Evaluatetheroleofthenervousandendocrinesysteminregulatingtheactivitiesof othersystems.

**CO4**. Identifythemicroscopicstructure ofbasictissues,labelthepartsofprimaryphysiological systems in the body such as nervous, respiratory, digestive, endocrineandreproductive systems.

**CO5.** Perform haematological study of blood such as blood smear, blood count and bloodgrouping,recordpulse,blood pressureandinterpretanormalECG.

# Reference:

1. Beck,W.S.(1971)HumanDesign.HarcourtBraceJovanovichInc.,NewYork.
2. Best,C.H.andTaylor,N.B.(1980)LivingBody.4thed.BIP,Bombay.
3. Creager,J.G. (1992)Human Anatomy andPhysiology.2nded.WMCBrown Publishers,England.
4. Guyton,A.C.(1979)PhysiologyoftheHumanBody.5thed.SaundersCollegeof Publishing,Philadelphia.
5. Subramaniam,S.andMadhavanKutty,K.(1971)TheTextBookofPhysiology.OrientLongmanLtd.,Madras.
6. TortoraG.J.AnagnostakosN.P.(1984). PrinciplesofAnatomyandPhysiology,4thedition,HarperandRowPublishers, NewYork.
7. WaughAandGrantA.(2012)RossandWilsonAnatomyandPhysiologyin HealthandIllness.11thed.ChurchillandLivingston,Elsevier
8. Wilson,K.J.W. (1987)AnatomyandPhysiologyinHealthandIllness.6thed. ELBS,Churchill Livingstone,London.

# E -learningresources

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

# MappingwithProgrammeOutcomes

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **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 |

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

|  |  |  |
| --- | --- | --- |
| SEMESTER: I  PART: III  CORE: II | **23UNFDC14 : BASICS OF FOOD MICROBIOLOGY**  **(Theory and Practical)** | CREDIT: 5  HOURS: 5/W |

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| **LearningObjectives** |
| Toenable thestudents to: |
| * Gainknowledgeonthe characteristicsofmicro-organismsinfoodandenvironment. |
| * Understandtheroleofmicroorganismsinfoodspoilage,healthandillness. |
| * Familiarizewiththemethodsofcontrollingmicroorganisms. |

|  |  |  |
| --- | --- | --- |
| **UNIT** | **CONTENT** | **HOURS** |
| **I** | **IntroductiontoMicrobesinFoods**  History and Development of Food MicrobiologyClassificationofmicroorganisms.Generalmorphologicalcharacteristicsofbacteria,yeast,algae.mold, virus.  Characteristicsofpredominantmicroorganismsinfood,sourcesofmicroorganismsinfoods. | **15** |
| **II** | **Microbialspoilageandcontaminationof commonfood**  Factors affecting growth of microorganisms- intrinsic and extrinsic.Sources of contamination and spoilage of common foods -Cereal andcerealproducts, fruits and vegetables, egg, meat and fish, milk andmilkproducts. | **15** |
| **III** | **Beneficial uses of microorganisms in food and health**Microorganisms used in fermented products - Alcoholic drinks, Dairyproducts,Bread,Vinegar, Pickledfoods.Single-cell protein  FoodBiopreservativesofmicrobialorigin.IntestinalBacteriaandProbiotics. | **10** |
| **IV** | **FoodpoisoningandFoodbornedisease**  Food poisoning/ intoxication and food infection- definition.Bacterial food poisoning – Staphylococcus aureus, Clostridiumbotulinum,Clostridiumperfringens,Bacilluscereus  FoodInfection-Salmonellosis,Shigellosis,Cholera,Gastroenteritis.Measuresto prevent foodpoisoningand food borneinfection. | **15** |
| **V** | **Microorganisms found in water, soil, air and sewage**- List ofmicroorganisms and diseases caused; Test for sanitary quality ofwater,Purification ofwater  **ControlofMicroorganismsinfood**  Control of Access of Microorganisms: sanitation, sterilization anddisinfectionControlbyHeat(ThermalProcessing),LowTemperature,Reduced Water Activity and Drying, Low pH and Organic Acids,Modified Atmosphere, Reducing O-R Potential) AntimicrobialPreservativesandBacteriophagesIrradiation,NovelProcessingTechnologies,Combination of Methods(HurdleConcept) | **20** |
|  | **TOTAL** | **75** |

# COURSEOUTCOMES

**Aftersuccessfulcompletionof thecoursethestudentwillbeableto**

**CO1.**Comprehendthecharacteristicsofmicroorganismsinfoodandits environmentand applytheknowledgeto controlthem.

**CO2**. Differentiate between organisms that are beneficial from those causing spoilage.

**CO3**. Explain the causes and prevention of food poisoning and food borne infections.

**CO4**.Identifythemicroscopicstructureofalgae,molds,yeast,virusandbacteria.

**CO5.**Performappropriateteststoidentifythesize,shape,arrangementandmotilityof organisms.

# References

1. ParijaSC.(2012)TextbookofMicrobiologyand Immunology,2nd edition,ElsevierIndia.
2. Garbutt J. (1997) Essentials of Food Microbiology, 2ndedition, Arnold publication, NewYork,1997
3. Adams M.R, Moss M.O and Peter.M (2016). Food Microbiology. 4th edition. RoyalSocietyof Chemistry,United Kingdom.
4. Frazier W.C and Westhoff D.C. (1995). Food Microbiology. 5th edition. Tata Mc GrawHillPublishingCompanyLtd, New Delhi.
5. Jay J.M, Loessner MJ and Golden D.A. (2005). Modern Food Microbiology. 7th edition,CBSPublishers and Distributors, New Delhi.
6. Ananthanarayan and Paniker. (2017). Text book of Microbiology, Tenth Edition, OrientLongman Limited, Hyderabad.
7. Ramesh.V.(2007).FoodMicrobiology,MJPpublishers,Chennai.
8. Gerald McDonell. (2020). Block’s Disinfection, Sterilization and Preservation. 6th edition.LippincottWilliams and Wilkins,Philadelphia.

# E- learningresources

* + <http://people.uleth.ca/~selibl/Biol3200/CourseNotes/MicroTaxonomyCh10.pdf>
  + <https://www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-understand-color-office.pdf>
  + <https://www.who.int/news-room/fact-sheets/detail/food-safety>
  + [https//epi.dph.ncdhhs.gov/cd/diseases/food.html](https://epi.dph.ncdhhs.gov/cd/diseases/food.html)
  + <http://vikaspedia.in/health/nutrition/food-borne-diseases-or-food-poisoning>
  + <https://www.microrao.com/micronotes/sterilization.pdf>
  + https://ehs.colorado.edu/resources/disinfectants-and-sterilization-methods

# PRACTICAL

1. Studyofdifferent equipmentsinamicrobiologylab.
2. Safetypracticesinmicrobiologylaboratory.
3. Microscopy-principles,parts,functionandoperation.
4. Microscopicstructureof algae,molds, yeast,virusandbacteria.
5. Examinationoforganisms usingsimple stainingtechnique.
6. Examinationoforganismsusinggramstainingtechnique.
7. Examinationofmotilityof bacteriausinghangingdroptechnique.
8. Demonstrationofsterilizationofglasswareusinghotairoven,autoclave.
9. Demonstrationofmediapreparation-Broth,deep, slantandplates.
10. Demonstrationofculturetechniques-streak,pour plate.
11. Visit (at least one) to food processing units or any other organization dealing withadvancedmethods in food microbiology.

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

|  |  |  |
| --- | --- | --- |
| SEMESTER: I  PART: III  ELECTIVE - I | **23UNFDE15 : FOUNDATIONS OF BAKING AND CONFECTIONERY** | CREDIT: 3  HOURS: 4/W |

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| **LearningObjectives** |
| Toenable thestudents to: |
| * Gain insight intotheplanningand operation ofbakeryunit. |
| * Familiarizewiththeequipmentsandtools,hygienicpracticesrelatingtobaking |
| * Understandtheroleofvarious ingredientsused in themakingofbreads,cakes,cookies, pastries andvariousconfectioneries |
| * Acquireskillsinbakingandconfectionerywith anemphasison specialdietaryneeds. |

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| --- | --- | --- |
| **UNIT** | **CONTENT** | **HOURS** |
| **I** | **AnOverviewofBakeryIndustry**  Currentstatusandgrowthof bakeryindustryinIndia.  Baking–principles, process.Layoutand organizationofabakeryunit.Equipmentand tools used in baking and confectionery. Bakerysanitationand personnelhygiene. | **10** |
| **II** | **IngredientsinBakeryandConfectionery**  Ingredients - Flour, Sugar, Shortenings, Egg, Leavening agents-yeast,baking soda, baking powder, chocolates, cocoa powder. Otheringredients- salt, milk and milk derivatives, maltproducts, doughimprover,oxidizingagents,flavours andcolors, nuts, spicesand  condiments,preservedandcandiedfruitpeels. | **10** |
| **III** | **BreadsandCakes**  **Bread-**ingredients,typesofbreads,faultsanditsprevention  **Cakes**–ingredients,typesofcakes, **c**akejudging,faultsandremedies.Different types and techniques of cake decoration -icings and fillings.**Relatedexperience**  Preparationofbuns,rolls, soupsticks,rusk andpizzabase.  Preparationof angelfoodcake,butter cake,spongecake, chocolate cake,poundcake.  Modifiedbakedproducts-highfiber,low/alternatesugar,lowfat,gluten free, and millet based bakery products for special nutritionalrequirements. | **15** |
| **IV** | **Pastries,CookiesandBiscuits**  **Pastries-** types of pastries- puff pastry, short crust, phyllo pastry, flakypastry,chouxpastry  **Cookies&biscuits**–ingredients,typesandprocessing.  **Relatedexperience**  Preparationofbiscuits,cookies.  Preparationofpastries- Shortcrustpastry,flakypastry,puffpastry,chouxpastry. | **15** |
| **V** | **Confectionery and Marketing of Baked Products**Chocolates-production,types,chocolatedecorations**S**ugarbasedconfectionery–fudge,fondant,sugar candies.  **Marketingandsalespromotion**-costing,packagingandlabelling.  **Relatedexperience**  Preparationofplain chocolate,fudge,fondant. | **10** |
|  | **TOTAL** | **60** |

# COURSEOUTCOMES

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

**CO1**.Understandtheprinciplesandprocessofbakingandconfectionery.

**CO2**.Acquireknowledgeonrole ofvariousingredientsusedinbakingandconfectionery.

**CO3**.Develop skills to design baked goods using alternative healthy ingredients to catertospecial dietaryneeds

**CO4**. Identifyandcontrolfaultsinbaking.

**CO5**. Enhance entrepreneurial skills in bakery and confectionery to establish a bakeryunit.

# References

1. JohnKingslee(2006) A Professional Text book to Bakeryand Confectionary. NewAgeInternationalPvtLimitedPublisher, NewDelhi.
2. Uttam KSingh(2011).TheoryofBakeryandConfectionary-AnOperationalApproach.KanishkaPublishers andDistributors,NewDelhi.
3. Yogamba lAshokkumar (2012) Theory of Bakery and Confectionary, PHI publication.NewDelhi.
4. Nicolello,I.and Foote,R (2000). CompleteConfectionaryTechniques. HodderandSolution,London.
5. Bakershand BookonpracticalBaking(2000)PublishedbyU.S.WheatAssociates,NewDelhi.
6. Dubey.S.C(2002)BasicBaking.4thEdition. Published bytheSocietyofIndian Bakers,NewDelhi.
7. Sarah R. Lebensky, Pricilla et al., (2004) Textbook of Baking and Pastry Fundamentals,thirdedition, Pearson EducationLtd.
8. The Culinary Institute of America, Baking & Pastry: Mastering the Art and Craft, JohnWiley&Sons,IncNew Jersy.2009.

# E - LEARNINGRESOURCES

* + <https://www.youtube.com/watch?v=dfvkplBBO2g>
  + <https://www.lifestyleasia.com/ind/food-drink/dining/bookmark-the-best-baking-youtube-channels-to-bake-like-a-pro/>
  + [www.bakels.in](http://www.bakels.in/)

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

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| --- | --- | --- | --- | --- | --- |
| **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 |

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| SEMESTER: I  PART –IV  FOUNDATION COURSE - I | **23UNFDF17 : NUTRITION FOR THE FAMILY** | CREDIT: 2  HOURS: 2/W |

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| **LearningObjectives** | | |
| Toenable thestudents to: | | |
| * Understand the basic concepts of nutrition | | |
| * Understand the nutritional demands in various stages of life cycle | | |
| * Acquire skills in planning adequate meals in different stages of life cycle | | |
| * Understand different diet | | |
| * Acquire knowledge on physiological changes | | |
| **UNIT** | | **CONTENT** |
| **I** | | Food groups- basic five, nutritional classification of foods - energy yielding, body buildingand protective foods - Basic principles of Meal planning – balanced diet- meaning, food guide pyramid. |
| **II** | | Nutritional needs during Pregnancy and Lactation– dietary guidelines; general dietaryproblems, Common Nutritional related problems and complications. Nutrition during Lactation - Dietary guidelines for lactating women, Composition of Breast Milk. |
| **III** | | Nutrition during Infancy and Preschool age - dietary guidelines for infants, advantages ofbreast feeding, disadvantages of bottle feeding; Weaning foods (definition) and types of supplementary food. Nutritional needs of Pre-school children, factors to be considered whileplanning meals for pre-school children. Food habits of Pre School Children |
| **IV** | | Nutrition for School children and Adolescence - dietary guidelines, factors considered inplanning packed lunch. School lunch feeding problems. Nutrition during Adolescence – generaldietary guidelines; Dietary Problems (Eating Disorders) |
| **V** | | Nutritional needs of Adults and Old Age - dietary guidelines for adults. Nutrition during Oldage - physiological changes in ageing, psycho-social factors affecting food intake. Nutrition modification in Diet. |

**COURSE OUTCOMES**

On successful completion of the course, the students will be able to gain knowledge about

1. Physiological changes and hormones involved during pregnancy and lactation.
2. Plan a healthy food choice for physical, physiological, psychological aspects ininfancy.
3. The students will be able to relate nutrient needs to developmental stages and plandiets which will adequately meet nutritional needs during childhood.
4. The student will learn the impact of growth and development in arriving at thenutritional needs of adolescents.
5. Determine nutrient requirements during old age.

**Text book**

1. Mahan,L.K &amp;Arlin.M.T, “Krause’s Food,Nutrition and Diet Therapy”, 11th Edition, W.B.Saunder Company, London, (2000).
2. Selelstein. S. &amp; Sharlin.J, “Life Cycle Nutrition”, Jones &amp; Bartlett publications,(2008).
3. Begum. M. R, “A Textbook of Food, Nutrition &amp; Dietetics”, 3rd edition, Sterlingpublications Pvt. Ltd., (2008).
4. Srilakshmi. B, “Nutrition Science”, 5th edition, New Age International Pvt.Ltd., (2008).
5. Mudambi S.R and Rajagopal M.V, “Fundamentals of foods and Nutrition”, 3rd edition, New Age International Pvt. Ltd., (1997).
6. Pasricha.S, “Some Therapeutic Diets”, 5th edition, National Institute of Nutrition,(2004).
7. ICMR-Nutritive value of Indian Foods, National Institute of Nutrition, Hyderabad, (1989).
8. Mudambi. S.R, Rao. S.M, &amp; Rajagopal.M.V, “Food Science”, New Age International Pvt.Ltd. Publishers, New Delhi, (2007).

