# QUEEN MARY'S COLLEGE (AUTONOMOUS)
# CHENNAI - 600 004

**UNDER GRADUATE SYLLABUS FOR THE ACADEMIC YEAR 2019 ONWARDS**


## POST GRADUATE DEPARTMENT OF HOME SCIENCE

## B.SC HOME SCIENCE- CLINICAL NUTRITION AND DIETETICS

## CO-K, PO-CO MAPPED SYLLABUS

**2019-20 onwards**

**(CO-K, PO mapping adopted in 2019-2020 and implemented from 2021-2022 onwards)**

## CONTENTS

**QUEEN MARY'S COLLEGE (A), CHENNAI – 4**

**PG AND RESEARCH DEPARTMENT OF HOME SCIENCE**

**BOARD OF STUDIES (2019 - 2020)**

**MINUTES OF THE BOARD MEETING HELD ON 05. 04.2019**
**REVISION OF UG SYLLABI**

**THE MEETING OF THE BOARD OF STUDIES FOR B.Sc HOME SCIENCE- CLINICAL NUTRITON AND DIETETICS AND B.Sc HOME SCIENCE - NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS WAS HELD ON 5.4.2021. THE PROPOSED NEW SYLLABI WERE PRESENTED TO THE BOARD**

**CHANGES MADE**

- ALL PAPERS WERE REVISED AND UPDATED
- INTRODUCED A NEW NME PAPER TITLED BASICS IN FOOD, HEALTH AND NUTRITION INSTEAD OF THE PAPER TITLED HEALTH AND PHYSICAL FITNESS
- **THE CONTENT OF ALL PAPERS WAS STRENGTHENED:**
- LEVEL OF KNOWLEDGE WAS INCREASED
- RECENT CONCEPTS WERE INCLUDED
- EMPHASIS WAS LAID ON APPLICATION ORIENTED COMPONENTS
- ENSURED THAT SYLLABUS ADHERED TO TANSCHE SPECIFICATIONS

SUGGESTIONS OF THE EXPERTS WERE INCORPORATED AND APPROVAL OF THE FINAL DRAFT OF THE SYLLABUS WAS OBTAINED

**QUEEN MARY'S COLLEGE (A), CHENNAI – 4**

**POST GRADUATE DEPARTMENT OF HOME SCIENCE**
**BOARD OF STUDIES – (2019 - 2020)**
**MINUTES OF THE BOARD MEETING HELD ON 05.04.2019**

The meeting of the Board of studies was held on 05-04-2019. The proposed new syllabi were presented before the board.

**MEMBERS OF THE BOARD**

**1. DR. REGI FERNANDO** **CHAIR PERSON**
ASSOCIATE PROFESSOR and HEAD
POST GRADUATE DEPARTMENT OF HOME SCIENCE
QUEEN MARY'S COLLEGE (A), CHENNAI - 4

**2. DR. MARY PRAMELA** **UNIVERSITY NOMINEE**
ASSOCIATE PROFESSOR
DEPARTMENT OF HOME SCIENCE
WOMEN'S CHRISTIAN COLLEGE
CHENNAI - 6

**3. DR. GOWRI RAMESH** **SUBJECT EXPERT**
ASSOCIATE PROFESSOR
DEPARTMENT OF HOME SCIENCE
WOMEN'S CHRISTIAN COLLEGE
CHENNAI - 6

**INTERNAL MEMBERS (ALL THE MEMBERS OF STAFF)**

4. DR. (MRS.) C. KALAIVANI ASHOK - ASSOCIATE PROFESSOR
5. MRS NISHA SOLOMON - ASSOCIATE PROFESSOR
6. DR. MS. K. KASTHURI - ASSOCIATE PROFESSOR
7. MRS. Y. VIJAYALAKSHMI PRIYA - ASSOCIATE PROFESSOR
8. DR. (MRS) A. ANANTHALAKSHMI - ASSISTANT PROFESSOR
9. DR.(MRS). N. PRABHAVATHY DEVI - ASSISTANT PROFESSOR
10. DR. (MRS). S. PREMA - ASSISTANT PROFESSOR
11. DR. (MRS). S. VIJAYAPRIYA - ASSISTANT PROFESSOR
12. MRS P. MUTHULAKSHMI - DEPT ALUMINI
13. MRS. S. RUBINI - DEPT ALUMINI
14. MS. SUJATHA RAJU - STUDENT REPRESENTATIVE
15. MRS. ANURADHA - STUDENT REPRESENTATIVE

## LIST OF COURSE WITH CREDITS FOR THE BSC HOME SCIENCE – CLINICAL NURITION AND DIETETICS (UG)

| S.NO | SEMESTER | C/E | TITLE OF THE PAPER | NO.OF CREDITS | Code No. | MARKS | |
|---|---|---|---|---|---|---|---|
| | | | | | | UE | IA |
| **SEMESTER I** | | | | | | | |
| 1 | I | C | FOOD SCIENCE | 5 | CL151 | 75 | 25 |
| 2 | I | C | PRINCIPLES OF RESOURCE MANAGEMENT | 5 | CL152 | 75 | 25 |
| 3 | I | CE | PHYSIOLOGY – I (ALLIED I) | 5 | CLA15 | 75 | 25 |
| SEMESTER II | | | | 5 | | | |
| 4 | II | C | FAMILY MEAL MANAGEMENT | 5 | CL153 | 75 | 25 |
| 5 | II | C | FAMILY MEAL MANAGEMENT PRACTICAL | 5 | CL154 | 75 | 25 |
| 6 | II | CE | PHYSIOLOGY – II (ALLIED II) | 5 | CLA15 | 75 | 25 |
| SEMESTER III | | | | | | | |
| 7 | III | C | NUTRITION | 5 | CL155 | 75 | 25 |
| 8 | III | C | BASIC DIETETICS | 5 | CL156 | 75 | 25 |
| 9 | III | EDE | Allied Chemistry I | 4 | CHA17 | 75 | 25 |
| 10 | III | EDE | BASICS IN FOOD NUTRITION AND HEALTH (NME I) | 5 | HSNM5 | 75 | 25 |
| SEMESTER IV | | | | | | | |
| 11 | IV | C | BIOCHEMISTRY | 5 | CL157 | 75 | 25 |
| 12 | IV | C | NUTRITION AND CLINICAL BIOCHEMISTRY PRACTICAL | 5 | CL158 | 75 | 25 |
| 13 | IV | EDE | Allied Chemistry II | 4 | CHA18 | 75 | 25 |
| 14 | IV | EDE | Allied Chemistry Practical | 2 | CHA19 | 75 | 25 |
| 15 | IV | EDE | FOOD SAFETY AND HYGIENE (NME II) | 4 | HSNM6 | 75 | 25 |
| SEMESTER IV | | | | | | | |
| 16 | V | C | MICROBIOLOGY | 5 | CL159 | 75 | 25 |
| 17 | V | C | BASICS IN SPORTS NUTRITION | 5 | CL160 | 75 | 25 |
| 18 | V | C | COMMUNITY NUTRITION | 5 | CL161 | 75 | 25 |
| 19 | V | C | QUANTITY FOOD PRODUCTION AND SERVICE | 5 | CL162 | 75 | 25 |
| 20 | V | DE | ENTREPRENEURSHIP FOR WOMEN – Elective 1 | 5 | CL163 | 75 | 25 |
| SEMESTER VI | | | | | | | |
| 21 | VI | C | FOOD SERVICE MANAGEMENT | 5 | CL164 | 75 | 25 |
| 22 | VI | C | CLINICAL NUTRITION | 5 | CL165 | 75 | 25 |
| 23 | VI | C | ADVANCED DIETETICS | 5 | CL166 | 75 | 25 |
| 24 | VI | C | ADVANCED DIETETICS PRACTICAL | 5 | CL167 | 75 | 25 |
| 25 | VI | DE | HUMAN DEVELOPMENT – Elective 2 | 5 | CL168 | 75 | 25 |