**Outcomes Mapping**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** |
| **CO1** | 2 |  |  |  |  |
| **CO2** |  | 2 |  |  |  |
| **CO3** |  |  | 2 |  |  |
| **CO4** |  |  |  | 2 |  |
| **CO5** |  |  |  |  | 2 |

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| --- | --- | --- |
| SEMESTER: II  PART: III  CORE: III | **23UNFDC23 : FOOD SCIENCE** | CREDIT: 5  HOURS: 5/W |

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| **LearningObjectives** |
| Toenable thestudents to: |
| * Understandthescienceoffoodandfactorsthataffectitsquality,Nutritivevalueand shelflife. |
| * Understandthephysical,biologicalandchemicalcharacteristicsofvariousfoodsand their uses. |
| * Applyknowledgeoffoodsinplanningdietsand preparingmealsthataresafe, * nutritiousandpalatable. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **I** | **Nutrientcontent of foods and Cooking Methods -**Classificationoffoodsaccordingtonutrient content.Food groups forbalanced diets. Study of the different cooking methods- dry heat, moistandcombinationmethods, solarcooking,microwavecooking-merits anddemerits,dishes preparedbythesemethods. | **10** |
| **II** | **Cereals**,**Millets**, **Pulses, Legumes and Nuts-** Classificationof Cereals, Structure, nutrient composition, storage, processing, milling,parboiling, scientific methods of preparation and cooking, acceptabilityand palatabilityof rice, wheat, maize and millets Cooking of starches-Dextrinizationandgelatinization,retrogradationandresistant starch.  **Pulsesandlegumes**-Types,nutritivevalue,methodsofcooking,effectofsoakingandgermination,judicious combination of cerealsand pulses- complementary effect, soya beans, fava beans and kesari dhal-methodstoinactivate /remove toxins; storage.  **Nuts**-types,composition, market forms, roasting, steaming ofnuts,nutsbutters;usesinsweets,baking,and confectionery;Storage.  **Oilseeds**-types,methodsofprocessing,usesandshelflife | **10** |
| **III** | **Vegetables and FruitsVegetables:**  Classification,nutritivevalue,effectof cookingoncolour, texture,flavour, appearance and nutritive value, Purchase - storage andpreservation  **Fruits:**  Classification,nutritivevalue,changesduringripening,enzymaticbrowning,uses, preservation. | **10** |
| **IV** | **Fleshfoods, Eggs,andMilk**  **Meats** – structure, nutritive value, selection of meat, postmortemchanges in meat, ageing, factors affecting tenderness of meat, methodsofcookingand storage.  **Poultry**-types,nutritivevalue,selectionandcooking  **Fish**-classification,nutritivevalue,selection,storage,cookingandpreservation. | **15** |
| **Eggs**  Structure,nutritivevalue,methodsofcooking,storage,preservationand uses in cookery; foam formation and factors affecting foam.formation  **Milkandmilkproducts**  Nutritive value, kinds of milk, pasteurization, and homogenization,coagulation of milk, fermentation of milk; milk products - whole andskimmedmilk,milkpowdersandyogurt,ghee, butter,cheese.Storageandpreservation. |  |
| **V** | **Fats and oils, sugars, food adjuncts and beverages Fats and Oils**:Types, sources-animal fats and vegetable fats, functions, processing-difference between cold pressed and regular cooking oils,hydrogenated fat, emulsification, rancidity, smoking point. Factorsaffecting absorption of oils while frying foods, harmful effects ofreheatedoils.  **Sugars:**  Types and market forms of sugars; stages of sugar cookery,crystallization,factorsaffectingcrystallization,usesinconfectionery.**Foodadjuncts andfood additives**  Spicesandcondiments:classification,source, useinfoodpreparation,Leavening agents, stabilizers, thickeners, anticaking agents, enzymes,shortenings, stabilizers, flavouring agents, colouring agents,sweeteners-use and abuse.  **Foodadulteration**  Definition,commonadulterantsinfood  **Beverages**  Classification-fruit based beverages; milk-based beverages nutritive.valueanduses,alcoholicbeverages,coffee, teaandcocoa,malted. beverages.Sources,manufacture,processing,andservice;methodsofpreparationofcoffeeand tea. | **15** |
|  | **PRACTICAL**   1. CerealandPulse-ExperimentalCookery,gelatinization,Dextrinisation 2. VegetableandFruit-ExperimentalCookery,enzymaticbrowning. 3. Meat,Eggand Milk-Experimental Cookery; whippingqualityof eggs 4. StudyofthesmokingtemperatureofFats 5. StagesofSugarcookery, factorsaffectingcrystallization 6. Preparationof coffeeandteabydifferentmethods. 7. Preparationofonedisheach applyingthe differentcookingmethods | **15** |
|  | **TOTAL** | **75** |

**ACTIVITY**

* Asurveyofprocessedformsofcereals,pulses,dairy/meatproductsavailableinthemarketComparison of convenience foods and natural/wholefoods
* Marketsurveyof processedbeverages
* Identifycommonadulterantsinfoods

# COURSEOUTCOMES

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

**CO1.** Identifyfoods based on food groupsand list their uses.

**CO2.** Describeclassification,nutritivevalue,storageandpreservationoffoods.

**CO3**. Explainchangesinfoodduetocooking,processingandfactorsthataffectpalatability,acceptability,and nutritivevalue.

**CO4.** ComparedifferentmethodsofcookingandselectthemethodsbestsuitedforcookingdifferentFoods.

**CO5.** Justifytheselection,processing,storage,andcookingmethodstopreservenutritivevaluesofvarious foods and makethem safe and acceptable.

# References:

1. Manay, S. and Shadaksharaswamy, M. (1987) Foods Facts and Principles. New AgeInternationalPublishers,New Delhi.
2. Peckham, G.C. and Freeland-Graves, J.H. (1979) Foundations of Food Preparation, 4thedition,Macmillan PublishingCo.Inc., New York**.**
3. Shewfelt R.L. (2015) Introducing Food Science. CRC Press, Taylor and Francis Group.BocaRaton
4. SrilakshmiB(2019)FoodScience,(7th Ed.)New AgeInternationalPublishers
5. Thangam E.Philip, Modern Cookery for Teaching and the Trade Volume - 1&2 (6th RevisedEdition),Orient Black
6. Vaclavik,V.A.and Elizabeth,W.C. (2013)Essentialsof FoodScience.2nded.

SpringerPublication,NewDelhi

# E-Learningresources

* <https://ia801408.us.archive.org/20/items/textbookoffoodsc0000khad/textbookoffoodsc0000khad.pdf>
* <https://egyankosh.ac.in/handle/123456789/32947><https://unacademy.com/content/kerala-psc/study-material/basic-food-science/>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

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| --- | --- | --- | --- | --- | --- |
| **CO/PSO** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| **CO1** | 3 | 3 | 2 | 3 | 3 |
| **CO2** | 3 | 3 | 2 | 3 | 3 |
| **CO3** | 3 | 3 | 2 | 3 | 3 |
| **CO4** | 3 | 3 | 2 | 3 | 3 |
| **CO5** | 3 | 2 | 2 | 3 | 3 |
| **Weightage** | 15 | 14 | 10 | 15 | 15 |
| **Weighted percentage (rounded of)of CourseContributionto Pos** | 3 | 3 | 2 | 3 | 3 |

|  |  |  |
| --- | --- | --- |
| SEMESTER: II  PART: III  PRACTICAL: III | **23UNFDP24 : BASIC COOKERY PRACTICAL** | CREDIT: 5  HOURS: 5/W |

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| **LearningObjectives** |
| Toenable thestudents to: |
| * Learntheprinciplesandscientificmethodsofcooking |
| * Learnthebestmethodsofcookingfoodstopreserve itsnutrientcontentandminimizecookingtime. |
| * Applythe principlesofcookerytopreparetastyand nutritiousfood |

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| **UNIT** | **CONTENT** | **HOURS** |
| **I** | **IntroductiontoBasicCookingSkills**  Introductiontodifferentcookingmethods,cookingterminology;equipment andtechniques used for pre-preparation and for differentcookingmethods.  Methods of measuring and weighing liquids and dry ingredients .The useandcareofsimplekitchenequipment.  Introduction tofood safety,sanitation and hygiene in the kitchen,Safepracticesin handling knives, sharp instruments and materials athightemperature. | **10** |
| **II** | **Cereals,Milletsandpulses**  **Cereals and Millets:** Methods of combining fine and course cereal withLiquid(eg.Ragiporridge,ravaupma)  Methodofcookingcerealsandfactorsinfluencingtextureandnutritivevalue-cooking ricebyboilingandstraining,absorptionmethod,steaming, pressurecooking,microwave cooking;Gelatinizationanddextrinization  Preparationofrecipesusingrice-puttu,dosai,idli/idiappam,lemonrice,curd rice, coconut rice, fried rice, tamarind rice, tomato rice, mintpulao- afew.WheatandMilletpreparations-Kesari, Phulka,poori,paratha,naan,ragiadai,samaicurdrice,thinaiuppuma,-afew  **Pulses:**  Factors influencing texture, digestibility and nutritive value of wholegram/legumesandpulses-soaking,additionofsodabicarbonate,additionof salt, water quality- hard and softwater, pressure cooking, boiling andstraining.  Pulse preparations- Sundal, sambhar, sprouted green gram patchadi,Vadai, pongal, ompodi, green gram payasam, masala vadai ,medhuvadai-a few | **15** |
| **III** | **VegetablesandFruits**  **Vegetables:** Basic cuts of vegetables-Slice and mince (onions) Shred(cabbage,spinach),dice(carrot),chop(tomato), grating(beetroot),andtheir uses in dishes. Changes in colour and texture of vegetables andnutritive value due to different methodsof cooking, cooking mediumandadditionofacid/alkali.  Vegetablepreparations–Poriyal,Aloomethicurry,vegetablecutlet,thoran,vegetablekurma,avial,keeraimaseal,vegetablesalad,vegetablesoup,vegetablesandwich,kootu,mintchutneyand carrothalwa.  **Fruits:**  Enzymaticbrowninginfruitsandmethodstopreventit.Fruitpreparations-stewedapple,bananafritters,fruitsalad,fruitpunch,fruityoghurtand fruit smoothie,preserve/ jam. | **20** |
| **IV** | **Eggs,milkandmilkproducts,meatandfish:**  **EggCookery:**  Boilingofeggs-hardandsoftboiledeggs.Bestmethodofboilingeggs.Prevention of Ferrous sulphide formation on the yolk. Poaching andfrying.Coagulation of eggprotein-stirred and bakedcustard  Egg preparations - egg curry, omelet, French toast, caramel custard(steamed),scrambled eggs and fried eggs- a few Factors affectingwhippingqualityofeggwhite–effectofsalt,sugar,vinegar,fatandmilk,typeofcontainerusedand beaters,Stagesoffoamformation inwhippedeggwhitesandtheirusesincookery.  **Milkandmilkproducts**  Curdlingofmilkusinglimejuice,buttermilk,tomatojuice,  **Milkpreparations**  Creamof tomatosoup,paneermasala,payasam,patchadi,thayirvadai, morkulumbu,basundhi,lassi,spicedbuttermilkandbakedmacaroniandcheese.  **MeatandFish**  Methods of tenderizing meat-Pounding, mincing addition of acids likecurd/limejuiceinmarinade,additionofproteolyticenzymes-rawpapayaEffectofdifferentmethodsofcookingonflavour,textureandappearanceofmeatandfish.  Meatpreparations-muttonballcurry,muttonvindaloo,muttonkeema,liverfry,chickenspringroll,chickensweetcornsoup,chickenbiriyani.Sea food preparations- fish fry, fish moilee, fish cutlet, sweet and sourprawns. | **15** |
| **V** | **Sugar cookery, Fats and oils food additives and raising agentsSugarCookery-**Stagesofsugarcookeryanduses.Preparationsofsweetsusingdifferentstagesofsugarcookery  **Fatsandoils-**Effectoftemperatureofoilontextureandpalatabilityoffoods-Fryingpoorisatdifferenttemperatures  Smokingpointofoil-breadcubetest.  Emulsions-definition,Preparationofmayonnaise  **FoodadditivesandRaisingagents**  Role of MSG, sodium benzoate and KMS in food preparation andpreservation.,Natural versus synthetic preservatives, -Advantages andlimitationsUseofbakingsoda,bakingpowder,yeastinbakingandfoodpreparation-Prepareonedishwitheachofthese  Usesofherbsandspicestoenhanceflavour. | **15** |
|  | **TOTAL** | **75** |

# COURSEOUTCOMES

**Aftersuccessfulcompletionofthecoursethestudentwillbeableto:**

**CO1.** Identify appropriate methods for weighing dry and wet food ingredients and for cookingdifferentfoods.

**CO2**. Select suitable methods for cooking cereals, pulses, vegetables, meat, fish and Poultry.

**CO3.** Applytheprinciplesofcookery,cookingtechniquesandsuitableingredientsin preparingdishes.

**CO4.**Explainthereasonsbehind thechangesthatoccur duringfoodpreparation.

**CO5.**Justify thebestpreparation andcookingmethodsforacceptability andretention of nutrientsindifferentdishes

# References:

1. Martland,R.E.andWelsby,D.A.(1980)BasicCookery,FundamentalRecipesandVariations.WilliamHeinemannLtd.,London.
2. KrishnaArora(2008)Theory of cookery, FrankBrothers&Co.,
3. NegiJ(2013)FundamentalsofCulinary Art,S.ChandandCo.
4. Peckham,G.C.andFreeland-Graves,J.H.(1987)Foundationoffoodpreparation.4thed.MacmillanPublishingco,NewYork
5. PenfieldMPandAdaMarieC(2012),ExperimentalFoodScience,AcademicPress,,SanDiego

# E- LearningResources:

* <https://www.ihmnotes.in/assets/Docs/Books/Theory_of_Cookery.pdf>
* <http://staffnew.uny.ac.id/upload/132318572/pendidikan/buku-esp.pdf>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CO/PSO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** |
| **CO1** | 3 | 3 | 1 | 3 | 3 |
| **CO2** | 3 | 3 | 1 | 3 | 3 |
| **CO3** | 3 | 3 | 1 | 3 | 3 |
| **CO4** | 3 | 3 | 2 | 3 | 3 |
| **CO5** | 3 | 3 | 1 | 3 | 3 |
| **Weightage** | 15 | 15 | 6 | 15 | 15 |
| **Weighted percentage (rounded of)of CourseContributionto Pos** | 3 | 3 | 1 | 3 | 3 |

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| --- | --- | --- |
| SEMESTER: II  PART: III  ELECTIVE: II | **23UNFDE25: FOOD PRODUCT DEVELOPMENT** | CREDIT: 3  HOURS: 4/W |

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| **LearningObjectives** |
| Toenable thestudents to: |
| * Understandthestepsinvolvedinnewfoodproductdevelopment. |
| * Learnaboutconsumerpreferencesandmarkettrends. |
| * Understandconceptsaboutsubjectiveandobjectiveevaluationofnewproduct. |

|  |  |  |
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| **UNIT** | **CONTENT** | **HOURS** |
| **I** | **IntroductiontoNewFoodProductdevelopment**  Food products, definition, Classification, Characterization Reasons fornewfood product development  Factorsshapingnewproductdevelopment-Social concerns,healthconcernsimpact of technologyand marketplaceinfluence.  Utilizingtraditionalfoods,unconventionalsources,functional,nutraceuticalsfoods fornewproductdevelopment  MarketSurveyto identifythe new product. | **7** |
| **II** | **ProductDevelopment:**   1. NewProductDevelopment Team 2. SourcesofNewProductideas 3. Designingnewproduct 4. Stagesofproductdevelopment 5. Causesofproductfailure/ successinproductdevelopment | **8** |
| **III** | **ProductEvaluationandQualityControl**  Qualityattributes–physical,chemical,nutritional,microbial,andsensoryindicatorsPrinciplesandtypesofassessmentofquality.Subjectiveandobjective methodsofevaluation ofproductquality.  Roleofsensoryevaluationinconsumerproductacceptance;requirementsfor sensoryanalysis-Sensorypanel  EvaluationofNewProduct:Nutritionalevaluation(estimationofrelevant parameters) Evaluation of shelf-life of the product (testing forappropriatequality parameters- physical, chemical, microbiologicalandnutrient content, acceptabilitystudies)  Foodsafetystandardsandregulations:DomesticregulationsFSSAI, AGMARK,BISQualitymanagementsystemsinIndia;(ISO9001, ISO22000); Global Food safety Initiative; International food standardsVariousnationalandinternationalorganizationsdealingwithinspection,traceabilityandauthentication,certification,and quality assurance. | **15** |
| **IV** | **Packagingandlabelling**  Packaging Material-types; factors affecting type of packaging materialused; Aseptic packaging, modified atmosphere packaging, ControlledAtmospherePackaging and activepackaging.  PackagingandLabellingoftheproduct–Packagingdesign,graphics andlabelling–FSSAIregulationsfor foodlabelling. | **10** |
| **V** | **Marketingtheproduct**  Productlifecycle  Costingtheproductand determiningthesales priceAdvertisingandtest marketingtheproduct | **10** |
|  | **PRACTICAL**   1. Survey oftypesofconveniencefoods/novelfoodsinthemarket or Survey of markettrends and consumerbehaviorinthefoodsector. 2. Sensoryanalysis:conductsensorytestsforbasictastesandsensoryattributesofproducts. 3. Basicevaluationofshelf-lifeacceptabilityand qualityofafoodproduct. 4. Evaluate consumer responses utilizing prepared foodproducts, analyse and present dataon acceptability ofproductbasedonsensoryevaluationor 5. Project Development of a new food product,standardization, selectionofsuitablepackaging and   preparinglabelwithproductinformation. | **10** |
|  | **TOTAL** | **60** |

**COURSEOUTCOMES**

# Aftersuccessfulcompletionofthecoursethestudentwillbeableto:

**CO1.**Definethebasicconceptsinfoodproductdevelopment,packaging,costing advertisingandmarketing.

**CO2.** Explaintheneed,characteristicsand factorsinfluencingthenewproduct;test marketing,packagingandqualityattributes.

**CO3.** Illustrate the quality attributes, food safety, packaging and labellingregulations,and marketing toolsforafoodproduct.