***C – Core; DE - Department Elective ; EDE – Other Department Elective***

## ALLIED I

| Sem | Paper No. | Title of the paper | Code No. | UE | IA | Total | C | Hrs / wk |
|---|---|---|---|---|---|---|---|---|
| I | I | PHYSIOLOGY – I | CLA15 | 75 | 25 | 100 | 5 | 6 |
| II | II | PHYSIOLOGY – II | CLA16 | 75 | 25 | 100 | 5 | 6 |

## ALLIED II

| Sem | Paper No. | Title of the paper | Code No. | UE | IA | Total | C | Hrs / wk |
|---|---|---|---|---|---|---|---|---|
| III | I | ALLIED CHEMISTRY I | CHA17 | 75 | 25 | 100 | 4 | 6 |
| IV | II | ALLIED CHEMISTRY II | CHA18 | 75 | 25 | 100 | 4 | 6 |
| IV | III | ALLIED CHEMISTRY PRACTICAL | CHA19 | 75 | 25 | 100 | 2 | 6 |

## PART –IV - SKILL BASED ELECTIVE SUBJECTS

| Sem | Paper No. | Title of the paper | Code No. | UE | IA | Total | C |
|---|---|---|---|---|---|---|---|
| I | I | LIFE SKILLS -I | SBE09 | 75 | 25 | 100 | 3 |
| II | II | LIFE SKILLS – II | SBE10 | 75 | 25 | 100 | 3 |
| III | III | SKILLS FOR THE WORK PLACE | SBE11 | 75 | 25 | 100 | 3 |
| IV | IV | EMPLOYABILITY SKILLS | SBE12 | 75 | 25 | 100 | 3 |

## PART – IV - VALUE EDUCATION AND ENVIRONMENTAL STUDIES FOR ALL COURSES

| Sem | Paper No. | Title of the paper | Code No. | UE | IA | Total | C |
|---|---|---|---|---|---|---|---|
| I | I | ENVIRONMENTAL STUDIES | EVS02 | 75 | 25 | 100 | 2 |
| II | II | VALUE EDUCATION | VEDU3 | 75 | 25 | 100 | 2 |

**CHOICE BASED CREDIT SYSTEM FOR UG 2019-2020**

| **TOTAL NO: OF PAPERS IN PARENT DEPARTMENT -18 ; 90 CREDITS** | | | |
|---|---|---|---|
| **TYPE OF PAPER** | **NO.OF PAPERS** | **CREDITS PER PAPER** | **CREDITS** |
| PART –III CORE | 16 | 5 | 80 |
| PART III CORE ELECTIVE I & II (SEM V & VI) | 2 | 5 | 10 |
| **OTHER PAPERS FROM PARENT AND OTHER DEPARTMENTS – 2+19=21; 65 CREDITS** | | | |
| **PART III ALLIED** (PHYSIOLOGY I AND II - SEM I & II) CHEMISTRY (SEM III & IV) | 5 (2+,2+1) | 5+4+2 | 20 (10+8+2) |
| PART II – ENGLISH (SEM I –IV) | 4 | 3 | 12 |
| PART –I LANGUAGE (SEM I – IV) | 4 | 3 | 12 |
| PART- IV EVS (SEM I) | 1 | 3 | 2 |
| PART- IV VALUE EDUCATION (SEM II) | 1 | 2 | 2 |
| PART –IV NON MAJOR ELECTIVE (SEM III & IV) | 2 | 2 | 4 |
| PART –IV SOFT SKILS (SEM I,II,III & IV) | 4 | 3 | 12 |
| PART –V EXTENSION ACTIVITY | 1 | 1` | 1 |
| **TOTAL** | **39** | | **155** |

***Week - 6 working day order Semester – 15 such week**

| **S.NO** | **CORE/ ELECTIVE** | **HOURS/WEEK** | **NO OF WEEKS** | **TOTAL HOURS PER SEMESTER** |
|---|---|---|---|---|
| 1 | CORE | 6 | 15 | 90 |
| 2 | ELECTIVE | 4 | 15 | 60 |

Number of Units in the syllabus of core papers 05
Number of Units in the syllabus of elective papers 05
Maximum marks per paper 100
Total Marks: 2300