**CO4.** Analysethesignificanceofpackaging, labelling,advertising,costingandquality conceptsforthe newfood product

**CO5.** Developanewfoodproductandevaluateitsqualityandacceptability.

# References:

1. Earle M., Earle RL. and Anderson A. (2001) Food Product Development:Maximizingsuccess,WoodheadPublishingLtd,FoodSeries,No.64,2001.
2. Fuller,GW(2011).Newfoodproductdevelopment:Fromconcepttomarketplace.3rded.NewYork,NY:CRC Press
3. LawlessHTandKlein BP(1991)SensoryScienceTheoryandApplicationsinFoods.MarcelDekkerInc.
4. MoskowitzHR,SaguyISandStrausT(2009).AnIntegratedapproachtoNewFoodProductDevelopment.ed.NewYork, NY:CRC Press
5. PaineFA,PaineHY(Eds.)(1992)A handbookof FoodPackaging(2nded.),BlackieAcademicandProfessional.
6. SharmaA(2018).FoodproductDevelopment. CBSPublishers&DistributorsPvtLtd

# E- LearningResources:

* <https://www.destechpub.com/wp-content/uploads/2015/01/Methods-for-Developing-New-Food-Products-preview.pdf>
* <https://www.youtube.com/watch?v=iL0iIGpa4vg>
* <https://www.youtube.com/watch?v=5kOXUH8kaCs>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CO/PSO** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| **CO1** | 3 | 3 | 1 | 3 | 3 |
| **CO2** | 3 | 3 | 3 | 3 | 3 |
| **CO3** | 3 | 3 | 2 | 3 | 3 |
| **CO4** | 3 | 3 | 3 | 3 | 3 |
| **CO5** | 3 | 3 | 1 | 3 | 3 |
| **Weightage** | 15 | 15 | 10 | 15 | 15 |
| **Weightedpercentage(roundedof)**  **ofCourseContributiontoPos** | 3 | 3 | 2 | 3 | 3 |

Non-major (NME) courses offered to other Department

|  |  |  |
| --- | --- | --- |
| SEMESTER: I | 23UNFDN16 : CLINICAL NUTRITION | CREDIT: 2  HOURS: 2/W |

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| **LearningObjectives** |
| Toenable thestudents to: |
| * Understandtheaetiology,physiologicandmetabolicanomaliesofacuteandchronicdiseasesandpatientneeds. |
| * Understandthebiochemicalchangesofthedisorderandtolearntheclinicalsignificanceofbiochemicalfindings. |
| * Befamiliarwithrecentadvancesinthemedicalnutritionalmanagementof variousdiseases |

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| **UNIT** | **CONTENT** | **HOURS** |
| **I** | **Biochemical changesduetodisordersofmetabolism**  MetabolicandNutritionalimplicationsinDiabetesmellitus,Inbornerrors of metabolism – Gout, phenylketonuria, Galactosemia, Lactoseintolerance,Ageing–physiologicalchangeswithageing.Cellularadaptationsto stress | **15** |
| **II** | **CardiovascularDisorders**  MetabolicandNutritionalimplicationsofMyocardialinfarction,atherosclerosishyperlipidaemia, hypertension, metabolic syndrome,Roleoflipids in cardiovasculardiseaseand Recent advances. | **10** |
| **III** | **DigestiveSystem, LiverandPancreaticDisorders**  MetabolicandNutritionalimplicationsofDiarrhoea,constipation.Gastritis,ulcers,colitis,malabsorptionsyndrome,celiacdisease,Inflammatory bowel disease, Irritable bowel syndrome, Diet and gutmicroflora.Recent advances.  MetabolicandnutritionalimplicationsofHepatitis.Cirrhosisofliver,  Hepaticcoma,Pancreatitis,CholecystitisandCholelithiasis.Recentadvances | **10** |
| **IV** | **RenalDisorders**  MetabolicandnutritionalimplicationsofNephritis,Nephroticsyndrome,RenalTransplant,NephrolithiasisandDialysis.Roleofkidneyin Water andElectrolyteBalanceandImbalance. | **15** |
| **V** | **Carcinogenesis**  Carcinogens in Food, Types of cancer, Causes, pathogenesis, cancercachexia, Effect of cancer on metabolism and nutritional status, Recentdevelopmentsin nutrition and cancer. | **10** |
|  | **PRACTICAL**   1. Analysisofurine 2. Collectionofblood andseparation ofplasmaandserum 3. Estimationofbloodglucose 4. Estimationof total protein 5. DeterminationofA/G ratio 6. Estimationofserumurea 7. Estimationofserumcreatinine 8. Estimationofcholesterol 9. EstimationofBilirubin | **15** |
|  | **Total** | **75** |

# COURSEOUTCOMES

**Aftersuccessfulcompletionof thecoursethestudentwillbeableto:**

**CO1.**Describethebiochemical changesdueto disorders ofmetabolism

**CO2.**Comprehendthemetabolicandnutritional interventionofvariousdisorders.

**CO3**. Evaluate and formulate dietary recommendations and customized diet plans based on clinicalcondition.

**CO4**. Illustrate the etiology, manifestation and assessment of diseases of the heart, liver, gallbladder,kidneys andgastrointestinal tract.

**CO5.**Exhibitskillsinqualitativeandquantitative estimationofbloodandurinesamples.

# REFERENCES

1. Schlenker,E.,&Gilbert,J.A.,(2018),Williams'EssentialsofNutritionandDietTherapy-E-Book.Elsevier Health Sciences.
2. Wardlaw,GM.,(2004),ContemporaryNutrition, 2ndedition, MosbyPublishing.
3. Rolfes,S.R.,Pinna,K.,&Whitney,E.(2020),Understandingnormalandclinicalnutrition,Cengagelearning.
4. CarolByrd–Bredbenner,(2013),Wardlaw'sperspectivesinNutrition,9theditionMcGraw

–Hill InternationalEdition.

1. MahanL.K., Sylvia Escott-Stump,(2012), Krause’s FoodNutritionandDietTherapy,13thedition,W.B. Saunders Company,London.
2. SrilakshmiB.,(2014),Dietetics,7thedition,New AgeInternationalPvt. Ltd.NewDelhi.
3. AntiaF.P.,AbrahamP,(2002),ClinicalDietetics,4thedition,OxfordPublishingCompany.
4. Whitney,E., &Rolfes,S.R.,(2018),Understandingnutrition.CengageLearning.

# E-LEARNINGREFERENCES

* + <https://www.nutrition.gov/>
  + <https://nutrition.org/>
  + [NutritionResourcesforOnlineLearning(healthyeating.org)](https://www.healthyeating.org/products-and-activities/curriculum/online-learning)

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| SEMESTER: II | 23UNFDN26 : HOSPITAL FOOD SERVICE ADMINISTRATION | CREDIT: 2  HOURS: 2/W |

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| **LearningObjectives** |
| Toenable thestudents to: |
| * Define role of hospital food service administration |
| * Develop skills to maintain medical records. |
| * Understand the management of resources in hospitals |
| * Design hospital diets and housekeeping department |
| * Knowledge about financial management |

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| **UNIT** | **CONTENT** |
| **I** | **Introduction to hospitals**  Hospital based health care and its changing scenario, Effects of globalization on healthcare, concepts of corporate hospitals in developing countries, infrastructure and lay out of anideal corporate hospital, functioning of modern hospital and changing needs of patients. |
| **II** | **Patient care services**  Patient Care Services, Patient Admission / discharge. Functioning of Outpatient -In patient -Emergency Services -Operation theatre -Intensive care - Superspecialty. Planning and scheduleof work |
| **III** | **Objectives functioning of Supportive Services**  Lab services -Radiology and Imaging services, Blood bank services, HomeServices,  diagnostic services, physiotherapy. Medical records services-Housekeeping- Laundry-Stores -Health Insurance |
| **IV** | **Hospitality in hospital care**  Function, structure, organisation and management of Dietary Department. Diet planning forhospital diets. Purchasing, storage and quantity food production, patient compliance, foodproduction, serving to patient- tray and trolley service, plate waste management, washing andgarbage disposal |
| **V** | **Management of Hospital services**  Importance of Marketing and Material management, Human resource management, managerial accounting and financial management, inventory management. Types of computersystems used for reservation systems, point of sale systems (POS) and property managementsystems. (PMS). Meaning and importance of Hospital audit. |

**COURSE OUTCOMES**

1) Understand the functioning of hospitals

2) Manage the patient care and auxiliary and supportive care services.

3) Plan menu to satisfy the nutritional, dietary and medical needs of patients

4) Understand the functions of the management of hospital administration.

5) Gain knowledge on Hospital based healthcare and it changing scenario.

**Text Books**

1) Sudhir Andrews, Front Office Management and Operations, 2008, Tata Mc Graw – HillPublishing Company Ltd.

2) Sakharka B M, Principles of Hospital Administration and Planning, 2009, 2nd Edition,Jaypee Brothers Medical Publishers (p) Ltd.

3) Sherry Glied and Peter Smith, The Oxford Handbook of Health Economics,2011

**Supplementary Reading**

1) Jan Abel Olsen, Principles in Health Economics and Policy, 2009, Oxford UniversityPress.

2) Mohinder Chand, Managing Hospitality Operations, 2009, 1st Edition, Anmol PublicationsPvt. Ltd. New Delhi.

3) Goel S.L, Health Care System and Hospital Administration, 2009, Vol.7, Deep and DeepPublications Pvt. Ltd.

**Outcomes Mapping**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** |
| **CO1** | 2 |  |  |  |  |
| **CO2** |  | 3 |  |  |  |
| **CO3** |  |  | 2 |  |  |
| **CO4** |  |  |  | 3 |  |
| **CO5** |  |  |  |  | 2 |

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| **SEMESTER: III**  **PART-III**  **CORE-V** | **23UNFDC33: HUMAN NUTRITION** | **Credit:5**  **Hours:5** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Understandtheimportanceofvariousmacronutrientsinrelationtohealth. |
| Highlightdietaryguidelinesforvariousnutrientsand contributetowardsa betterlifestylefor  Preventionofnon-communicablediseases. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Introductiontonutrition**  HistoryofNutrition– DevelopmentofNutritionasa Science  Foodasasourceofnutrients,definitionof nutrients,Balanceddietsanddietaryguidelines-currentconcepts  Signsandsymptomsofadequate,optimumandgoodnutrition,malnutrition(Undernutrition,andovernutrition),AssessmentofNutritionalstatus-Anthropometric,Biochemical,ClinicalandDietaryaspects. | **7** |
|  | **Activity-**Planmealsbased onMy- Plateconcepts, RecordHeight,Bodyweight, andcalculateBodyMassIndex(BMI)in asmallsample,andcategorizeaccordingtoBMI. | **3** |
| **UNITII** | **Carbohydrates**  Classification,FoodSources,RequirementsandFunctionsofcarbohydratesinthebody.Reviewofdigestion,absorptionandmetabolism.  PhysiologicalsignificanceofMonosaccharides,DisaccharidesandPolysaccharides Glycemic Index, Glycemic load of Foods, and factorsaffecting it,HormonalcontrolofBlood sugar.  Roleoffibreinpreventionofnon-communicablediseases.  **Proteins**  Aminoacids-Indispensableanddispensableaminoacids.Classification,Sources,Requirements and functions of protein. Mutualsupplementationofproteins.  Protein deficiency-Protein Energy Malnutrition- Kwashiorkor andMarasmus–etiology, clinical features, treatment and preventionEvaluationofproteinquality-PER,BV,NPUandNPR,chemicalscore.ProteinSupplementsandNovelProteinsources-BenefitsandHealth  concerns | **17** |
|  | **Activity-**ListfoodsbasedontheirGI,andProteinsupplementsavailablein  Themarket. | **3** |
| **UNITIII** | **Lipids**  Classification, Sources, Requirements and functions, Essential fatty acids-deficiency,food sources and functions, Healthy and Unhealthy Fats in thediets,Dietarylipidsandits relationtocardiovasculardiseases.  **Energy**  Determinationofenergyvalue offoodsusing Bomb calorimeter,  Physiologicalvalueoffoods,relationbetweenoxygenusedandcalorific | **17** |
|  | value.Direct and Indirect calorimetry direct calorimetry, Respiratory quotientComponentsofEnergyexpenditure-Basal metabolism,factorsaffectingBMR,Foodrelatedthermogenesis,PhysicalactivityEnergy requirementsfordifferentagegroups,and forvarious typesofactivities. |  |
|  | **Activity-**Listhealthyandunhealthysourcesof fats inone’sdiet.  LearntoestimateBMR. | **3** |
| **UNITIV** | **FatSolubleVitamins**  Foodsources,Requirements,Functions,EffectsofdeficiencyorToxicity(whereverapplicable).  **WaterSolubleVitamins**  Foodsources,Requirements,Functions,Effectsofdeficiency.AntioxidantRoleofcertainVitaminsinHealthpromotion | **10** |
| **UNITV** | **Macrominerals**  Calcium, Phosphorous, Magnesium, Potassium, Sodium and Chloride-Distributioninthebody,functions,foodsources,requirements,effectsofdeficiencyand toxicity.  **Micro/Traceminerals**  Iron, Zinc,Iodine,Selenium,Manganese,Chromium,FluorideandCopper Distribution in the body; functions, effects of deficiency, foodsourcesandrequirements,RoleofAntioxidantminerals  **Water**  As nutrient, functions, sources, requirements.Distributionofwaterinthebody,exchangeofwaterinthe body,compositionofbodyfluids.  Waterbalance,factorsregulatingit,dehydration,waterintoxication. | **15** |
|  | **TOTAL** | **75** |

# COURSEOUTCOMES

Aftersuccessfulcompletionofthecourse,thestudentwillbeableto:

**CO1**.Definenutrientsandtermsrelatedtonutrition.

**CO2**. Describethesources,recommended allowances of macronutrients, micronutrients andwater.

**CO3:** Interpret the significance of macro and micronutrients and water for maintenance of optimum health.

**CO4**.Explainthefunctions,deficiencyortoxicityofmacroandmicronutrientsandwater.

**CO5**.Evaluatetheroleofmacronutrients,micronutrients, andwaterinhealthanddisease.

# Reference:

1. AndersonJ. J.B.,RootM.M.,GarnerS.C.(2015)HumanNutrition: HealthyOptionsforLife.Jones&BartlettLearning,Massachusetts,USA.
2. Guthrie,H.A.(1989)IntroductoryNutrition.7thed.TimesMirror/MosbyCollegePublishing,St.Louis
3. InselP.,RossD.,McMahonK.,BernsteinM.(2016)DiscoveringNutrition.5thEd.,Jones&BartlettLearning,Massachusetts,USA.
4. Mahan Kand Sylvia E.Stump (2000) Krause’s Food Nutrition and Diet Therapy,Saunders, USA
5. Medeiros D. M., and Wildman R. E. C. (2019) Advanced Human Nutrition. 4th Ed.,Jones&BartlettLearning,Massachusetts,USA.
6. Ross A. C., Caballero B., Cousins R. J., Tucker K. L., Ziegler T. R. (2014) ModernNutrition in Health and Disease. 11th Ed., Wolters Kluwer | Lippincott Williams &Wilkins,Philadelphia,USA.
7. Sizer F. S. and Whitney E. (2014) Nutrition: Concepts & Controversies. 13th Ed.,Wadsworth,CengageLearning,USA.
8. Whitney, E.R.andRolfes S.R. (1996)Understanding nutrition. 7th Ed., West PublishingCompany,USA

# e-LearningResources:

* <http://www.merck.com/mmhe/seciz/ch155/ch155a.html>
* http://www.whereincity/medical/vitamins

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| **SEMESTER: III**  **PART-III**  **CORE-VI** | **23UNFDC34: NUTRITIONAL BIOCHEMISTRY**  **(THEORY & PRACTICAL)** | **Credit:5**  **Hours:5** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Studythebasic conceptsof metabolismof proximateprinciples andothers. |
| Tolearnthemetabolicpathwaysof nutritionalsignificance. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **BiologicaloxidationandEnzymes**  Biological oxidation, Electron transport chain and OxidativePhosphorylation.Enzymes–Definition,Types,Mechanismofaction,Factorsaffectingenzymeactivity,Coenzyme,Roleofbvitaminas coenzyme.  Free radicals – Definition, Formation in biological systems.Antioxidants– definition,Role ofantioxidantsinpreventionof  Degenerativedisorders | **10** |
| **UNITII** | **MetabolismofCarbohydrates**  Classification,Glycolysis,TheCitricAcidCycleGlycogenesis,Glycogenolysis,Gluconeogenesis,TheHexoseMonophosphateShuntandbioenergetics. | **10** |
| **UNITIII** | **MetabolismofProtein**  Classificationofaminoacids,OxidativeDeamination,decarboxylation, transamination andtransmethylationofaminoacids,ureacycle,biosynthesisofnon-essentialaminoacids,catabolismofessentialamino\acids.Proteinbiosynthesis. | **10** |
| **UNITIV** | **MetabolismofLipids**  Classificationoffattyacid,Biosynthesisoffattyacids,betaoxidation of saturatedfattyacids, ketone bodies. Essential fattyacids–typesandfunctions.Lipoproteins–classificationand  function.Biosynthesisofcholesterol. | **15** |
| **UNITV** | **IntermediaryMetabolism, Nucleicacid&Recentconcepts**  Overviewofintermediarymetabolismofcarbohydrates,proteinandlipid. Hormonalregulationofcarbohydrateproteinandfatmetabolism Structural components and functions of nucleic acid,StructureofDNA,RNAtypesandfunctions.RecombinantDNA  technology,MetabolismofXenobiotics,Nutrigenomics | **15** |
|  | **Practicals**   1. Qualitativetestsforsugars-glucose, fructose,lactose,maltoseandglucose. 2. Quantitativeestimationofreducingsugar. 3. Qualitativetestsforproteins | **15** |
|  | 1. DemonstrationExperiments. 2. Estimationoftotalnitrogeninfoods(MicroorMacrokjeldahlmethods) 3. DeterminationofIodinevalue 4. DeterminationoffatcontentinfoodusingSoxhletmethod. |  |
|  | **TOTAL** | **75** |

# COURSEOUTCOME

**Aftersuccessfulcompletionofthecoursethestudentswillbeableto**

**CO1.** Describe the role of enzymes and co enzymes in biological oxidation.**CO2.** Explain metabolism and regulation of carbohydrate, lipids and proteins**CO3.**Analyzetheintegrationofcarbohydrate, lipidandproteinmetabolism

**CO4.**Comprehendthesignificanceofrecent biochemicalconceptsnamelyxenobiotics,recombinantDNAtechnologyandNutrigenomics.

**CO5.**Discussthestructureandfunctionsofnucleicacids.

# References

1. Albanese,A.(Ed.).(2012).NewermethodsofnutritionalbiochemistryV3:Withapplicationsandinterpretations.Elsevier.
2. Bettelheim,F.A.,Brown,W.H.,Campbell,M.K.,&Farrell,S.O.(2009).General,Organic &Biochemistry.Brooks/Cole CengageLearning.
3. Champe,P.C.,Harvey,R.A.,& Ferrier,D. R.(2005). Biochemistry.LippincottWilliams&Wilkins,6thEdition,Wolters Kluwer,London.
4. Harvey,R.andFerrier,D.,Lippincott’sIllustratedReviews:Biochemistry,6thedition,LippincottWilliamsandWilkins,Philadelphia.
5. Lehninger,A.L.(1993)Biochemistry.3rded.CBSPublishers,NewDelhi.
6. Lieberman,M.,&Ricer,R.E.(2009).Lippincott'sIllustratedQ&AReviewofBiochemistry.LippincottWilliams&Wilkins.
7. Murray,R.K.,Granner,D.K.,Mayes,P.A.andRodwell,V.W.(2000):25thEd.HarpersBiochemistry.Macmillanworthpublishers.
8. ShanmughamAmbika(1985)Fundamentalsofbio-chemistrytomedicalstudents.NVABharatPrinters,andtraders56, Peters Road,Madras-86.

# E-LEARNINGRESOURCES:

* + <https://www.udemy.com/share/1027yA/>
  + <https://www.classcentral.com/course/swayam-biochemistry-5229>
  + [https://www.classcentral.com/course/edx-biochemistry-biomolecules-methods-and-](https://www.classcentral.com/course/edx-biochemistry-biomolecules-methods-and-mechanisms-12585)

[mechanisms-12585](https://www.classcentral.com/course/edx-biochemistry-biomolecules-methods-and-mechanisms-12585)

* + <https://www.classcentral.com/course/swayam-experimental-biochemistry-12909>
  + <https://youtu.be/y6YGZfcAegw>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

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| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| **SEMESTER: III**  **PART-III**  **ELECTIVE-III** | **23UNFDE35: FUNDAMENTALS OF ART AND DESIGN**  **(THEORY & PRACTICAL)** | **Credit:3**  **Hours:4** |

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| **LearningObjectives** |
| Toenablethestudentsto: |
| Understandtheelements,principlesofdesignandprinciplesofhousing. |
| Learntheconceptsofcolourandcreatecolourschemeforinteriors. |
| Learntheapplicationofartprinciples,elementsofdesign,colourschemesandhousing  principlesincreating aestheticinteriors. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Introductiontoartanddesign-**Importanceofdesign,Applicationofgood taste and Role of good designer.Types of design- Structural andDecorativedesign.ClassificationofDecorativeDesign-Naturalistic,  Stylized,AbstractandGeometricalDesign. | **8** |
|  | **Practical:**Sketchingdifferent typesofdesigns. | **2** |
| **UNITII** | **Elementsofdesign-**Lineanditstypes –horizontal,vertical,diagonal,curved,zigzag;Shape;Form–2D&3D,Size,Texture-tactileandvisual;light,pattern,Space-positive&negativeandColour-warmandcool.  Applicationofelementstoformdesign. | **8** |
|  | **Practical**:CreatingOpticalillusioninInteriors. | **2** |
| **UNITIII** | **PrinciplesofDesign-**Harmony–harmonyofline,shape,size,textureandideas.Balance–symmetrical,asymmetrical andradial.Proportion  –proportionalrelationships,GreekoblongandScale.  Emphasis–emphasisthroughgroupingof objects,useof contrastcolor,decoration,plain background space, unusual lines, shapes, andsizes.  Rhythm – achieving rhythm through repetition of shapes, progressionofsize,continuouslinemovement,radiation,andgradation. | **15** |
|  | **Practical:** ApplicationofArt Principlesinarrangingareasininteriors | **5** |
| **UNITIV** | **Colour-**Definition,Qualitiesofcolour,Hue,Value,Intensity.TintsandShades. The colour wheel/systems - Prang colour system, Physicist’sTheory,Psychologist’sTheory,Harmoniesofrelatedcolors-Monochromatic,AnalogousandAccentedNeutral;Harmoniesof  contrasting colours –Direct,double,splitand triad. | **8** |
|  | **Practical:**Paintingdifferentroomswithvariouscolourharmonies. | **2** |
| **UNITV** | **Housing -** Selection of site and functions of house. Basic principles ofplanning a life space - Orientation, Grouping, Roominess, Lighting,Circulation,StorageFacilitiesandPrivacy.Creatingalifespace-Factorsinplanningdifferentrooms–LivingRoom,Bedroom,DressingRoom,Dining,Kitchen,StudyRoom,Storeroom,Bathroom,Utilityspace,Staircase andVerandah. | **8** |
|  | **Practical:**Planninglayout fordifferentareasininteriors. | **2** |
|  | **Total** | **60** |

# COURSEOUTCOMES

**Aftersuccessfulcompletionofthecoursethestudentwillbeableto:CO1**:Classifydesigntypeslikestructuralanddecorativedesign

**CO5**:Explaintheprinciplesinplanningalifespace

**CO2**:Usedifferentelementsofdesignappropriatelyincreatingdesignobjects.

**CO3**:ApplytheArtprinciplesinInteriorDesign.

**CO4**:Applycolour harmoniesinvariousrooms.

# References:

* 1. Andal. A and Parimalam.P, (2008), “A TextBook of InteriorDecoration”, SatishSerialPublishingHouse.
  2. Chaudhari,S.N.(2006),“InteriorDesign”,AavishkarPublishers,Jaipur.
  3. Goldstein,(1976),“ArtinEveryDayLife”,OxfordandIBHPublishingHouse.
  4. Kasu,A.A.2005,“InteriorDesign”,AshishBookcentreDelhi.
  5. P.C.Varghese(2013),“BuildingConstruction”,PHILearningPrivateLimited.
  6. PremavathySeetharamanandParveenPannu,(2009),“InteriorDesignandDecoration”,CBSPublishers andDistributors PvtLtd.NewDelhi.

# e-LearningResources:

* [https://www.google.co.in/?gfe\_rd=cr&ei=oJE8VvucFMOl8wfe0ZnICw#tbm=vid&q=principles+of+design+in+interior+design](https://www.google.co.in/?gfe_rd=cr&ei=oJE8VvucFMOl8wfe0ZnICw%23tbm%3Dvid&q=principles%2Bof%2Bdesign%2Bin%2Binterior%2Bdesign)
* <http://www.docstoc.com/docs/108663367/The-Munsell-and-Prang-Color-Systems>
* <https://www.decorilla.com/online-decorating/transitional-interior-design/>
* <https://www.apartmenttherapy.com/modern-vs-contemporary-vs-minimalist-design-261783>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| **SEMESTER: III**  **PART-IV**  **Skill Enhancement-4** | **23UTADS36: CONSUMER EDUCATION**  **(SKILL ENHANCEMENT COURSE-4 )** | **Credit:1**  **Hours:1** |

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| **LearningObjectives** |
| Toenablethestudentsto: |
| Befamiliarwiththeproblemsinbuyingandconsumerlegislations. |
| Becomeawareofmarketingconditionsand themeans forproblemredressal. |
| Createawarenessonvariousconsumerbuyingproblems. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Consumerism and consumer buying problem -** Definition and theconceptofconsumerism–consumer,producerandmarket.Characteristicsofconsumers,roleofconsumersintheIndianeconomy.Malpractices–Incorrectweightsandmeasures.Misleading  AdvertisementandMisbranding. | **2** |
|  | **Activity**:Preparationofposterandcreatingawarenesson  variousconsumerbuyingproblems. | **1** |
| **UNITII** | **Human wants, Demand and Supply -** Definition,classificationofhuman wants–necessities,comfortandluxuries. Meaning of demandandsupply.Relationbetweenutility,demandand supply.Factorsinfluencingdemandandsupply.  **Typesofincome-**Real,money,psychic, relationship ofGNP,national  income,personalincome,disposableincome. | **2** |
|  | **Activity:** Preparing guidelines for purchasing  commonlyusedconsumergoodsandservices. | **1** |
| **UNITIII** | **Markets and marketing -** Basic Concept, Classification and functionsofMarkets, TypesofMarket.ChannelsofDistribution:Meaning,typesandtheiradvantagesanddisadvantages.  **Consumer in the market -** Consumer buying habits, buying motivesandbuyingproblems.  **ConsumerAids**   1. Brand–Differenttypesand itsimportance.Labels–Importance,Meritsanddemerits.ImportanceofPackagingandAdvertising. | **3** |
|  | **Activity:**Illustratedifferenttypesofconsumeraids. |  |
| **UNITIV** | **QualityAssessment ofProducts -**Definition–Standardsand  standardizationanditsImportance. QualitySeal–BIS,ISI,AGMARK,ISO,HALLMARK,BEELABELandFPO | **2** |
|  | **Activity:**Identifygovernment agenciesinprotectingtheconsumer. | **1** |
| **UNITV** | **Consumer decision making process -** Types of consumer decisions,processofdecisionmaking,factorsdeterminingandinfluencingconsumerbehavior,guidelinesforwisebuying practices.  **ConsumerProtectiveServices-**ConsumerProtectionAct,Food  AdulterationAct–FSSAI.QualitycontrolandinspectionAct**.**ConsumerRightsandconsumerresponsibilities. | **2** |
|  | **Activity:**Identifyaconsumerproblemandsolveitusingdecision  makingsteps. | **1** |
|  | **Total** | **15** |

# COURSEOUTCOME

**Aftersuccessfulcompletion ofthecoursethestudentwillbeableto:CO1**.Identifythemajorinfluencesonconsumerbehavior.

**CO2.**Analyzetheimplicationsofdemandandsupply.

**CO3**.Implementwisebuyingpractices.

**CO4**.Explainconsumerprotectionlegislationsandstandards.

**CO5**.Assess the qualityofaproduct based ontheknowledgegained.

# References:

1. Gupta,C.B.andNair,R.N(2004).MarketingManagement:SultanChandandSons,
2. Juliana,M(2011).Greenconsumerism,UnitedStates:SAGEPublishers.
3. Kathiresan,S.Radha,V(2004),Marketing:Chennai,PrasannaPublisher.
4. Kumar,N.,(1999),ConsumerProtectioninIndia,Delhi,HimalayaPublishingHouse.
5. Pattanchetti,C.C.andReddy,2002).PrinciplesofMarketing,Coimbatore:RainbowPublishers,India.
6. Seetharaman,P.andSethi,M.(2001).Consumerism:StrategiesandTactics,CBSPublishersandDistributors,NewDelhi.
7. Steven, D.S, (2016). Consumer Economics: A Practical Overview”,NewYork: RoutledgeTaylorandFrancisgroup.
8. SujaNair(2002).ConsumerBehaviour:NewDelhi.SultanChandandSons.

# e-LearningResources:

* <http://www.jagograhakjago.com/consumer-rights/>
* <https://consumeraffairs.nic.in/organisation-and-units/division/bureau-indian-standards>
* <https://www.consumer-voice.org/food/know-your-quality-marks/>
* <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=120087>
* <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=120086>
* https:/[/www.nios.ac.in/media/documents/srsec321newE/321-E-Lesson-17.pdf](http://www.nios.ac.in/media/documents/srsec321newE/321-E-Lesson-17.pdf)
* <https://www.flexiprep.com/NIOS-Notes/Senior-Secondary/Home-Science/NIOS-Home-Family->and-Home-Science-Ch-16-Consumer-Education.html

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| **SEMESTER: III**  **PART-IV**  **Skill Enhancement-5** | **23UTADS37: FUNDAMENTALS OF RESEARCH IN NUTRITIONAL SCIENCES**  **(SKILL ENHANCEMENT COURSE-5)** | **Credit:2**  **Hours:2** |

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| **LearningObjectives** |
| **Toenablethestudentsto:** |
| Understandbasicconceptsofresearchmethodology. |
| Usesimplestatisticalmethodsforanalysisofdata. |
| Developskillstocarryoutaprojectand presentareport |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Introductiontoresearch**  Research-Meaning,objectives,significance.  Research problem- Definition andselection ofresearch problem.Researchdesign–Typesofresearchdesign  Methodofsampling-probabilityandnon-probabilitysampling–Meritsand  demeritsDeterminingsample size | **15** |
| **UNITII** | **DataCollection**  Primaryandsecondarydata,selectionofappropriatemethodfordatacollection.  Toolsusedfordatacollection-QuestionnaireandInterviewschedule. | **10** |
| **UNITIII** | **Codingandtabulationofdata**  Data entryand computation,Tabulationofdata –partsofthe table  Presentationofdata-useofbargraphandpiechart | **10** |
| **UNITIV** | **Basic statistical tools for analysis and interpretation**Measures of central tendency – Mean, Median, Mode.Variations-therangeandstandarddeviation  Correlation–KarlPearson’scoefficientofcorrelationTestofsignificance-  Student’sttest | **15** |
| **UNITV** | **Reportwriting**  Steps in report writing,Layout of a report.Bibliography-citingreferences-anyonestyle. | **10** |
|  | **EXPERIENTIALLEARNING**  Carryoutasmallsurvey,codeandtabulatedataandpresentdatausingtablesandgraphs.Interpretdatausingsimplestatisticaltoolsandpresentreport  followingrulesforreportwriting. |  |
|  | **TOTAL** | **60** |

# COURSEOUTCOMES

**Aftersuccessfulcompletionofthecourse,thestudentwillbeableto:CO1.**Definetermsassociatedwithconductofresearch.

**CO2**. Explain research design, methods of research, collection, tabulation andpresentationofdata.

**CO3.** Chooseasamplingmethodandidentifytheappropriatestatisticalmethods.

**CO4.**Analyzethedataanddrawconclusions.

**CO5.** Evaluatedata,drawinferencesandprepare areport**.**

# References:

1. Goode,WJandHatt, PK (1981)MethodsinSocialResearch,McGrawHillInternationalEditions,SociologySeries.
2. Gupta,S.P.(2019)Statisticalmethods.46thed.SultanChandandCo,NewDelhi.
3. Kerlinger F. N. and Lee, H.B. (2000) Foundations of Behavioura Research 4thEd.HarcourtCollegePublishers.
4. Kothari, C.R. (2019). Research methodology methods and techniques,NewAgeInternationalpublishers,NewDelhi.
5. Kumar, R. (2005) Research Methodology: A Step-by-Step Guide forBeginners.SagePublications,NewDelhi.

# e-LearningResources:

* <http://www.socialresearchmethods.net/tutorial/mugo/tutorial.htm>
* <https://ebooks.lpude.in/library_and_info_sciences/MLIS/year_1/DLIS401_METHODOLOGY_OF_RESEARCH_AND_STATISTICAL_TECHNIQUES.pdf>
* [https://mfs.mkcl.org/images/ebook/Fundamental%20of%20Research%20Methodology](https://mfs.mkcl.org/images/ebook/Fundamental%20of%20Research%20Methodology%20and%20Statistics%20by%20Yogesh%20Kumar%20Singh.pdf)

[%20and%20Statistics%20by%20Yogesh%20Kumar%20Singh.pdf](https://mfs.mkcl.org/images/ebook/Fundamental%20of%20Research%20Methodology%20and%20Statistics%20by%20Yogesh%20Kumar%20Singh.pdf)

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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 |

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| **SEMESTER: III**  **PART-V**  **EVS** | **23UEVSG38:**  **ENVIRONMENTAL STUDIES** | **Credit:-**  **Hours:1** |

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| **SEMESTER: IV**  **PART-III**  **CORE: VII** | **23UNFDC43:**  **NUTRITION THROUGH THE LIFE CYCLE**  **(THEORY & PRACTICAL)** | **Credit: 5**  **Hours: 5** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Understandthe roleofnutritioninthegrowthand developmentthroughthe lifecycle. |
| Gaininsightintotheprinciplesofeffectivemealplanning. |
| Understandthenutritionalneedsofvarious age groups |
| Acquireskillsto plandietsforvariousage groups acrossthelifecycle. |

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| **UNIT** | **CONTENT** | | | **HOURS** |
| **UNITI** | **Introduction to meal planning -** Balanced diet, food groups, FoodGuidePyramid(ICMR),Foodplate,RDA,factorsaffectingRDA.Principlesof meal planning– steps involved inplanning adiet.  **NutritionforAdult**-nutritionalrequirements,planningbalanceddietsforadultmenandwomen,promotinghealthylifestylethroughholistic  approach. | | | **10** |
| **UNITII** | **Nutritionduringpregnancy**-Physiologicaldemandsofpregnancy, nutritional needs, effect of nutrition on pregnancyoutcome, optimal weight gain, nutrition related problems inpregnancy,complicationsofpregnancy.  **Nutrition during lactation**- Physiology of lactation,  nutritionalrequirements,concernsofbreast-feedingmother. | | | **15** |
| **UNITIII** | **Nutrition during infancy**- Growth and development, growthstandards, food and nutritional requirements, breast feeding,artificialfeeding,lowbirthweightbabies,complementaryfeeds.  **Nutrition for preschool children**- Growth and development,food and nutritionalrequirements,eatinghabitsandfoodbehaviors,nutritionrelatedproblems-PEM,VADandtheir  dietaryinterventions. | | | **15** |
| **UNITIV** | **Nutrition for school children**- Growth pattern, nutritionalrequirement,importanceofhealthysnacks,factorsaffectingeatinghabits,schoollunch.  **Nutritionduringadolescence-**Growthanddevelopment,  nutritional requirements, food habits, nutritional problems –obesity,underweight,anaemiaandeatingdisorders. | | | **15** |
| **UNITV** | | **Nutrition foroldage-**Physiological changesinelderly,  foodandnutritionalrequirements,nutritionalandhealthconcerns inoldage,healthy lifestyle. | **5** | |
|  | | **PRACTICAL**   1. PreparationofComplementaryfeed. 2. Planning and preparation of diets for different activitylevelsand incomegroup.    1. Pre-schoolchild    2. Schoolgoingchildren    3. Adolescents    4. Adult    5. Expectantmother    6. Nursingmother    7. Oldage 3. Planningandpreparationofdiets(lowandmediumcost) for deficiencydiseases-    1. PEM    2. VitaminA deficiency    3. Nutritionalanemia 4. Packedlunchforschool | **15** | |
|  | | **TOTAL** | **75** | |

# COURSEOUTCOMES

**Aftersuccessfulcompletionof thecoursethestudentwillbeableto**

**CO1**. Explain the physiological basis for nutritional needs through the human lifecycle**CO2.** Identify nutrition related concerns and deficiency disorders at every stage of lifecycle**CO3**.Discuss appropriatedietaryguidelines forvarious agegroups

**CO4**.Developindigenous, valueaddedandlow costcomplementaryfeeds.

**CO5.** Demonstrate skills to plan and prepare appropriate and sustainable diets fordeficiencydiseases

# REFERENCEBOOKS

* + 1. SrilakshmiB.(2011)Dietetics,sixthedition,NewagePublishingPress,NewDelhi.
    2. Gopalan,C., Ramanathan, P.V. Balasubramanian, S.C. (2001) Nutritive value of Indianfoods,NIN, Hyderabad.
    3. Longvah T, Ananthan R, Bhaskar K, Venkaiah K. (2017) Indian Food CompositionTables,NationalInstituteof Nutrition.
    4. AbrahamS,NutritionthroughLifecycle.(2016)1stedition,Newageinternationalpublishers, NewDelhi.
    5. StacyN,William’sBasicNutritionandDietTherapy.(2005)12thedition,Elseivierpublications,United Kingdom.
    6. WhitneyENandRolfesSR, UnderstandingNutrition.(2002)9theditionWest/Wordsworth, London.
    7. GroffJL,GropperSS,AdvancedNutritionandHumanMetabolism.(2000)3rdedition,West/ Wadsworth,United Kingdom.
    8. Cataldo,DeBruyneandWhitney,NutritionandDiettherapy–PrinciplesandPractice.(1999)5thedition, West/ Wadsworth, London.