**QUANTIFICATION: END SEMESTER EXAMINATION**

**QUESTION PAPER PATTERN(EFFECTIVE FROM THE ACADEMIC YEAR 2019 - 2020) CORE and ELECTIVE PAPERS**

**Maximum Marks: 100 Internal Assessment: 25 External Valuation: 75 *No passing minimum in internal. Overall Aggregate should be 40%**

| Part – A | | Part – B | | Part – C | |
|---|---|---|---|---|---|
| 5 x 2 = 10 marks | | 5 x 4 = 20 marks | | 3X15= 45 marks | |
| Answer all the questions | | Answer all the questions | | Answer any 3 questions out of 5 | |
| **QUESTION** | **UNIT** | **QUESTION** | **UNIT** | **QUESTION** | **UNIT** |
| **1** | **I** | **6(a) or 6(b)** | **I** | **11** | **I** |
| **2** | **II** | **7(a) or 7(b)** | **II** | **12** | **II** |
| **3** | **III** | **8(a) or 8(b)** | **III** | **13** | **III** |
| **4** | **IV** | **9(a) or 9(b)** | **IV** | **14** | **IV** |
| **5** | **V** | **610(a) or 610(b)** | **V** | **15** | **V** |

**INTERNAL EVALUATION METHODOLOGY FOR ALL THE PROGRAMS:**

- ✓ Quiz programme
- ✓ Periodical class tests
- ✓ Objective type assignments
- ✓ Problem solving assignments ( INDIVIDUAL / GROUP)
- ✓ Seminar based on lecture notes available online / USING POWERPOINT
- ✓ Online exercises from open source/resource
- ✓ e-quiz
- ✓ Group Discussion or debate
- ✓ Question session
- ✓ Descriptive assignments with creative questions

**QUANTIFICATION OF INTERNAL EVALUATION - UG THEORY**

- Minimum 6 tests – 2 out of 6
- Minimum 3 assignments – best of three
- Model Examination for 75 marks reduced to 10 marks

| TEST | ASSIGNMENT | ATTENDANCE | MODEL EXAM | TOTAL | CONTINUOUS INTERNAL ASSESSMENT |
|---|---|---|---|---|---|
| **10** | **10** | **5** | **75** | **100** | |
| **REDUCED TO** | | | | | |
| **5** | **5** | **5** | **10** | | **25** |

## PRACTICALS

**Maximum Marks : 100**

**Internal Assessment : 25** **External Valuation : 75**

2 Model test for 75 marks each reduced to 10 marks

| Continuous Assessment | MODEL Exam | TOTAL |
|---|---|---|
| 15 | 10 | 25 |

| Record | PRACTICAL EXAM – END SEMESTER |
|---|---|
| 10 | 65 |

Passing minimum
University Examination 40%
Aggregate (CIA+UE) 40%
Grade Points and Cumulative Grade Point Average are awarded in the mark sheet

**TEACHING METHODOLOGIES ADOPTED FOR THE UG PROGRAM**

1. CHALK TALK
2. TEXT BOOK LEARNING
3. DIGITAL LEARNING- ONLINE PPT - LECTURE NOTES
4. VIDEO LECTURE – ONLINE – YOU TUBE – GOOGLE MEET - CLASSROOM
5. INTERACTIVE SESSIONS
6. STUDENT SEMINAR
7. LECTURE BY EXPERTS IN FIELD – INVITED TALKS
8. PARTICIPATORY LEARNING – LECTURES IN OTHER INSTITUTIONS

**PROGRAM EDUCATIONAL OBJECTIVE (PEO):**

**On par with the institutional vision and mission, B.Sc Home Science – Clinical Nutrition and Dietetics Programme aims at imparting knowledge and skills to the students enabling them to**

- Pursue higher education, enrich research habits and procure job opportunities throughstrong and ample learning of the core and related subjects with adequate exposure to digital literacy and training to communicate their original ideas effectively. (PEO1)
- Probe and utilize appropriate resources and tools to be life – long learners, demonstrate analytical skills and befit globally competent. (PEO2)
- Improve leadership qualities in creating successful and self-confident citizens with rational thinking and scientific temper. (PEO3)

**PROGRAM SPECIFIC OUTCOME (PSO):**

After completing **B.Sc HOME SCIENCE – CLINICAL NUTRITION AND DIETETICS** Programme, the student would be able to

| | |
|---|---|
| PSO1 | Understand core concepts in Food Science, Biochemistry, Diet Therapy, Clinical Nutrition, Entrepreneurship and Food Service Management **(PSO1:PO1)** |
| PSO2 | Comprehend the methods of assessing nutritional status, biochemical parameters and ascertaining nutritional requirements in accordance to local and global standards **(PSO2:PO9)** |
| PSO3 | Understand and articulate nutritional information to the community for health promotion and disease prevention. Competent in the use of ICT for collecting and disseminating scientific information. **(PSO3: PO2; PO7)** |
| PSO4 | Acquire skills to plan and prepare diets for different life stages, disease conditions and provide nutritional management in clinical settings.<br>Develop the ability to supervise meal preparation in hospitals and other food establishments employing nutritional and organizational principles **(PSO4; PO5; PO8)** |
| PSO5 | Enables one to pursue higher education and research **(PSO5: PO10)** |

**PROGRAM OUTCOME (PO):**

The outcome of the UG program **in B.Sc HOME SCIENCE – CLINICAL NUTRITION AND DIETETICS** would be to create an individual with very high knowledge in the subject concepts, develop good communication skills through frequent seminars and digitally conversant through presentations, get inclined to analyze and solve problems, have a quest for enquiry and learning. The program also gives abundant opportunity for students to pursue disciplinary cum systematic learning (PO1), enhance and explore her communication skill set (PO2), undergo thorough training in analyzing problems(PO3), motivated to learn through questions and updated topics (PO4), work in teams (PO5) to take initiatives (PO6), become digitally efficient (PO7), embrace moral values (PO8), be aware of the resources available to equip knowledge (PO9), earnest to be self-learner (PO10) and project their findings globally. However, it is up to the student to take her thought initiative forward to reach her goal. The skill levels are checked on a scale of 3 and correlated as low (1), moderate (2) and strong (3) for each unit of the course to arrive at the total correlation of skills for the program. Any level of skill below 30 % is not correlated and left as blank.