# e-LEARNINGRESOURCES

* <http://vikaspedia.in/health/nutrition/dietary-guidelines-1/dietary-guideline-1>
* <https://www.nhp.gov.in/healthlyliving/healthy-diet>
* <https://motherchildnutrition.org/india/complementary-feeding-guidelines.html>
* <http://vikaspedia.in/health/nutrition/dietary-guidelines-1/diet-for-children-and-adolescents>
* <https://motherchildnutrition.org/india/complementary-feeding-guidelines.html>
* <https://sol.du.ac.in/mod/book/view.php?id=1422&chapterid=1288>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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 |

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| **SEMESTER: IV**  **PART-III**  **CORE: VIII** | **23UNFDP44:**  **NUTRITION PRACTICAL** | **Credit: 5**  **Hours: 5** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Understandthevariousanalyticaltechniques. |
| Developanalyticalskillsrequiredfornutritionresearch. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | Assessmentof Nutritional Status  -BodyComposition parameters  -Circumferencemeasurements  -Clinicalsigns  -Dietaryassessment  Ashingoffoodand preparation ofash solution | **15** |
| **UNITII** | Estimation of Iron in foodEstimationofcalciuminfood  EstimationofVitamin CbyTitrimetricmethod | **10** |
| **UNITIII** | EstimationofcalorificvalueoffoodusingtheBomb Calorimeter-Demonstration  Estimationofproteincontentin food bythe kjeldahlmethod-Demonstration  EstimationofmoisturecontentoffoodusingInfraredmoisturebalance-  Demonstration | **20** |
| **UNITIV** | Estimationofglucoseinblood (colorimetricestimationand useofglucometer)  Estimationofhaemoglobin inblood | **10** |
| **UNITV** | Determinationofplasmacholesterol,Triglycerides,HDLandLDLcholesterol(withthe useofthesemiautoanalyser)  Estimationofacid valueinoil/fat  Visittoafoodanalytical lab | **20** |
|  | **TOTAL** | **75** |

# COURSEOUTCOME

Aftersuccessfulcompletionofthecourse,thestudentwillbeableto:

**CO1.**Describetheprincipleandproceduresforthevariousexperiments.

**CO2**.Identifyappropriatelaboratoryproceduressuitedforestimationofselectnutrientsinfoodandbodyfluids.

**CO3**.~~E~~stimateselectnutrientsinfoodandmetabolitesinserum.

**CO4**.Comparetheresultswithstandardvaluesandinterpretthe findings.

**CO5**.Developskillstoassessnutritionalstatusofindividualsandthecommunity.

# References:

1. Oser,D.l.(1979)Hawk’sPhysiologicalChemistry.Tata-McGrawHillPublishingCo.,NewDelhi
2. Plummer,D.T.(1987)Introduction toPracticalBiochemistry.Tata-McGraw HillPublishingCo.,NewDelhi
3. Raghuramulu,N.,Nair,K.M.andKalyanasundaram,S.(1983)AManualofLaboratory
4. Sharma,B.K.(1999).8thEd.InstrumentalMethodsofChemicalAnalysis.GelPublishingHouse.
5. Srivastava,A.KandJain,P.C.(1986).2nd,Ed.ChemicalAnalysis:AnInstrumentalApproach.SChandandCompanyLtd.
6. Techniques.NIN,Hyderabad
7. Varley, H.; Gowenlock, A.H. and Bell, M. (1980). 5thed. Practical ClinicalBiochemistry.HeinemannMedicalBooksLtd.
8. Winton,A.L.andWinton,K.B.(1999).TechniquesofFoodAnalysis. AlliedScientific

# e-LearningResources:

* <http://www.merck.com/mmhe/seciz/ch155/ch155a.html>
* http://www.whereincity/medical/vitamins

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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 |

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| --- | --- | --- |
| **SEMESTER: IV**  **PART-III**  **ELECTIVE: IV** | **23UNFDE45:**  **HUMAN DEVELOPMENT** | **Credit: 3**  **Hours: 3** |

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| **LearningObjectives** |
| **Toenablethestudentsto:** |
| Familiarizewiththegrowthprocessfromconceptionto confinement. |
| Knowthe developmentof an individualfrom infancytoold age. |
| Understandthephysical,psychological,andsocialdevelopmentoftheindividualfrominfancytooldage. |
| Developanawarenessoftheproblemsofchildren,adolescent,andexceptionalchildren. |

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| --- | --- | --- |
| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Growthanddevelopment**  Meaning-growth anddevelopment,principlesofgoverninggrowthanddevelopment,developmental task ofdifferent stages.  Methodsof studyofhuman development. | **10** |
|  | **Practical -** preparation of case study - observing various development-physical, motor, cognitive, creative, social, emotional, and intellectual ofaparticular child. | **10** |
| **UNITII** | **InfancyandChildhood**  Characteristics, physical, social, and emotional development, cognitiveand language development during infancy, early childhood, and latechildhood.  Children’s play – meaning, types, importance stages.ParentaldisciplinaryTechniques–meritsanddemerits | **12** |
|  | **Practical -** Socio-metric study of early adolescents.Analysisof various playtechniques. | **2** |
| **UNITIII** | **Adolescence**  Adolescence –physical and psychological changes, emotional, moralandsocial development,Problemsof adolescence.  Delinquency–causes,prevention,andrehabilitation.  Educationalandvocationalguidance,roleoffamilyandschoolsandcollegesin guidingadolescence | **9** |
|  | **Practical -** A surveyonJuvenileDelinquencyprevalence. | **2** | |
| **UNITIV** | **AdulthoodandOldAge**  Adulthood-Characteristicsanddevelopmentaltasks,allaspectsofdevelopmentand vocational adjustments.  Oldage-Characteristicsofoldage,physicalchanges,psychologicalchanges.Placeof the aged inIndian Society | **4** | |
|  | **Practical -**Surveyon problemsof old age. | **2** | |
| **UNITV** | **ExceptionalChildren**  IntroductiontoChildrenwithSpecialNeedsandidentification&EducationalRehabilitation  Giftedchildren Orthopedicallychallenged  Mentallyretarded Hearingimpaired  Visuallyhandicapped Learningdisability | **7** | |
|  | **Practical-** Visittoaninstitutionforexceptionalchildren. | **2** | |
|  | **TOTAL** | **60** | |

# CCOURSEOUTCOME

Aftersuccessful completionofthecoursethestudentwill beable to

**CO1.**Describethemeaningand principles ofGrowth &Development

**CO2.**Explaindevelopmental aspectsduringinfancy,earlyandlatechildhood.

**CO3**.Evaluatedevelopmentalaspectsduringadolescence.

**CO4**.Identifythedevelopmentaltasksduring adulthoodandoldage.

**CO5.** Introduction to Children with Special Needs and identification & EducationalRehabilitation

# References

1. HurlockE.B.,(1972).ChildDevelopment,NewYork:McGrawHillBookcompany.
2. Hurlock,E.B.,(1995):DevelopmentalPsychology-ALifeSpanApproach,5th(Ed.)NewYork:McGraw Hill Book Co.
3. Nanda V.K., (1998): Principles of Child Development, New Delhi:AnmolPublications Pvt.Ltd.
4. RajammalP.DevadasandJayaN.Muthu(2002).ATextbookofChildDevelopment,NewDelhi:Macmillan Publishers.
5. Singh,A.(2015).FoundationsofHumanDevelopment:ALifeSpanApproach.NewDelhi:OrientBlack Swan.
6. SuriakanthiA.,(1997).ChildDevelopment–AnIntroduction,TamilNadu:KavithaPublishers.
7. Swaminathan,M(1998).TheFirstFiveYears:ACriticalPerspectiveonEarlyChildhoodCareand Education inIndia. NewDelhi: SagePublications.
8. Suriakanthi,A.,(2009). ChildDevelopment.Kavithapublications,Tamil

# LearningResources

* 1. <http://www.wbnsou.ac.in/online_services/SLM/BED/SEM-01_A1.pdf>
  2. <https://ncert.nic.in/textbook/pdf/kepy104.pdf>
  3. <https://egyankosh.ac.in/bitstream/123456789/17134/1/Unit-3.pdf>
  4. [https://www.cukashmir.ac.in/departmentdocs\_16/Growth%20&%20Development%20-](https://www.cukashmir.ac.in/departmentdocs_16/Growth%20%26%20Development%20-%20Dr.%20Ismail%20Thamarasseri.pdf)

[%20Dr.%20Ismail%20Thamarasseri.pdf](https://www.cukashmir.ac.in/departmentdocs_16/Growth%20%26%20Development%20-%20Dr.%20Ismail%20Thamarasseri.pdf)

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| **SEMESTER: IV**  **PART-IV**  **SKILL ENHANCEMENT-6** | **23UNFDS46:**  **PRE-SCHOOL AND CRECHE MANAGEMENT**  (**SKILL ENHANCEMENT COURSE** – **6**) | **Credit: 2**  **Hours: 2** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Tofamiliarizethestudentswith thesignificanceofmanagingthecrècheandpreschool |
| Understandtheelementsinvolvedinorganization and managementofcrecheandPreschool. |
| Createawarenessoffunctionsofvariousauthoritiesdealingwithcrèche andpreschool. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Conceptandorganization ofCrecheandPreschool**  Crèche and preschool -Meaning, types of preschools, need, importance oforganization,Elements of organizationand administration.  Difference between crèche and preschool, Preschool Programme -Principles of preschool programme, Framing of preschool curriculum –typesof curriculum,planningactivitiesforchildren,audio-visualaidsforchildren and its importance, Activities for children: Audio-visual aid forchildrenand its importance. | **4** |
|  | **Practical -** Planning the layout of Creche and Preschool, Planning cyclicmenufor apreschool andcrèche | **1** |
| **UNITII** | **ResourceManagement**  Location, site and building, Types of rooms, Storage facilities,arrangement of room (activity centers), ventilation, lighting and safety,Provision of safe drinking water and sanitary facilities, Playground andsafety aspects – indoor and outdoor games, Play equipment – types,criteriaforselection,Maintenanceofbuilding-store,furniture,equipmentSuggestive Low-Cost EducationalMaterial-TeachingAids | **4** |
|  | **Practical-**Analyzingtheavailabilityandsuitabilityof playmaterialsPreparationofFirst AidBox**.** | **1** |
| **UNITIII** | **Recordsandregisters**  Need, importance and maintenance of records and registers. Types ofrecords(Importantrecords)–Admission,Progress,Financial,Equipment,Correspondence, Health - sickness of child and immunization. Types ofregister - Attendance (Staff, children), Accounts, Stock, Staff Profile,services for children and daily diary. Methods of maintaining record ofchildren– Cumulativeand Anecdotal. | **6** |

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|  | **Practical-**Casestudyofachild-Socio-economicprofile,Demographicdetails, Maintaining an activity dairy, Diet-meal pattern, health statusPreparationand maintainingahealthrecord file. | **3** |
| **UNITIV** | **PlanningofPreschoolEducationActivities**  Skills&qualitiesofpreschoolchildren  IntroductoryGames/activitiesforRapport BuildingwithChildren  **Physical&MotorDevelopment**  GrossMotor &Fine MotorSkills  Essentials of Optimum Physical DevelopmentActivities/GamesforGrossandFineMotorSkills**CognitiveDevelopment**  EssentialsforCognitiveDevelopment  DevelopmentofBasicSkills -ActivitiesforSensoryDevelopment,MentalSkills and Concept Development  **LanguageDevelopment–**  Essentials for Language DevelopmentGames/ExercisesforLanguageDevelopment  Activities for Language Development - Listening Skills, Reading Skillsand WritingSkills  **DevelopmentofScienceExperience&CreativeExpression**  Areas of Creative ExpressionScience Experience Activities**Social&EmotionalDevelopment**  Essentials for Social & Emotional DevelopmentActivities and games for Social-Emotional DevelopmentGamesfor Socio-Emotional Development | **7** |
|  | **Practical-**Planningactivitiesforchildrenbasedonthecurriculumofthepreschoolandcrèche | **1** |
| **UNITV** | **PersonnelManagement**  Role and qualities of teacher and care - taker and other staff involved inwelfareandcareofchildren,Teacher-childratio,Needforandimportanceofin-servicetraining | **2** |
|  | **Practical -** Organization chart for Creche and Preschool, Collection ofdifferentrecordsandregisterstobemaintainedin apreschoolandcrèche | **1** |
|  | **TOTAL** | **30** |

# COURSEOUTCOME

**After successful completion of the course the student will be able toCO1.** Describe key Concept and organization of Creche and Preschool**CO2.**Explain ResourceManagement for crecheand preschools

**CO3**.Understandthe criteriaforRecords andregistersmaintenance

**CO4**.IdentifyimportanceandPlanningofPreschoolEducationActivities

**CO5.**IntroductiontoPersonnelManagementrequiredforcrecheandpreschools

# Reference

1. Ax line,V.M.(1964).Dibs insearchofself.NewYork:Ballentinebooks754
2. Clarke,P.(2001).Teaching&learning:the cultureofpedagogy.NewYork:Sage
3. Thomson, C.L., Holmberg, M.C., Baer, D.M., Hodges, W. L., and Moore, S.G.(1978). An Experimental Analysis of Some Procedures to Teach Priming andReinforcementSkillstoPreschoolTeachers.MonographsoftheSocietyforResearchinChild Development. 43 (4), pp 1-86.
4. Jaya, N., & Jayapoorani. N. (2004). Participation in a nursery school – Laboratorymanualforstudents. Coimbatore: Saradalaya.
5. Tileston,D.W.(2005).TrainingManual forEveryTeacher,Chennai:Sage.
6. TN Forces and IAPE, (2000). Pre- school Curriculum, Activity baseddevelopmentallyappropriatecurriculum forpreschoolers.Chennai

# LearningResources

* + <https://ddceutkal.ac.in/Syllabus/MA_Education/Paper_19.pdf>
  + <https://wcd.nic.in/sites/default/files/national_ecce_curr_framework_final_03022014%20%282%29.pdf>
  + <https://scert.kerala.gov.in/wp-content/uploads/2020/06/07-creche%20and%20preschool.pdf>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

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| --- | --- | --- | --- | --- | --- |
| **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 |

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| **SEMESTER: IV**  **PART-IV**  **SKILL ENHANCEMENT-7** | **23UNFDS47:**  **COMPUTER APPLICATION IN HOME SCIENCE**  (**SKILL ENHANCEMENT COURSE** – 7) | **Credit: 2**  **Hours: 2** |

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| **LearningObjectives** |
| Toenablethestudentsto: |
| Understandtheapplicationofcomputerin variousdisciplinesofHomeScience. |
| KnowthefeaturesofAutoCADsoftwareusedinTextiles &Interior Design. |
| Explorethebenefitsofcomputerapplicationsinthefieldofresearch. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Generalcommands-** Creatingandopeningafile,Steps increatingafolderand savingafileinthedestinedfolder.  **MSOfficePackage-**SoftwareinMSOfficepackage,creatingadocumentusingMSWord,preparingslidepresentationusing MS  PowerPoint. MakingGraphsandChartsusingMSoffice. | **5** |
| **UNITII** | **Computer Application in Space planning -** AutoCAD in InteriorDesign **-** Need, Purpose and merits. Application – Preparing Plan,Elevation and section drawings for interiors and exteriors. Need forrenderedviewsindesign.Creating3Dmodelsand3Dviewsusing  GoogleSketchup.Advantagesofsoftwareindesignfield. | **8** |
| **UNITIII** | **Computer Application in Nutrition - S**oftware package in nutritioneducationanddietcounselling-Patient’shealthrecord,Nutritivevalueof food items, Nutritional analysis, Meal planning and recipes, Typesof nutrition Softwares – Nutrium, Nutrition maker, Nutritionist pro,Nutritics,Coreplus.BenefitsofNutritionSoftware’stoNutritionists  andClients. | **5** |
| **UNITIV** | **ComputerApplicationinTextiles-**AutoCADinTextileDesigning  –Definition,Concept,ApplicationofCAD–Sketching, patternmaking,gradingpatterns,Makingmarkers,Apparelproduction.Typesof Textile CAD software – Woven Textiles, Knitted Fabrics,Printedfabrics,SketchPadsystem,Texturemapping,Embroiderysystem,Apparel industryandcomputer.AdvantagesofTextileCAD. | **7** |
| **UNITV** | **ComputerApplicationinResearch-**Datacollection–creatingonlineform using Google forms, Data entry in MS Excel anddata analysisusing SPSS – Frequency analysis, Cross Tabulation, Chi-Sqaure, T –test,ANOVAandCorrelationCo-efficient.Exportandsavingresults  inWord document.CreatingTables. | **5** |
|  | **Total** | **30** |

# COURSEOUTCOMES

**Aftersuccessfulcompletion ofthecoursethestudentwillbeableto:CO1**:RecallthefeaturesofMS Officepackage.

**CO2**: Understand the application of AutoCAD for design.**CO3**:Explaincomputerapplicationsinthe fieldofNutrition.**CO4**:CreatetextiledesignpatternsusingTextileCAD.

**CO5**:Analyzeresearchdatausingappropriatesoftwareand interpretresults.

# References:

1. AutoCAD2018forNovices(LearnByDoing),[CADSoftTechnologies.](https://www.amazon.com/s/ref%3Ddp_byline_sr_book_1?ie=UTF8&field-author=CADSoft%2BTechnologies&text=CADSoft%2BTechnologies&sort=relevancerank&search-alias=books)
2. CADPracticalSkillsinTextileTechnologyandDesign(TTD),[PatienceChitura](https://www.amazon.in/s/ref%3Ddp_byline_sr_book_1?ie=UTF8&field-author=Patience%2BChitura&search-alias=stripbooks),2020.
3. MicrosoftOffice365 forBeginners2022:[8 in1]TheMost UpdatedAll-in-OneGuidefrom Beginner to Advanced | Including Excel, Word, PowerPoint, OneNote, OneDrive,Outlook,Teams andAccess,James Holler.
4. SPSS Statistics for Data Analysis and Visualization, Jesus Salcedo, Wiley Publishers,2017.

# e-LearningResources:

* <https://www.tutorialspoint.com/word/index.htm>
* https:/[/www.vmaker.com/tutorial-video-hub/microsoft-tutorial-videos/microsoft-](http://www.vmaker.com/tutorial-video-hub/microsoft-tutorial-videos/microsoft-)office-tutorial/
* <https://www.thesourcecad.com/autocad-tutorials/>
* https://nutrium.com/blog/why-should-you-choose-a-nutrition-software-over-an-excel-word/

# MappingwithProgrammeOutcomes:

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CO/PSO** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| **CO1** | 3 | 3 | 3 | 3 | 3 |
| **CO2** | 3 | 3 | 3 | 3 | 3 |
| **CO3** | 3 | 2 | 3 | 3 | 2 |
| **CO4** | 3 | 3 | 3 | 3 | 2 |
| **CO5** | 3 | 3 | 3 | 3 | 2 |
| **Weightage** | 15 | 14 | 15 | 15 | 12 |
| **Weightedpercentage(roundedof)**  **ofCourseContributiontoPos** | 3 | 3 | 3 | 3 | 2 |
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| **SEMESTER: IV**  **PART-V**  **EVS** | **23UEVSG48:**  **ENVIRONMENTAL STUDIES** | **Credit: 2**  **Hours: 1** |

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| **SEMESTER: V**  **PART-III**  **CORE: IX** | **23UNFDC51**  **QUANTITY FOOD PRODUCTION**  **(THEORY & PRACTICAL)** | **Credit: 4**  **Hours: 5** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Acquaintwiththetypeand operationoffoodserviceestablishments. |
| Familiarisewith thedifferenttypesofmenusandstylesofservice. |
| Fosterentrepreneurshipskills. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **FoodServiceIndustry**  History of development of food service institution in India.**Classification offoodserviceestablishments**–Commercial-Transportcatering,Hotels,Restaurants,Outdoorcateringand Non-commercial/Welfare-Hospital,Institutional-School/College,Orphanage/Oldagehomes,prisons,Industrial catering.  **FoodServicesystems**-conventional,ready–prepared,commissary,assembly-serve. | **10** |
| **UNITII** | **Quantityfoodproduction**  Productionforecasting,planning,productionscheduling;  Standardizationofrecipesdefinition,need,uses, methodsofenlargementofrecipes.Portion control, effectiveuseof left-overs. | **10** |
| **UNITIII** | **MenuPlanning**  **Menu**–origin,definitionandfunctionsofmenu,importanceofplanningmenus,factorsaffectingmenuplanning,Frenchclassicalmenu.Typesofmenu - A la carte, Table d’ hote, Du jour, static, cyclic, single use,constructionand writingmenu, menu display.  **Basic terminologies** in food service relating to stocks, soups, sauces,saladsand beverages**-**alcoholicand non-alcoholic. | **10** |
| **UNITIV** | **FoodandBeverageService**  Table Setting - Mise-en-scene, Mise-en-place, Basic rules for laying atable,Cover – definition,AlaCartecoverandTable d’hote cover.  **Foodservicepersonnel:**basictechnicalskills,inter-personalskills,attributes offood and beverage personnel. Duties of a waiter- beforeguests arrive, when guests arrive, during the meal and after guests leave,rulesforwaitingat table.  **Styles of Service** - Table Service - Waiter – Silver / English, Family,American, French,Russian, Gueridon; Bar Counter, Assisted**-** Carvery,Buffet,Self-service-Cafeteria-Counter,Free-flow,Echelon,Supermarket,Single-pointService-Takeaway,Drive-thru,Fastfood; | 15 |
|  | Vending;Kiosks;Foodcourt,In-situService-Tray,Trolley,Home  delivery,Lounge,Room, Drive-in. |  |
| **UNITV** | **Entrepreneurshipincatering**  Entrepreneurship–conceptandsignificance  Entrepreneur-definition,characteristicsandclassification.  Foodstartup,Start-upprocess,steps,opportunitiesandchallenges,problemsfaced bywomen entrepreneurs. | **10** |
|  | **PRACTICAL**   1. Plan menu for different types of food service institutions-commercialandnon-commercialfood serviceinstitution 2. Preparationofmenusfordifferenttypesofevents. 3. Preparationandstandardisationofdishesofdifferentcuisines(oneportion). 4. Quantity production and service of meals - stepping up of recipeto 50 portions. 5. TableSetting– Cover-A la carteandTable d’hotecovers. 6. Napkinfolding. 7. Visittofoodserviceunits –commercialandnon-commercial. 8. Organisefoodsales. 9. Internshipin foodserviceestablishmentfor amonth. | **20** |
|  | **TOTAL** | **75** |

# COURSEOUTCOMES

**After successful completion of the course the student will be able toCO1**.Identifyanddifferentiate thetypes offoodservicesectors.

**CO2**.Developskillstoformulateandstandardizerecipesfromvariouscuisines.

**CO3**.Demonstrate skillsin quantityfoodproduction.

**CO4**.Distinguish various styles of service and identify the basic technical skills,andinterpersonal skills required forfoodservice.

**CO5**.Identifytheentrepreneurialventuresinfoodproductionandservice.

# References

1. Sethi,Mohini,Malhan,Surjeet.(2015).CateringManagement–AnIntegratedApproach,3rd ed, New AgeInternational Publishers,New Delhi.
2. JunePayne-Palacio,MonicaTheis,IntroductiontoFoodservice(2009),11thillustrated,PublishedbyPearson/PrenticeHall.
3. Dhawan andVijay. (2001).Foodand BeverageService, FrankBossandCo,NewDelhi.
4. Suganthi,VandPremakumari,C.(2017).FoodServiceManagement,DiptiPress(OPC)Pvt.Ltd, Chennai.
5. AndrewsandSudhir.(2000).IntroductiontoHospitalityIndustry,Tata-McGrawHillPub.Co.,New Delhi.
6. FoskettDavid.(2011).TheTheoryofHospitalityandCatering,HodderEducation,London.
7. Gupta,CBandSrinivasan,NP.(2002)EntrepreneurialDevelopment,SultanChand&Sons,NewDelhi.
8. Jagmohan.N.(2013).FoodandBeverageServiceOperation,S.Chand&Co.Ltd.,NewDelhi.

# LearningResources

* + <https://www.scribd.com/document/119449120/History-of-Food-Service-Industry>
  + <https://sirvo.com/>
  + <https://www.yaaka.cc/unit/types-of-catering-establishment/>
  + <https://www.scribd.com/doc/24003230/Unit-1-Food-and-Beverage-Service-Management>
  + <https://www.universalclass.com/.../types-of-service-and-table-settings-in-waiter>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

|  |  |  |
| --- | --- | --- |
| **SEMESTER: V**  **PART-III**  **CORE: X** | **23UNFDC52**  **PUBLIC HEALTH NUTRITION** | **Credit: 4**  **Hours: 5** |

|  |
| --- |
| **LearningObjectives** |
| Toenable thestudents to: |
| Gainknowledgeaboutnutritionalpolicies,programsandagenciesinvolvedin  combatingmalnutrition. |
| Acquireknowledgeandskills inassessmentofnutritionalstatus. |
| Createawarenessonimprovinghealthandnutritionofthecommunity |

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| --- | --- | --- |
| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Conceptandscopeofpublicnutrition**  Definition, concept, scope and multidisciplinarynatureofpublicnutrition  **Nutritional problemsaffectingthecommunity.**  Etiology,prevalence,clinicalfeaturesandpreventivestrategies for malnutrition related problems and deficiencydisorders-Undernutrition(Proteinenergymalnutrition,Wasting,Stunting),Overnutrition(obesityandrelatedrisks),Nutritionalanemia,VitaminAdeficiency,Iodinedeficiency  disorders,Fluorosis. | **15** |
| **UNITII** | **Assessmentofnutritionalstatus**  Objectives and importance, Methods of assessment: Direct(Clinical signs, Anthropometry, Biochemical tests); Indirect(Dietsurveys,vital statistics) | **10** |
| **UNITIII** | **Nutritionpolicyandprograms**  Nationalnutritionalpolicy**;**Integratedchilddevelopmentscheme(ICDS),MiddayMealProgram-StateandNational(PoshanAbhyan),Nationalprogramsforthepreventionofanemia,VitaminAdeficiency,Iodinedeficiencydisorders,FortificationofFoodsandPublicDistributionSystemasa  preventiveapproach. | **15** |
| **UNITIV** | **Nutritioneducation**  Objectives,principlesandscopeofnutritionandhealtheducation, creatingawareness on current public health issuesanddevisingstrategies forpreventionandmanagement. | **10** |
| **UNITV** | **Role of National and International agencies incombatingmalnutrition**  WHO,FAO, UNICEF; National: FSSAI, ICAR, ICMR,  NIN, FNB, CFTRI, NNMB- Role, Target groups (ifspecified),PoliciesandPrograms. | **10** |
| Practical | **Practical/experientiallearning**  Planning low-cost nutritious recipes for infants, pre-schoolers,pregnant/lactatingmothersfornutritioneducation.Assessmentofnutritionalstatus   * Anthropometry:Weightandheightmeasurements * Plottingandinterpretationofgrowthchartsforchildrenbelow5yearsIdentificationofclinicalsignsofcommonnutritionaldisorders * Dietary assessment: 24-hour recall, Food FrequencyQuestionnaire, Diet DiversityScore   PlanningaNutrition EducationProgram,andimparting  nutritioneducationtothecommunity | **15** |
|  | **TOTAL** | **75** |

# COURSEOUTCOME

**Aftersuccessfulcompletionofthecourse,thestudentwillbeableto:CO1.**Definetermsrelatedto PublicHealthnutrition.

**CO2**.Describethenutritionalproblemsprevalentinthecommunity.

**CO3**.Explainthesignificanceofassessmentofnutritionalstatus.

**CO4.**Assesstheroleofvariousorganizations incombatingnutritionalproblems.

**CO5.**Conductnutritioneducationprogramstocreateawarenessonimprovinghealthandnutritionofthecommunityatlarge.

**Reference:**

1. WadhwaAandSharmaS(2003).NutritionintheCommunity-Atextbook.ElitePublishingHousePvt.Ltd. New Delhi.
2. Park K (2011). Park’s Textbook of Preventive and Social Medicine, 21st Edition.M/sBanarasidasBhanotPublishers,Jabalpur,India.
3. JellifeDB,JellifeERP,Zerfas AandNeumannCG(1989).Communitynutritionalassessment with special reference to less technically developed countries. OxfordUniversityPress. 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/).](http://www.who.int/childgrowth/standards/en/))
5. Gupta,MC.AndMahajanBK.(2003)TextbookofPreventiveandSocialMedicine3rdEd Jaypeebrothers,Medical Publishers (p) Ltd.

# WebReferences:

* Mohfw.nic.in/NRHM/NIDD
* [www.nrhmorissa.gov.in/NIDDCP.html](http://www.nrhmorissa.gov.in/NIDDCP.html)
* [www.Scripts.mit.edu](http://www.scripts.mit.edu/)

# MappingwithProgrammeOutcomes

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **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 |

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)**  **ofCourseContributiontoPos** | 3 | 3 | 3 | 3 | 3 |

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| --- | --- | --- |
| **SEMESTER: V**  **PART-III**  **CORE: XI** | **23UNFDC53**  **SPORTS NUTRITION** | **Credit: 4**  **Hours: 5** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Understandthebasicconceptsofnutritionforphysicalfitnessandsports. |
| Enumerate~~on~~thespecialnutritionalrequirementsforathletes. |

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| --- | --- | --- |
| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Introduction to Physical Fitness**Componentsoffitness,HealthandSports related fitness, Descriptionof Aerobic and anaerobic sports-Typesand Benefits  Bodyweightandcompositionforhealthandsport,Strategiesforweightmanagement | **10** |
| **UNITII** | **EnergysystemsforExercise**  Types of muscle fibres, Fuel sources and energy systemsfor exercise, energy pathways, regulation of energymetabolism-metabolic response to exercise and metabolicadaptationto exercisetraining | **10** |
| **UNITIII** | **Role of Macronutrients in Physical Fitness**Carbohydrates – Utilization of carbohydrate before, duringandafterexercise,importanceofglycogenloading.  Proteins – role of proteins for exercise, requirementsbefore, during and after exercise. Fats – role of fats inexercise,requirementsbefore,duringand afterexercise,Fatloading-effectsonexerciseperformance.  Macronutrients Requirements for Power,endurancesportsandstrengthtrainingActivities. | **15** |
| **UNITIV** | **Role of Micronutrients and Water for Exercise**Roleofvitaminsandmineralsforexercise,RoleofAntioxidantnutrientsfor exercise,Relative energydeficiency.  Water,electrolyteandtemperatureregulation.Effectof  dehydration andhyperhydrationonperformance.Fluidguidelinesbefore,duringandafterexercise. | **15** |
| **UNITV** | **NutritionforAthletes**  Importance of pre-event, during and post-event meals,preparingforcompetition,dealingwithcramps,GI distress,electrolytebalance-sportsdrinks.  RoleofSportssupplements,Ergogenicaidstoimproveperformance.  Nutrient requirements for children, adults andelderlyinvolvedindifferentsports.Eatingdisorders  –types,prevalence,riskfactors,effectonsports  performance, treatmentand prevention. | **15** |

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| --- | --- | --- |
|  |  |  |
| **UNITV** | **NutritionforAthletes**  Importance of pre-event, during and post-event meals,preparingforcompetition,dealingwithcramps,GI distress,electrolytebalance-sportsdrinks.  RoleofSportssupplements,Ergogenicaidstoimproveperformance.  Nutrient requirements for children, adults andelderlyinvolvedindifferentsports.Eatingdisorders  –types,prevalence,riskfactors,effectonsports  performance, treatmentand prevention. | **15** |
|  | **Practical/Projectcomponent:**Planningofdietsforathletes(forallagegroups)involvedindifferentsports.  **IndustrialTie-up**-WithSportsOrganizations, FitnessCentre’s | **10** |
|  | **TOTAL** | **75** |

# COURSEOUTCOMES

Aftersuccessfulcompletionofthecourse,thestudentwillbeableto:

**CO1**.Definetermsrelatedtophysicalfitness, nutrientsandsupplements forexercise.

**CO2**. Discuss the benefits of different exercise, significance of body weight andcompositionparameters,fuelsystem,nutrients,supplementsandergogenicaidsfor exercise.

**CO3**. Explain the significance of body composition parameters, fuel systems, energypathwaysandutilizationofnutrients, sportssupplementsandergogenicaidsforexercise.

**CO4**. Analyze the role of energy pathways, macro and micronutrients, sportssupplementsandergogenicaidsusedbyathletestoimproveperformance.

**CO5**.Assessthefunctionsofnutrientsbefore, duringandafterexercise, andrecommendmealplansforathletesinvolvedindifferent sports.

# References:

1. FinkH.H.,BurgoonL.A.,MikeskyA.E.(2018)PracticalapplicationsinSportsNutrition.Jones and BartlettPublishers.Sudbery,Massachusetts.
2. MahanKandSylviaE.Stump(2000)Krause’sFoodNutritionandDietTherapy,Saunders,USA.
3. McArdle.W.D.,Frank.I.Katch,VictorLKatch(2005)SportsandExerciseNutrition.Lippincott,WilliamsandWilkins,Philadelphia
4. SharkeyB.J. (2002)FitnessandHealth:HumanKinetics, HongKong
5. WilliamsM.H.,AndersonD.E.,RawsonE.S.(2013)NutritionforHealth,FitnessandSport.McGrawHill,NewYork.