Graduate Attributes for **B.Sc HOME SCIENCE – CLINICAL NUTRITION AND DIETETICS** Programme:

| S.NO | GRADUATE ATTRIBUTES | PROGRAMME OUTCOMES |
|---|---|---|
| 1. | **Disciplinary Knowledge and Skills** | To develop a B.Sc.HomeScience student who has acquired sound knowledge on the relationship between, food nutrition and health; is skilful in demonstrating the knowledge to promote health, prevent and manage disease conditions. Has a coherent understanding of the basics in nutrition and related disciplines in HomeScience**(PO1)** |
| 2. | **Skilled communicator** | To develop oral and written communication skills inorder to disseminate nutritional information effectively to the clients and the community. To foster the ability to write reports, make presentations using ICT and other appropriate communication methods. **(PO2)** |

| | | |
|---|---|---|
| 3. | **Critical thinker and problem solver** | To enable the student to define a nutritional problem, identify potential causes, and possible solutions and make thoughtful and suitable recommendations. To apply critical thinking in new situations. **(PO3)** |
| 4. | **Sense of inquiry** | To employ self-awareness and self-monitoring skills to analyse the influence of social and environmental factors that govern food choices and dietary pattern. To apply the knowledge of basic nutritional principles to guide healthy eating practices and develop a healty eating plan. **(PO4)** |
| 5. | **Team player/worker** | To impart training inorder to play a significant role as a nutritionist or dietitian in the health care team. To provide leadership in a variety of situations. Collaborate effectively and gain the ability to work both independently and in group. **(PO5)** |
| 6. | **Skilled project manager** | Impart skills required to gather information from resources and use them effectively. To inculcate basic management skills to work independently, mobilize resources and lead community based projects and initiatives **(PO6)** |
| 7. | **Digitally Efficient** | To develop the ability to utilize ICT to create, select, adapt and apply principles of food and nutrition for health promotion and disease prevention. To gather knowledge and update scientific information and skills through ICT tools. **(PO7)** |
| 8. | **Ethical awareness / reasoning** | Demonstrate professional behaviour such as being objective, unbiased and truthful in all aspects of work and avoiding unethical, irrational behaviour such as fabricating, falsifying or misrepresenting data or committing plagiarism; **(PO8)** |
| 9. | **National and international perspective** | Recognize and assess societal, environmental, health, safety, and cultural issues related to food within local and global contexts. Use e-learning materials as well execute proposals of National and International importance. **(PO9)** |
| 10. | **Lifelong learners** | To build the capacity for independent learning to meet their professional and personal needs in varying environment and changing contexts. (**PO10)** |

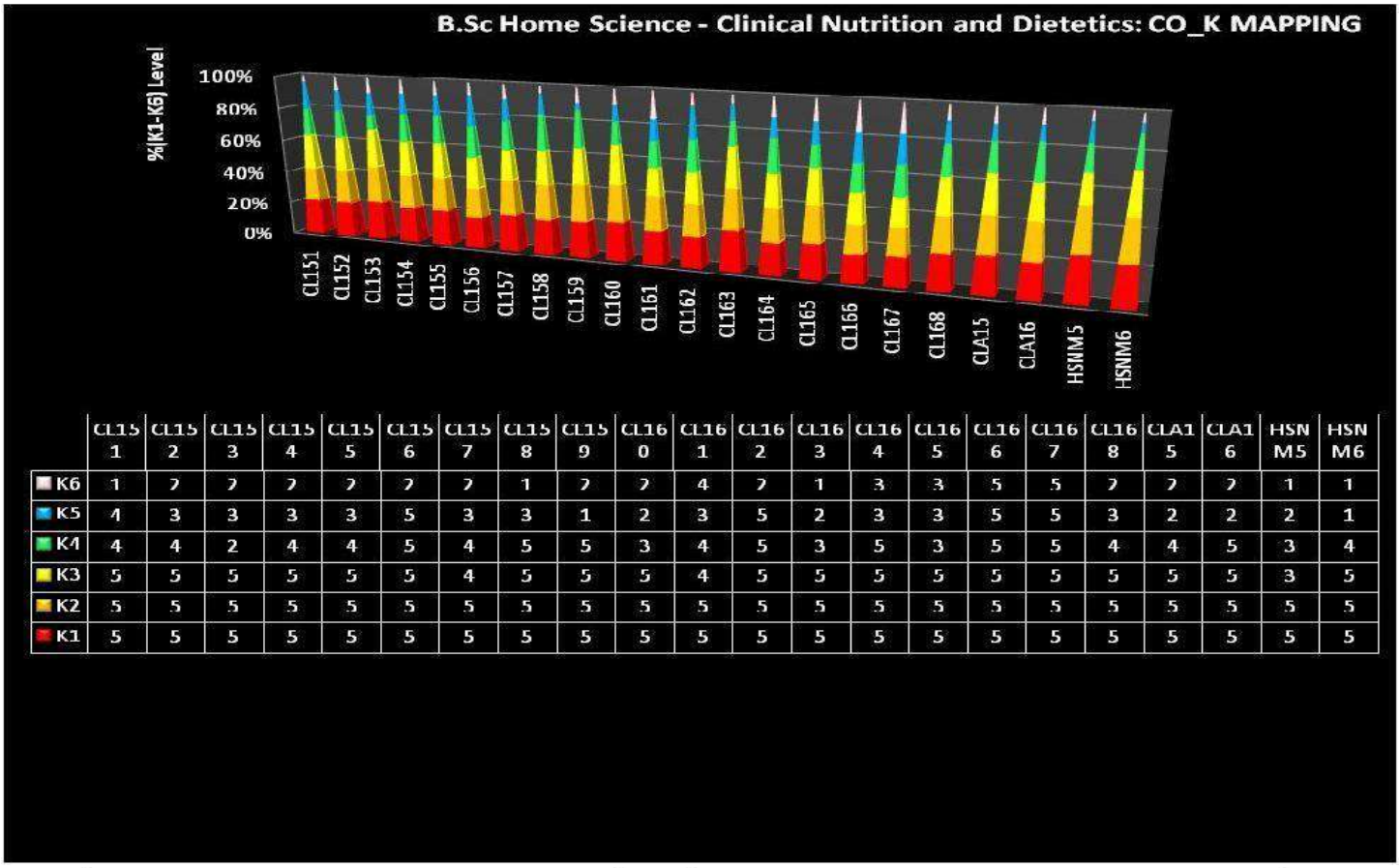
**COURSE OUTCOME (CO):**

The **UG** program in **B.Sc HOME SCIENCE – CLINICAL NUTRITION AND DIETETICS** curriculum has been designed to fit thoroughly into the ideologies of Bloom's taxonomy with strong knowledge level foundation, catering to remembering and understanding of the advanced concepts in Physics. Applying and analyzing the studied concepts scientifically based on the thorough theoretical and experimental knowledge acquired in all related fields, focused well in the evaluation pattern of both the continuous internal assessment and end-semester examination. Due weightage to creativity is given in internal assessment and project. The rational correlation of the course outcomes is evident in the evaluation pattern which is the strength of the course. Students would have acquired competence in areas of recent development and can fit themselves in places of scientific temper as they have the skill, computer knowledge and mastered the subject. Knowledge levels imparted in the curriculum are categorized based on Bloom's taxonomy under 6-levels as K1, K2, K3, K4, K5 and K6 and mapped to check their presence or absence and are not scaled. Upon completion of B.Sc Degree course in Clinical Nutrition and Dietetics