# e-LearningResources:

* sportsmedicine.about.com
* <http://sportsmedicine.about.com/od/sportsnutrition/a/carbohydrates.htm>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| --- | --- | --- |
| **SEMESTER: V**  **PART-III**  **CORE XII** | **23UNFDD54**  **PROJECT WITH VIVA VOCE** | **Credit: 4**  **Hours: 5** |

**Refer to the Regulations**

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| --- | --- | --- |
| **SEMESTER: V**  **PART-III**  **ELECTIVE: V** | **23UNFDE55**  **PRINCIPLES OF RESOURCE MANAGEMENT** | **Credit: 3**  **Hours: 4** |

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| **LearningObjectives** |
| Toenablestudentsto: |
| Recognizeanduseappropriateresourcestoachieveone’s goal. |
| Developskillsinutilizingthe availableresourcesinday-to-daylife. |
| Gainknowledge about worksimplificationand effectivemanagementofTime,EnergyandMoney |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Introduction to Management -** Management Concepts - Definition,Concept, Micro and Macro environment. PrinciplesofManagementProcess-Planning,Controlling,Evaluating.QualitiesofaGood  Manager.Motivational factors-Values,GoalsandStandards. | **15** |
|  | **Activity:**Identificationofpersonalandfamilyvaluesandgoals–their  interrelationship. |  |
| **UNITII** | **Resources-**Meaningandclassification,optimizingtheuseoffamilyresources,Factorsaffecting the useofresources.  **Decisionmaking-**Meaninganditsimportance,Typesofdecisions,  Decisionmakingprocess,Methodsofresolvingconflicts. | **10** |
|  | **Activity:**Listouttheresourcesoptimizingthe goal. |  |
| **UNITIII** | **Time Management -** Tools in time management - Time norms, Peakloads,WorkCurvesandrestperiods,Timemanagementprocess-Planning-Stepsinmakingtimeplans-Controllingtheplanningaction  -Evaluation.  **EnergyManagement-**Theeffortsrequiredinhome-makingactivities;Energyrequiredfor householdactivities. | **10** |
|  | **Activity:**PreparationofatimescheduleandEvaluatetimeschedule  usingGanttchart. |  |
| **UNITIV** | **Work Simplification -** Definition, Importance, Techniques – FormalandInformalTechniques-Mundel's Classes of change - Planningefficientworkareas inkitchen.  **Body Mechanics -** Posture, Gravity, Rhythmic movement, Proper useofMuscle and to takeadvantageofMomentum.  **Fatigue-**Concepts,Types-PhysiologicalandPsychologicalfatigue  andManagerialprocessappliedtoenergy. | **17** |
|  | **Activity:**Studyonworkheightsbasedonanthropometricmeasurement  onverticalandhorizontalplanes. | **3** |
| **UNITV** | **MoneyManagement-**FamilyIncome-Types,sourcesandmethodsofaugmentingfamilyincome.  **FamilyExpenditure-**Budget-Meaning-Typesofbudgets,Planningabudget for a family of a fixed income,Hotel /Restaurant, advantages ofbudgeting,Factorsaffectingfamilybudget,Engel'slawofconsumption,methodsofhandlingmoney-Familyfinancialrecords,Savings-  Importanceandtypes. | **15** |
|  | **Activity:**Preparationoffamilybudget.Studyofasavinginstitutionand  itsscheme. | **5** |
|  | **Total** | **75** |

# COURSEOUTCOMES

**After successful completion of the course the student will be able toCO1**:Applytheprinciplesofmanagementprocessin day-to-daylife**CO2**:Identifyandanalyzetheneedforresources

**CO3**:Utilizetoolsoftime managementeffectivelyinday-to-daylife.

**CO4**:Applyworksimplificationtechniqueswhilemanagingwork.

**CO5**:Developgooddecision-makingskillsandplanabudgetwithintheavailableincomeandto maintainaccounts.

# References:

1. BelaBhargava(2005),“FamilyresourceManagement&InteriorDecoration”,universitybookhousepvtltd,ISBN-13:978-8187339229
2. Marion Giordan (2016), “ConsumerEducation: A handbook for Teachers”,Routledge;1stedition,ISBN-13:978-1138839151
3. Nickell&Dorsey(2002),“ManagementinFamilyLiving”,CBS;4thedition,ISBN-13:978-8123908519
4. PushpaChakravorty(2007),HomeManagement,NewDelhi:PointerPublishers.
5. Rao(2020), “Taxmann’sHumanResourceManagement”,TaxmannPublicationsPvt.Ltd.;2ndedition,ISBN-13:978-9390128396
6. Ready GB (2021), “EBC consumer Protection Act”, LAW BOOKS,ASIN:B097TQ64QV
7. Steven, D.S, (2016). Consumer Economics: APracticalOverview”,NewYork:RoutledgeTaylorandFrancis group.
8. SudhirDixit(2018),“TimeManagement”,Manjul Publishing House,ISBN-13:978-9388241106

# LearningResources:

* + <http://www.yourarticlelibrary.com/decision-making/decision-making-in-management->
  + definition-and-features-explained/25657/
  + <http://www.familyresourcemanagement.org/services/goals/>
  + <http://www.familyresourcemanagement.org/services/standards/>
  + <http://www.nios.ac.in/media/documents/sechmscicour/english/home%20science%20(>eng)%20ch-15.pdf
  + https://books.google.co.in/books?id=NJkrzK3CgisC&pg=PA149&lpg=PA149&dq=ti
  + me,+energy,+money+as+resource+in+management&source=bl&ots=xmSp-
  + LDkia&sig=57qLKHx2UX3sznBIJhm

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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 |

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| --- | --- | --- |
| **SEMESTER: V**  **PART-III**  **ELECTIVE: VI** | **23UNFDE56**  **FOOD PRESERVATIONTheory & Practical** | **Credit: 3**  **Hours:4** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Gainknowledge onprinciples offoodpreservationoffoods |
| Understandthe techniques usedin processingfoods topreservetheir shelflife |
| Applyskillslearnttodevelop preservedfoodproduct |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **FoodSpoilage**-Definition,causes,microorganismsinvolvedinspoilageofbread,fruitsandvegetables,meat,fish,egg,milk,juicesandpickles.  **Foodpreservation**-Definition,principlesandimportance,classification  –bactericidalandbacteriostatic methods. | **13** |
| **UNITII** | **Processingbyhightemperature**  Processing and preservation by high temperature: blanching,pasteurization,sterilizationandUHTprocessing,canning,extractioncooking,dielectricheating,Dehydration. | **12** |
| **UNITIII** | **Processingbylowtemperature**  Processing and preservation by low temperature – refrigeration,freezing,dehydro-freezing. | **10** |
| **UNITIV** | **Preservation bydrying**  Processing and preservation by drying, concentration and evaporation:various methodssun – drying, tray or tunnel drying, spray drying, drumdryingfreezedrying,fluidizedbeddrying,advantagesanddisadvantages. | **10** |
| **UNITV** | **Preservation by non - thermal treatments and food packaging**Processingandpreservationbynon–thermalmethods:salt,sugar,chemicals,smoking.Irradiation  Foodadditives:Definition,typesandfunctions,permissiblelimitsandsafetyaspects.  Foodpackaging- itstypesanduses | **20** |
|  | **Practical-**Preparationofjams,jelliesandsquashesusingseasonalfruitsandvegetables. Preparationofpicklesusing fruitsandvegetables.  Preparationofsauceand ketchup. | **10** |
|  | **TOTAL** | **75** |

# COURSEOUTCOMES

**Aftersuccessfulcompletion of thecoursethestudentwillbeableto:**

**CO1.**Defineandexplaintheprinciplesoffoodpreservationandrelatetheroleofmicroorganismsinfoodspoilage.

**CO2.** Explain the causes of food spoilage, need and principles of food preservation.**CO3.**Applythevarioustechniquesoffoodpreservationtopreserve differentfoodssoastoincreasetheshelf lifeof foods.

**CO4.**comparetheprinciplesandtechniquesofvariousfoodpreservationmethodsandexplaintheroleofpackaginginfoodprocessing.

**CO5.**Justifytheuseofvariouspreservationtechniques,andpackagingmaterialsdescribethetermsrelatedtofoodpreservationandclassifyfoodsbasedontheshelflife.

# Reference:

1. Arthey,DandAshurst,P.R(1996),Fruitprocessing,Blackieacademicandprofessional.London.
2. Fellows,P.J(2016):FoodProcessingTechnology:PrinciplesandPractice,secondedition,CRCWoodheadpublishingLtd,Cambridge.
3. Gould.G.W(1995),Newmethodsoffoodpreservation.Blackieacademicandprofessional.London.
4. RahmanMS(2020)HandbookofFoodPreservationCRCPress,USA
5. SrilakshmiB(2017)FoodScience,NewAgeInternationalPublications,NewDelhi.
6. Suganthi.VandSubaratinam.R(2021)TextbookonFoodpreservation,DiptiPress(OPC)Pvt.Ltd, Chennai.

# learningresources

* + [https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/food-spoilage.](https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/food-spoilage)
  + <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=111436>
  + <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=111435>
  + <http://www.homepreservingbible.com/2247-an-introduction-to-the-drying-food->[preservation-](http://www.homepreservingbible.com/2247-an-introduction-to-the-drying-food-preservation-method/)

[method/](http://www.homepreservingbible.com/2247-an-introduction-to-the-drying-food-preservation-method/)

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| **SEMESTER: V**  **PART-IV**  **VALUE EDUCATION** | **23UVALG57**  **VALUE EDUCATION** | **Credit: 2**  **Hours: 2** |

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| **SEMESTER: V**  **PART-IV** | **23UNFDI58**  **SUMMER INTERNSHIP** | **Credit: 2**  **Hours: -** |

**Refer to the Regulations**

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| **SEMESTER: VI**  **PART-III**  **CORE: XIII** | **23UNFDC61**  **FOOD SERVICE MANAGEMENT** | **Credit: 4**  **Hours: 6** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Gainbasicunderstandingoforganizingandmanagingafoodserviceinstitution. |
| Impartknowledgeregardingpurchaseandstorageoffoodtoensurequalityservice. |
| Familiarizewiththelayout offoodserviceoutletand foodserviceequipment. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **OrganisationManagement**  Types of Organisation, Management - definition, principles,functionsandtoolsofmanagement-Tangibletools-organizationchart, job description, job specification, job analysis, workschedule, Intangibletools-budget,leadership styles,decision  making,andcommunicationskills. | **15** |
| **UNITII** | **PersonnelManagement**  Definition, functions of personnel department, Recruitment-sources, Selection- steps, Induction - definition, methods, uses,Training- advantages, methods, supervision, performanceappraisal, promotion, demotion, transfer, retirement, terminationanddismissalofemployees.  Laborlawspertainingtothe foodservice establishment. | **15** |
| **UNITIII** | **FoodManagement**  **Food purchase** – purchasing process, functions of food buyer,methodsofbuyingopenmarket,formal,negotiated,wholesale,blanketorder,contract.  **Storage in food service** – types of stores, storeroommanagement, purchase, stores records- Physical and perpetualinventory order form, requisition slip, invoice, goodsreceivedbook,stockbook,bincard,stores ledger. | **15** |
| **UNITIV** | **Plantandequipmentmanagement**  **Planningoffoodserviceunit**-Layoutofafoodservice,planningofstorage,productionandserviceareas,conceptsofworkflowandworksimplificationtechnique.Environmentalhygiene-pestcontrol-types of pests and pest control methods; garbage disposalmethod.  **Safety**infoodserviceinstitution-Accidents-causesandprevention.  **Equipment** in food service - Classification of equipment, factorsaffecting selectionofequipment. | **15** |

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| **UNITV** | **FinancialManagement**  **Book-keeping** –definition,advantages ofdouble entrysystem,booksofaccounts–anintroduction.  **CostingandCostcontrol**:Basiccostconcepts–elementsofcost (material, labour,overheads), behavior of cost (fixed, variable,semi-fixed/semi-variable),methodsofcosting(Dish,meal,menucosting&costingforevents),costcontrol,conceptofbreak-even,break-evenpoint.  **Pricing**-factorsaffectingpricing,pricingmethods(costplus,factor,rateofreturn,subsidy,discount). | **15** |
|  | **Total** | **75** |

# SELFSTUDY/EXPERIENTIALLEARNING

1. Group discussion and power point presentation, job descriptions, recruitmentadvertisementsinprintmedia/onlinesites.
2. Prepareresumes forjobinterviewandconducingofmock interview.
3. Roleplaysofdifferentleadershipskills.

# COURSEOUTCOMES

**Aftersuccessfulcompletionofthecoursethestudent willbeableto:**

**CO1.**Applytheprinciples,tools ofmanagementtoensureforeffectivefunctioning oforganization.

**CO2.**Develop themanagerialskillstoselect,train,appraisehumanresources.**CO3.** Recognize the use and operation of equipment and acquire skills in theselectionofequipment,sketchsamplelayoutofthefoodservice units.

**CO4.**Evaluateandimplementfoodsafetyandenvironmentalsanitationintheworkspace.

**CO5.**Usethebasicconceptofbookkeepingandelementsofcosttoassessthefinancialviabilityoftheorganization.

# References:

* 1. Andrews andSudhir.(2000).IntroductiontoHospitalityIndustry,Tata-McGrawHillPub.Co.,New Delhi.
  2. DhawanandVijay.(2001).FoodandBeverageService,FrankBossandCo,NewDelhi.
  3. FoskettDavid.(2011).TheTheoryofHospitalityandCatering,HodderEducation,London.
  4. Lillicarp,D.R.andCousins,J.(2010).FoodandbeverageService,8thedition,HodderEducation,London.
  5. Sethi,Mohini,Malhan,Surjeet.(2015).CateringManagement–AnIntegratedApproach,3rd ed,NewAgeInternationalPublishers,NewDelhi.
  6. Suganthi,VandPremakumari,C.(2017).FoodServiceManagement,DiptiPress(OPC)Pvt.Ltd,Chennai.
  7. Verghese and Brian. (2000). Professional Food and Beverage Service Management,MacmillanIndiaLtd.,India.

# LearningResources

* + <http://open.lib.umn.edu/principlesmanagement/chapter/1-5-planning-organizing->leading-and-controlling-2/
  + <https://www.managementstudyguide.com/management_functions.htm>
  + <http://www.bngkolkata.com/web/food-and-beverage-service-equipment/>
  + [http://www.fcijammu.org/food/food/orders/F&B%20Service-Unit-2.pdf](http://www.fcijammu.org/food/food/orders/F%26B%20Service-Unit-2.pdf)
  + <https://www.scribd.com/doc/29362905/Equipments-in-Food-amp-Beverage>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

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| --- | --- | --- | --- | --- | --- |
| **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 |

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| **SEMESTER: VI**  **PART-III**  **CORE: XIV** | **23UNFDC62**  **DIETETICS** | **Credit: 4**  **Hours: 6** |

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| **LearningObjectives** |
| **Toenablethestudentsto:** |
| Understandthe causesandsymptomsanddietarymanagementofvariousdiseaseconditions. |
| Gaincomprehensiveknowledge onprinciplesandplanningoftherapeuticdiets |
| Acquireknowledgeonnutritionalneedsofsickpersonsanddevelopaptitudeandskillsfor  takingupdieteticsasaprofession |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Conceptofdiettherapyandroleofdietitian**  Principles of therapeutic diets, modification of normal diet,classification oftherapeutic diets.  Differentfeedingtechniques-enteralandparenteralfeeding.–Indications,contraindications andcomplications,  Dietitian-Definition,roleandcodeofethics,classificationofdieticiansinnutritionalcare | **20** |
| **UNITII** | **DiseasesofGastrointestinaltract**  Etiology,symptoms, dietarymanagementof:  Diarrhoea,dysentery,andconstipation  Peptic ulcer,irritable bowel syndrome&inflammatory bowel disease(ulcerativecolitis),Crohn's diseaseandceliacdisease | **20** |
| **UNITIII** | **Diseasesofliver,gallbladder&febrileconditions**  Etiology,symptoms, dietarymanagementof:  Diseaseofliver&Gallbladder-Hepatitis,cirrhosis,gallstonesFebrileconditions-Acute&Chronicfevers (Typhoid,influenza,malaria,tuberculosis,COVID) | **10** |
| **UNITIV** | **Metabolicdisorders**  Etiology,symptoms,anddietarymanagementof:  Obesityand PCOS  Diabetesmellitus-types,symptomsandmetabolicchanges,treatmentwith dietandinsulin, GI, GL, carbohydrate counting, artificialsweetenersand complications  Cardiovasculardiseases–hypertension,atherosclerosis. | **10** |
| **UNITV** | **Diseasesofexcretory systemand cancer**  Etiology,symptoms,dietarymanagementof:  GlomerularnephritisNephroticsyndrome,urinarycalculi,renalfailure.Cancer–Riskfactors,modification of dietin cancer,nutritionalproblemsofcancer therapy  Roleofantioxidantsinpreventionofdegenerativediseases. | **15** |
|  | **SELFSTUDY/EXPERIENTIALLEARNING**  Conducta groupdiscussiontounderstandvariousdiseases andpresentationofcase-studies.  Planningof various low-cost recipes usinglocallyavailableingredientsfordieteticspractical  Conductinganutrition exhibition to displaysample menus forvariousdiseasedconditionsfordifferentsections ofsociety. |  |
|  | **SuggestedActivity**  Internshipindietaryunitofahospital |  |
|  | **TOTAL** | **75** |

# COURSEOUTCOMES:

After successfulcompletionofthecoursethestudentwillbeable to:

**CO1.**Explainconceptsofdiettherapyandroleofdietitian.

**CO2.**Identifytheetiologysymptomsandprinciplesofdietarymanagementforvariousdiseases.

**CO3.**Applytheprinciplesofdieteticstoplantherapeuticdietsforvariousdiseaseconditions.

**CO4.**Examinethephysiologicalconditionoftheindividualandexplaintheroleoffoodsanddietintreating thatcondition.

**CO5.** Summarize the causes, symptoms of a disease/ disorder and design asuitable diet plan using principles of nutritional management and recommenddietaryallowances.

# References:

1. AntiaF.P.(2002),ClinicalDieteticsandNutrition,4thedition,OxfordUniversityPress,Chennai.
2. GuthrieH.A,PiccianoM.F(1995)HumanNutrition, Mosby,St.LouisMissorie.
3. Joshi.S.A.(2005),NutritionandDietetics,TataMcGraw-HillPublishingCompanyLimited,NewDelhi
4. PassmoreR.andDavidsonS.(1986)HumannutritionandDietetics.Limingstonepublishers
5. Sharma.A.(2017),PrinciplesofTherapeuticNutritionandDietetics,CBSPublishers&DistributorsPvtLtd,NewDelhi.
6. SrilakshmiB,Dietetics(2019),8thedition,NewAgeInternationalPublishingLtd,NewDelhi
7. WilliamsS.R,(2000)BasicNutritionandDietTherapy, Mosbypublication.

# e-learningresources:

* <https://www.cdss.ca.gov/agedblinddisabled/res/VPTC2/9%20Food%20Nutrition%20and%20Preparation/Types_of_Therapeutic_Diets.pdf>
* <http://www.differencebetween.net/science/health/difference-between-enteral-and-parenteral-nutrition/>
* <https://www.medicinenet.com/difference_between_diarrhea_and_dysentery/article.htm>l
* <https://my.clevelandclinic.org/health/diseases/15587-inflammatory-bowel-disease-overview>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

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| --- | --- | --- | --- | --- | --- |
| **CO/PSO** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| **CO1** | 3 | 3 | 2 | 3 | 3 |
| **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 | 15 |
| **Weightedpercentage(roundedof)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| **SEMESTER: VI**  **PART-III**  **CORE: XV** | **23UNFDP63**  **DIETETICSPRACTICALS** | **Credit: 4**  **Hours: 6** |

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| **LearningObjectives** |
| **Toenablethestudentsto:** |
| Gainknowledge anddevelop skills andtechniquesinplanningandpreparationoftherapeuticdiets. |
| Plan diets based on the medical history of the patients and nutritional assessments –anthropometricmeasurements |
| Calculatethenutrient contentofdiets |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | Planning,Calculationofnutrientcontent, PreparationandServiceofdietsfor:  Tube feeds for special conditionsFevers–TyphoidandTuberculosis | **20** |
| **UNITII** | Planning,Calculationofnutrientcontent, PreparationandServiceofdietsfor:  PepticUlcer  Diarrhoeaandconstipation | **10** |
| **UNITIII** | Planning,Calculationofnutrientcontent, PreparationandServiceofdietsfor:  Viral hepatitisCirrhosisofliver | **20** |
| **UNITIV** | Planning,Calculationofnutrientcontent, PreparationandServiceofdietsfor:  Obesity  Diabetes MellitusAtherosclerosis | **10** |
| **UNITV** | Planning,Calculationofnutrientcontent, PreparationandServiceofdietsfor:  Hypertension  Chronickidneydisease | **15** |
|  | **TOTAL** | **75** |

# SELFSTUDY/EXPERIENTIALLEARNING

1. Initiateadietcounselingcenterintheinstitutionforstudents,teaching,andnon-teachingfaculty.
2. Conductexhibitionstodisplaydietsforvariousdiseaseconditions.
3. Preparepamphletindicatingfoodstobeincluded/avoided/restrictedindifferentdiseaseconditions.
4. CommemoratedayssuchaWorldDiabetesDay,WorldHeartDayand organizeSeminarsandawarenessprograms.

# COURSEOUTCOMES:

**After successful completion of the course the student will be able to: CO1.** List the principlesofdietarymanagementforvariousconditions.

**CO2.**Calculatethenutrientcontentofthedietforvariousconditionsandcompareit.withtherecommendedallowances

**CO3.**Applytheprinciplesofdietarymanagementinplanningdietsforvariousconditions.**CO4**. Justifychoiceoffoods,preparationmethods,content,andconsistencyfordifferentdiseaseconditions

**CO5.**Planandpreparedietsforvariousdiseaseconditions.

# REFERENCES:

1. Antia,F.B.(2010),ClinicalNutritionandDietetics, OxfordUniversityPress,London.
2. IDA.(2018),ClinicalDieteticManual,2ndedition,ElitePublishingHouse,NewDelhi
3. SriLakshmi. B.,( 2019)Dietetics,8thEd,NewAgeInternationalPub. Co,Chennai.
4. VimalaV.(2010).AdvancesinDietTherapy,1stEd.,NationalInstituteofNutrition–Hyderabad.
5. WilliamsS.R, (2000)BasicNutritionandDietTherapy,Mosbypublication.
6. Sharma.A.(2017),PrinciplesofTherapeuticNutritionandDietetics,CBSPublishers&DistributorsPvtLtd,NewDelhi.
7. Bajaj.M(2019) DietMetrics:HandbookofFoodExchanges,NortonPress,Chennai.

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

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| **CO/PSO** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| **CO1** | 3 | 3 | 2 | 2 | 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 | 15 | 13 | 14 | 15 |
| **Weightedpercentage(roundedof)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

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| **SEMESTER: VI**  **PART-III**  **ELECTIVE: VII** | **23UNFDE64**  **FIBRE TO FABRIC** | **Credit: 3**  **Hours: 5** |

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| **LearningObjectives** |
| Toenable thestudents to: |
| Understandtheconcepts intextiles,theproperties oftextilefibre, yarnandfabric. |
| Acquireknowledgeaboutdifferenttypesoffabric,makewiseselectionoftextilesandits  contributiontoclothingandinterior. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **IntroductiontoTextile-** Introduction,Termsanddefinitionrelatedto  textiles,importanceoftextiles. | **10** |
| **UNITII** | **Textilefibres**   1. Properties of fibers-primaryand secondaryproperties 2. Classificationoffibres –naturalandman-madefibres. 3. Manufacturingprocesses/Cultivation,propertiesandusesofCotton,Silk, Wool,Polyester, RayonandNylon. | **15** |
|  | **Practical-**Identificationoffibres. | **5** |
| **UNITIII** | **Yarns**   1. Definitionofyarn 2. Spinningprocess-Conventionalyarnspinning-CottonsystemandUnconventionalyarnspinning. 3. Typesofyarn-spunyarns,filamentyarns,sewingthreads,simpleandcomplexyarns. 4. Propertiesofyarn-Yarntwist,Yarncount/number(definition,unitofyarn count),Texturization-types | **10** |
|  | **Practical-**Identificationofyarns | **5** |
| **UNITIV** | **WovenFabricConstruction**   1. Weaving- Warp and weft yarns, grain line, selvedge and Fabriccount. 2. Partsofasimple loom andbasic weavingoperations. 3. Types of weaves- Basic weaves (Plain weave, variations in plainweave, Twill weave, variations in Twill weave, Satin weave andSateenweave)Decorativeweaves(Dobbyweave,Jacquardweave, Lenoweave,Surfacefigureweave,Pile,Doubleweave) | **10** |
|  | **Practical-**Identificationofweaves –Collectionofsamplesforbasicweaves. | **5** |
| **UNITV** | **Otherfabricconstruction**   1. Knittedfabric- warpandweftknitting 2. Non-Woven fabric- method of manufacture – web formation-parallellaid,crosslaid,randomlaid,highvelocitysprayed.Types- bonded fabrics, felts and care of non-woven .Other fabricconstructionprocess-Braidedfabric,Net,Laces,Filmfabric,tuftedfabric. | **10** |
|  | **Practical -** Fieldvisitstovarioustextilesunits | **5** |
|  | **Total** | **75** |

# COURSEOUTCOMES

**Aftersuccessfulcompletionof thecoursethestudentwillbeableto:**

**CO1**.Describetheessentialpropertiesoftextilefibres,yarnsandthebasicfabricconstructiontechniques

**CO2.**Explainthemanufacturingprocessofman-madefibres,yarnconstructionandfabricconstruction.

**CO3.**Classifytextilefibres,yarnsandfabrics.

**CO4.**Categorizethefibres,yarnsand fabricsforitsappropriateenduse.

**CO5**.Assessthesequenceofdevelopingfibresintoyarnsandfabric

# Reference:

1. Corbman,B.P(1975)Textilesfibertofabric.Mc.Grawhill,New York.
2. KleinW.DAPractical GuidetoRingSpinningTextile Institute,Manchester
3. MarjoryL.J(1977)IntroductoryTextileSciencesHoltReinhartandWinston,NewYork
4. Sara.K.J,Langford.A(2002)Textiles.9thedPrenticeHall,London
5. Rastogi,D.,&Chopra,S.(2017).TextileScience.India:OrientBlackswanPrivateLimited.
6. Robert,R.&Mather,R.H.(2015).TheChemistryofTextileFibers.Cambridge:RSCPublishers.
7. Sekhri,S.(2011)TextbookofFabricScience:FundamentalstoFinishing.India:PHILearningPvt.Ltd.
8. Smith,J.L.(2015).TextileProcessing:PrintingDyeingFinishing.Chandigarh:AbhishekPublication.

# e-learningResources:

1. <http://fibersource.com/f-tutor/rayon.htm>
2. <http://www.fibersource.com/f-tutor/nylon.htm>
3. [http://www.ehow.com/facts5016460parts-loom.html](http://www.ehow.com/facts%205016460%20parts-loom.html)
4. <http://www.fabrics-manufacturers.com/>

# MappingwithProgrammeOutcomes

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|  | **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 |

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |
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| **SEMESTER: VI**  **PART-III**  **ELECTIVE: VIII** | **23UNFDE65**  **FOUNDATIONS OF ENTREPRENEURSHIP** | **Credit: 3**  **Hours: 5** |

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| **LearningObjectives** |
| **Toenablethestudentsto:** |
| Understandthemeaningandimportanceofentrepreneurship. |
| Gainawarenessaboutexistingentrepreneurialdevelopmentprogrammes. |
| Knowthegovernment financialschemesavailableforentrepreneurship. |

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| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **Entrepreneurship-**Introduction,ConceptofEntrepreneur,EntrepreneurshipandEnterprise,Definitionof Entrepreneurship,ObjectivesofEntrepreneurshipDevelopment,PhasesofEntrepreneurshipDevelopment,RoleofEntrepreneurship,  CharacteristicsofEntrepreneurship,TraitsofEntrepreneurship. | **15** |
|  | **Activity:**Understandingtheapplicationprocessoffinancialservices  inGovernmentsectors/MSME. | **5** |
| **UNITII** | **Entrepreneur-**Meaning,FunctionsofEntrepreneur,types  ofentrepreneurs,stagesofentrepreneurial process, role ofentrepreneurineconomicdevelopment. | **8** |
|  | **Activity:**Categorizethestagesofentrepreneurial process. | **2** |
| **UNITIII** | **Women entrepreneurship -** Concept, functions, growth, problems,functions, development. Rural entrepreneurship – meaning – need –problems–howtodevelopruralentrepreneurs–RoleofNGOsand  SHGsinruralentrepreneurship. | **8** |
|  | **Activity:** Listouttheself-helpgroupactivities**.** | **2** |
| **UNITIV** | **Government Development Schemes -** Prime minister employmentgenerationprogramme(PMEGP),standupIndia,PradanMantriMudraYojana(PMMY),PrimeMinisterRuralDevelopmentFellowsScheme,Entrepreneurshipandskilldevelopmentprogrammes(ESDP)andstate developmentschemes. | **8** |
|  | **Activity:** Preparing/Submission of Project Proposal for Start  Up/Businessmodels | **2** |
| **UNITV** | **Institutions providing financial assistance -** Loan schemes offeredbySIDBI,SIDC’s,SIIC’s,NSICandNABARD-DifficultiesinprocuringInstitutionalfinanceAgenciesforUrbanandRural  Development–Government,DistrictRuralDevelopmentalAgencies(DRDA). | **20** |
|  | **Activity:**VisittoSSIUnits.AvailingSeedfundfromSIDBI/Angel  Investors. | **5** |
|  | **Total** | **75** |

# COURSEOUTCOME

**Aftersuccessfulcompletionofthecourse,thestudentwillbeableto:CO1**:Describingtheconcept ofentrepreneurship.

**CO2**:Analyzethetypesofentrepreneursandunderstandtheirroles

**CO3**:Identifythefinancialinstitutionsand applyforloanschemesfor startingabusiness

**CO4**:Assesstheproblemsofwomenand ruralentrepreneurs.

**CO5**:Prepareaproposalforentrepreneurshiputilizinggovernmentfinancialschemes

# References:

1. Dr.JayshreeSuresh(2012)EntrepreneurialDevelopment, MarghamPublications
2. DuttaandSundaram,IndianEconomy,SChandPublications,NewDelhi,2013.
3. RakeshSaxena(2020)GovernmentSchemes,missions,campaignsandprogrammesinIndia,PrabhatPrakashan.
4. SSKhanka(2011)Entrepreneurialdevelopment,SChand,andcompany
5. S.K.Singh,RuralDevelopmentPoliciesandProgrammes,NorthernbookcentreNewDelhi,2002.
6. SreedharandRajasekhar(2014)RuralDevelopmentinIndiaStrategiesandprocess,ConceptPublishingCompany.

# e-LearningResoruces:

* <http://www.simplynotes.in/e-notes/mbabba/entrepreneurship-development/>
* <https://www.iare.ac.in/sites/default/files/lecture_notes/IARE_Entrepreneurial_Development_NOTES.pdf>
* <https://www.yourarticlelibrary.com/women/women-entrepreneurship/women-entrepreneurship/99813>
* <https://ccsuniversity.ac.in/bridge-library/pdf/DHA-MHA-403_Unit3.pdf>
* <https://www.creditmantri.com/article-top-10-government-schemes-to-support-startups-promote-the-spirit-of-entrepreneurship/>

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CO/PSO** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| **CO1** | 3 | 3 | 3 | 3 | 3 |
| **CO2** | 3 | 3 | 3 | 2 | 3 |
| **CO3** | 2 | 3 | 3 | 3 | 3 |
| **CO4** | 3 | 3 | 2 | 3 | 3 |
| **CO5** | 3 | 2 | 3 | 3 | 3 |
| **Weightage** | 14 | 14 | 14 | 14 | 15 |
| **Weightedpercentage(roundedof)of CourseContributionto Pos** | 3 | 3 | 3 | 3 | 3 |

|  |  |  |
| --- | --- | --- |
| **SEMESTER: VI**  **PART-IV**  **Professional Competency SKILL** | **23UNFDF66**  **APTITUDE AND REASONING SKILL FOR**  **COMPETITIVE EXAMINATIONS** | **Credit: 2**  **Hours: 2** |

|  |
| --- |
| **LearningObjectives** |
| Toenable thestudents to: |
| Toacquaintthestudentsinquantitativeaptitudeandlogicalreasoningrequiredforvarious  competitiveexaminations. |
| Gainknowledge andrecognizetheimportanceof aptitudeandreasoningskilltoexcelincampus  interviews. |

|  |  |  |
| --- | --- | --- |
| **UNIT** | **CONTENT** | **HOURS** |
| **UNITI** | **QuantitativeAbility(BasicMathematics)**  NumberSystems,LCMandHCF,Simplification,SquareRootsandCubeRoots,Average,ProblemsonAges,Percentages, ProblemsonNumbers. | **5** |
| **UNITII** | **QuantitativeAbility(AdvancedMathematics)**  Probability,ProfitandLoss,SimpleandCompoundInterest,Time,SpeedandDistance, Time&Work, Ratio and Proportion. | **5** |
| **UNITIII** | **DataInterpretation**  Tables,ColumnGraphs,BarGraphs,LineCharts,PieChart,VennDiagrams | **5** |
| **UNITIV** | **VerbalandNon-Verbalreasoning**  Analogy, Blood Relation, Directional Sense, Number and Letter Series,Coding – Decoding, Calendars, Clocks, Venn Diagrams, MathematicalOperations,logicalsequenceofwork,Mirror-image,Water-image,Completionofincompletepattern, Groupingof identicalfigures | **10** |
| **UNITV** | **LogicalReasoning**  Statement–Argument,StatementAssumptions,Statement–Courseofaction,StatementandConclusions,CauseandEffectreasoning,Deriving  conclusionfrompassages,Themedetection. | **5** |
|  | **Total** | **30** |

# COURSEOUTCOMES

**After successful completion of the course the student will be able to:CO1.**Understand the basicconcepts ofquantitative aptitude.

**CO2**.Gainin depthknowledgeon variousconcepts oflogicalreasoningskills.

**CO3.**Exceland abletosolve aptitudeandreasoningpapersin campusinterview.

**CO4.**Acquiresatisfactorycompetencyin useof reasoning.

**CO5.**Competeefficientlyin nationaland international level competitiveexams.

# REFERENCES

1. *Aggarwal, R. S. (2000). A Modern Approach to Vernbal & Non Verbal Reasoning. S.Chand.*
2. Sijwali,B.Sand InduSijwali(2014).AnalyticalandLogicalreasoning,ArihantPublications.
3. Guha A, (2020) Quantitative Aptitude by Competitive Examinations,7 th Edition,McgrawHill Education Publication.
4. Rajgotra, A. & Pradhan P (2020). Wileys Exam Xpert A simpler Approach to LogicalReasoning,WilleyPublications

# E–LEARNINGRESOURCES

1. <https://prepinsta.com/>
2. <https://www.indiabix.com/>
3. [https://www.javatpoint.com](https://www.javatpoint.com/)

# MappingwithProgrammeOutcomes

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

**MappingwithProgrammeSpecificOutcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CO/PSO** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| **CO1** | 2 | 3 | 3 | 3 | 3 |
| **CO2** | 2 | 3 | 3 | 3 | 3 |
| **CO3** | 2 | 3 | 3 | 3 | 3 |
| **CO4** | 2 | 3 | 3 | 3 | 3 |
| **CO5** | 2 | 3 | 3 | 3 | 3 |
| **Weightage** | 10 | 15 | 15 | 15 | 15 |
| **Weightedpercentage(roundedof)**  **ofCourseContributiontoPos** | 2 | 3 | 3 | 3 | 3 |

|  |  |  |
| --- | --- | --- |
| **SEMESTER: VI**  **PART-V** | **23UNFDX67**  **EXTENSION ACTIVITY** | **Credit: 1**  **Hours: -** |

**(Refer to the Regulations)**