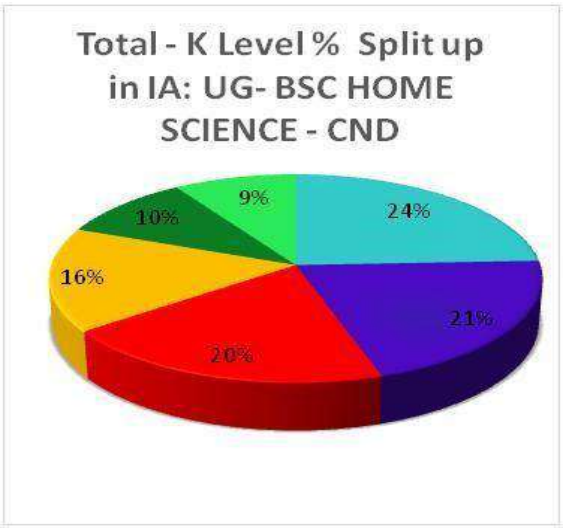
the student will be able to  Recall (K1), understand (K2) and apply (K3) the concepts of Nutrition and Dietetics in day today life.

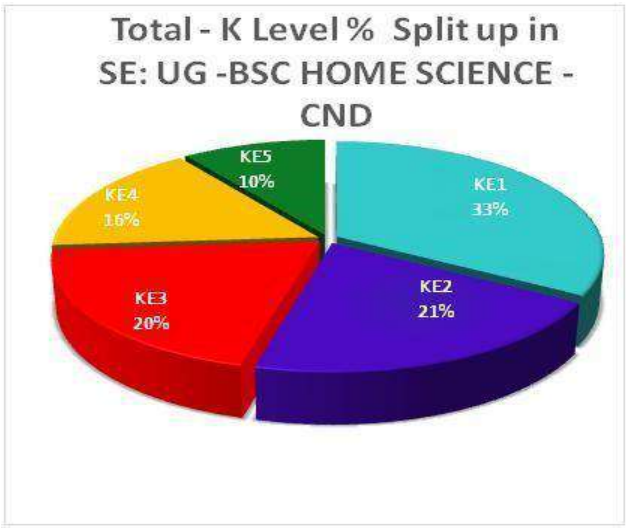
- Reason out (K4) and explain the dietary modifications needed in specific physiological and disease conditions.
- Logically analyse (k4) the clinical conditions and apply nutritional principles in their management and treatment
- Demonstrate (K5) ability to calculate nutrient content of menus using excel sheet ; disseminate nutritional information to the community using appropriate audio visual aids;
- Acquire employability skills through hands on experience in preparing therapeutic diets; analysis of biochemical parameters; use of PPT presentations, engagement in discussions and debates.

# CO – K MAPPING

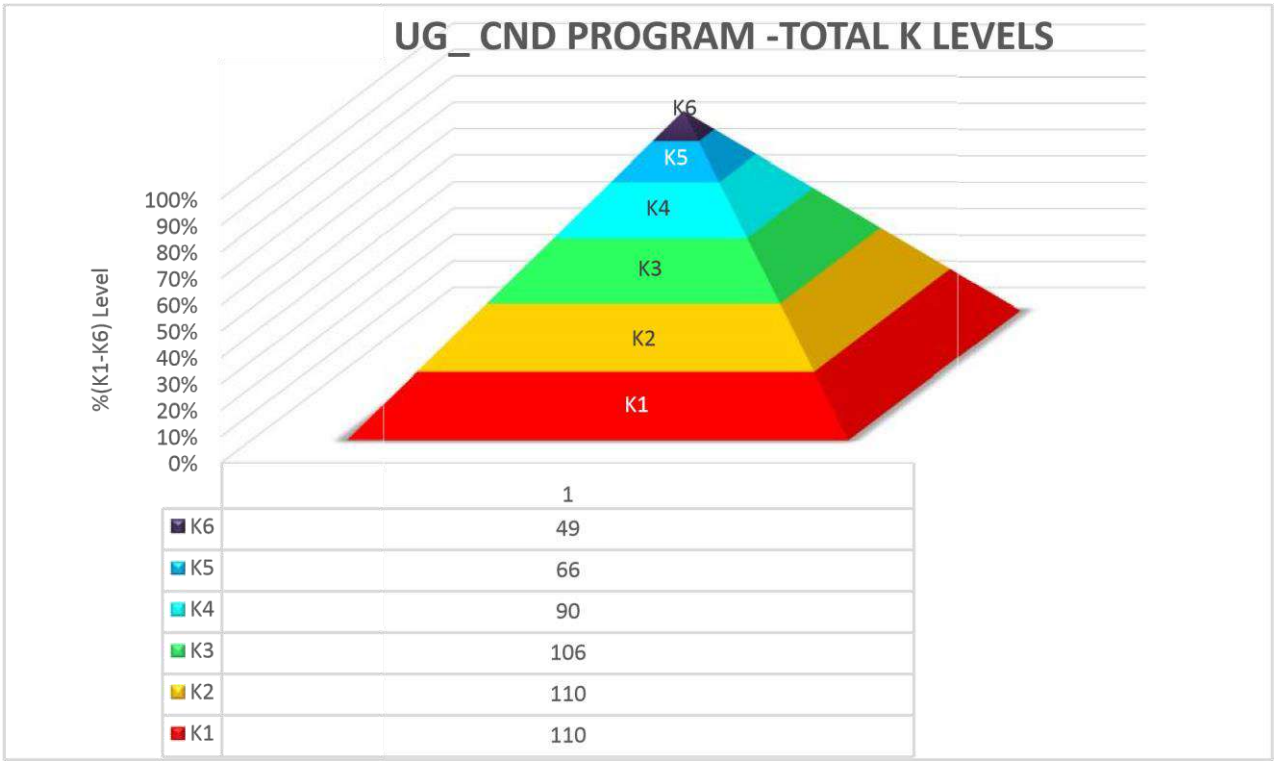



| | CL151 | CL152 | CL153 | CL154 | CL155 | CL156 | CL157 | CL158 | CL159 | CL160 | CL161 | CL162 | CL163 | CL164 | CL165 | CL166 | CL167 | CL168 | CLA15 | CLA16 | HSNM5 | HSNM6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K6 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 4 | 2 | 1 | 3 | 3 | 5 | 5 | 2 | 2 | 2 | 1 | 1 |
| K5 | 4 | 3 | 3 | 3 | 3 | 5 | 3 | 3 | 1 | 2 | 3 | 5 | 2 | 3 | 3 | 5 | 5 | 3 | 2 | 2 | 2 | 1 |
| K4 | 4 | 4 | 2 | 4 | 4 | 5 | 4 | 5 | 5 | 3 | 4 | 5 | 3 | 5 | 3 | 5 | 5 | 4 | 4 | 5 | 3 | 4 |
| K3 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 5 |
| K2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| K1 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |



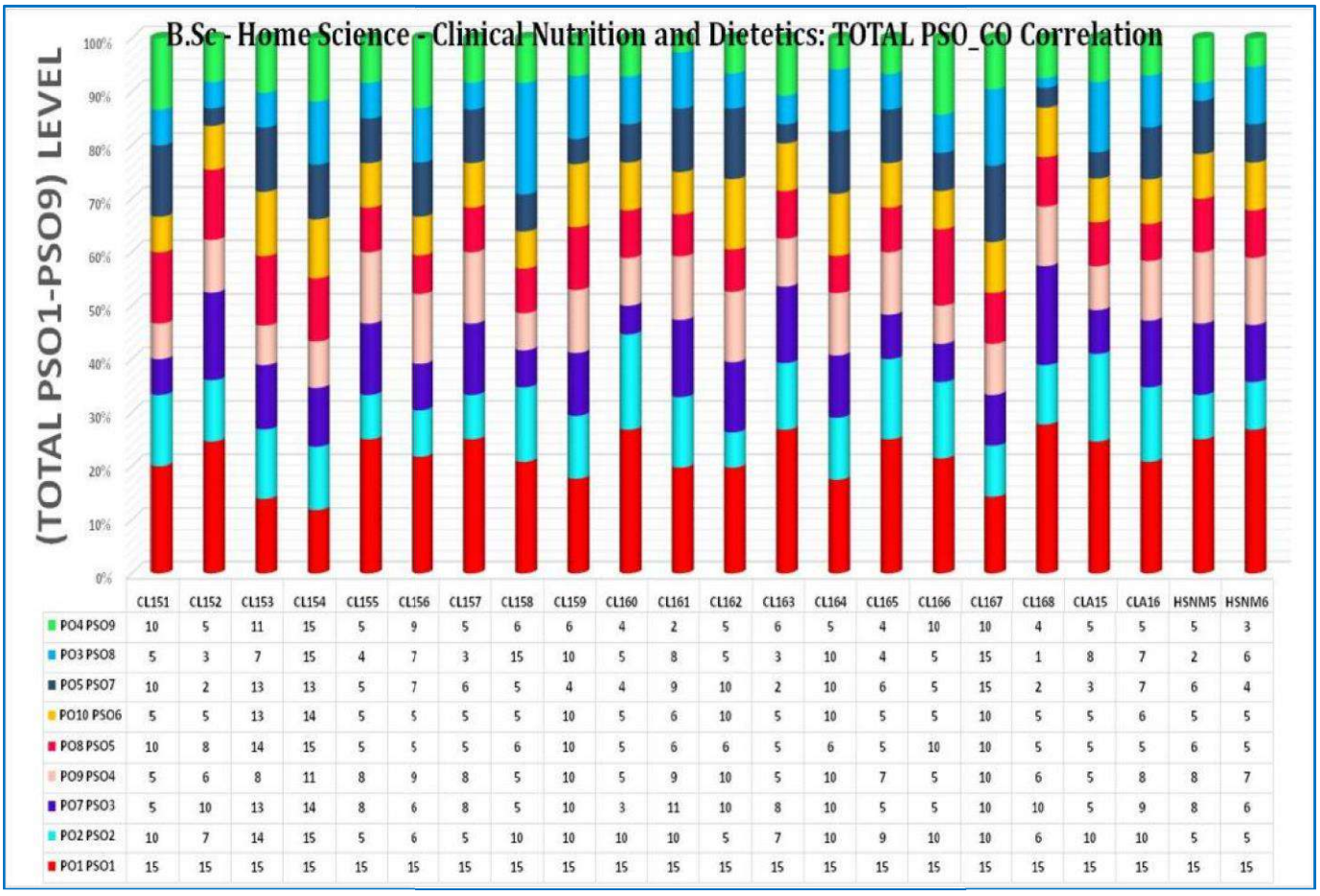




**NOTE: Kindly refer Appendix for mapping and correlation details of all courses of the Programme**




| | 1 |
|---|---|
| K6 | 49 |
| K5 | 66 |
| K4 | 90 |
| K3 | 106 |
| K2 | 110 |
| K1 | 110 |

# PO-PSO MAPPING BSC- HOME SCIENCE - CND

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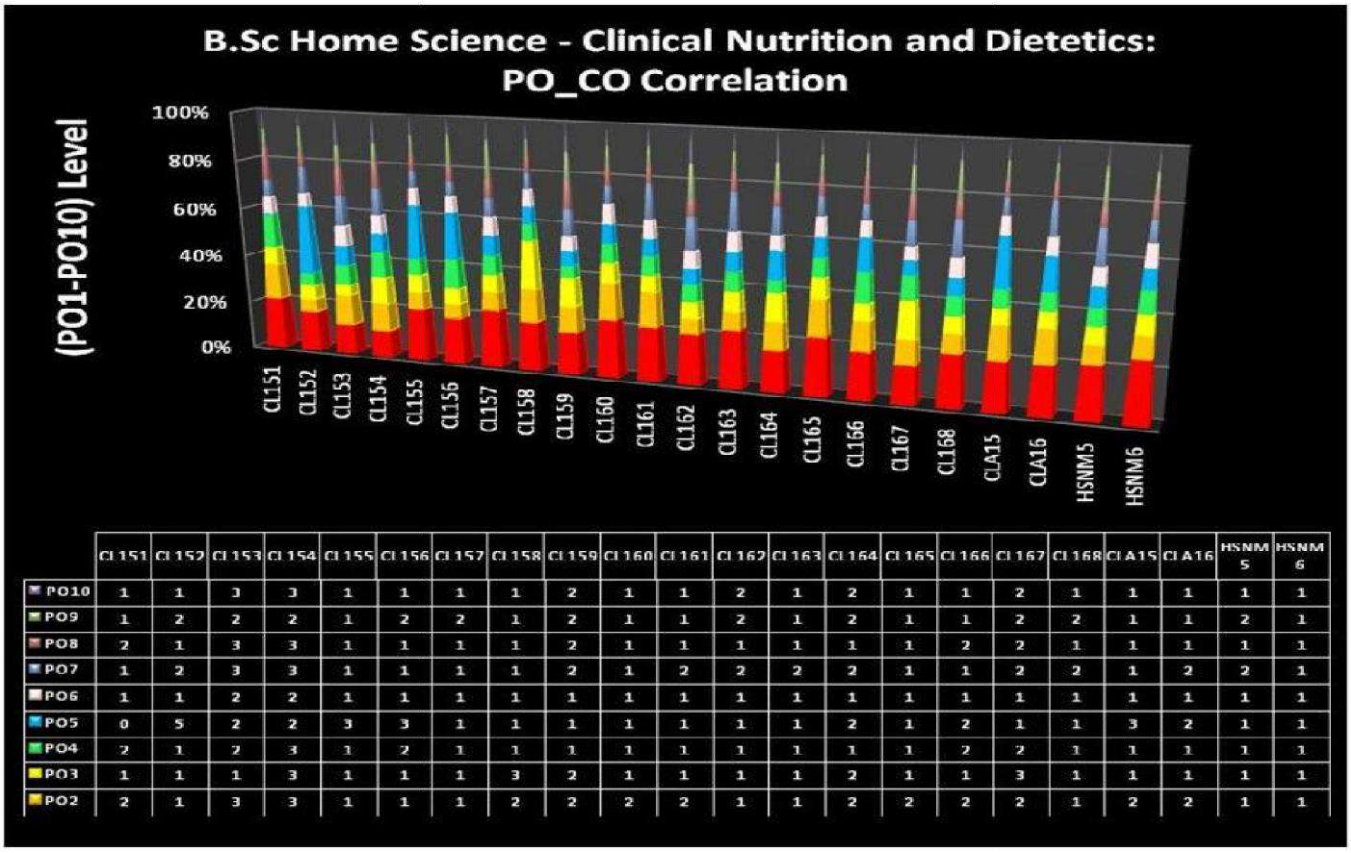
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PO4 PSO9 | 10 | 5 | 11 | 15 | 5 | 9 | 5 | 6 | 6 | 4 | 2 | 5 | 6 | 5 | 4 | 10 | 10 | 4 | 5 | 5 | 5 | 3 |
| PO3 PSO8 | 5 | 3 | 7 | 15 | 4 | 7 | 3 | 15 | 10 | 5 | 8 | 5 | 3 | 10 | 4 | 5 | 15 | 1 | 8 | 7 | 2 | 6 |
| PO5 PSO7 | 10 | 2 | 13 | 13 | 5 | 7 | 6 | 5 | 4 | 4 | 9 | 10 | 2 | 10 | 6 | 5 | 15 | 2 | 3 | 7 | 6 | 4 |
| PO10 PSO6 | 5 | 5 | 13 | 14 | 5 | 5 | 5 | 5 | 10 | 5 | 6 | 10 | 5 | 10 | 5 | 5 | 10 | 5 | 5 | 6 | 5 | 5 |
| PO8 PSO5 | 10 | 8 | 14 | 15 | 5 | 5 | 5 | 6 | 10 | 5 | 6 | 6 | 5 | 6 | 5 | 10 | 10 | 5 | 5 | 5 | 6 | 5 |
| PO9 PSO4 | 5 | 6 | 8 | 11 | 8 | 9 | 8 | 5 | 10 | 5 | 9 | 10 | 5 | 10 | 7 | 5 | 10 | 6 | 5 | 8 | 8 | 7 |
| PO7 PSO3 | 5 | 10 | 13 | 14 | 8 | 6 | 8 | 5 | 10 | 3 | 11 | 10 | 8 | 10 | 5 | 5 | 10 | 10 | 5 | 9 | 8 | 6 |
| PO2 PSO2 | 10 | 7 | 14 | 15 | 5 | 6 | 5 | 10 | 10 | 10 | 10 | 5 | 7 | 10 | 9 | 10 | 10 | 6 | 10 | 10 | 5 | 5 |
| PO1 PSO1 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |

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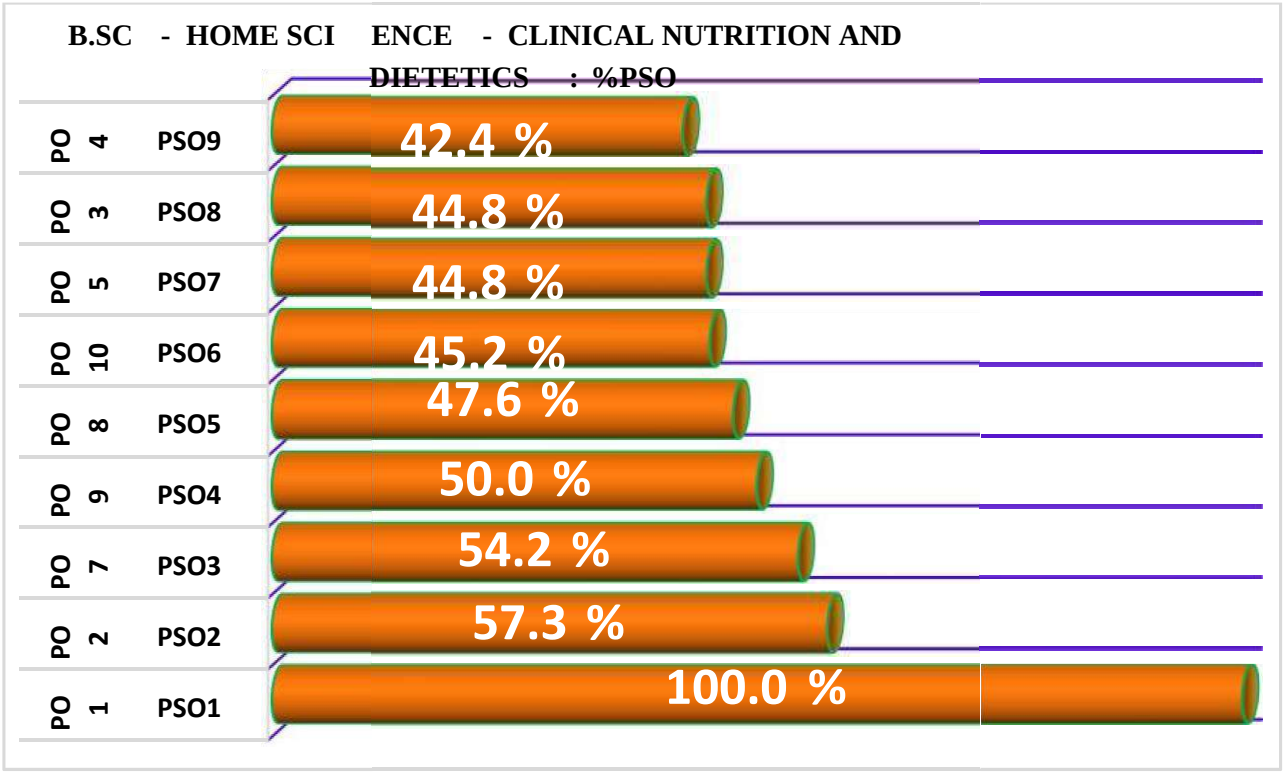
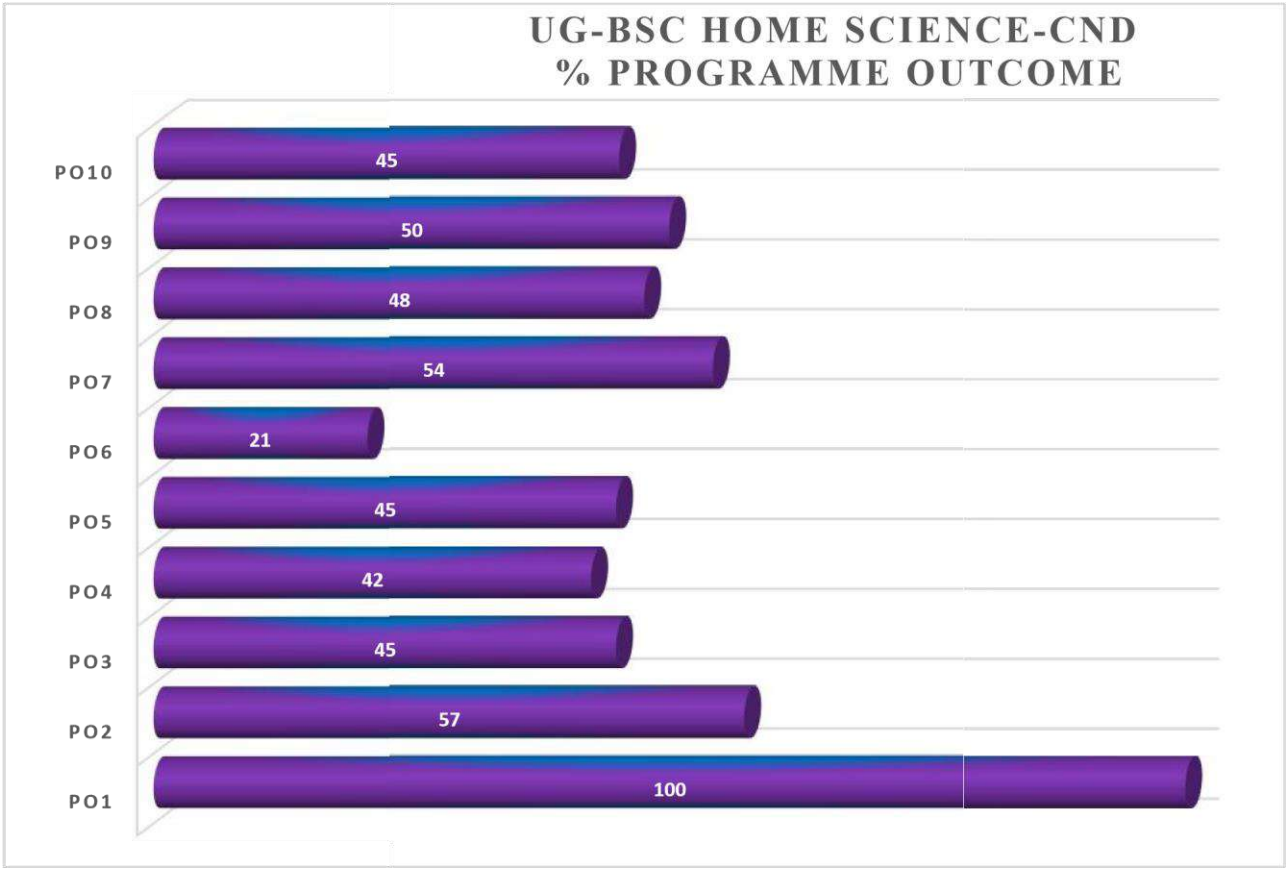
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PO10 | 1 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 |
| PO9 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 |
| PO8 | 2 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
| PO7 | 1 | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 |
| PO6 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| PO5 | 0 | 5 | 2 | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 3 | 2 | 1 | 1 |
| PO4 | 2 | 1 | 2 | 3 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
| PO3 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 |
| PO2 | 2 | 1 | 3 | 3 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 |




UG-BSC HOME SCIENCE-CND
% PROGRAMME OUTCOME
PO10
PO9
PO8
PO7
PO6
PO5
PO4
PO3
PO2
PO1
45
50
48
54
21
45
42
45
57
100

# FOOD SCIENCE

**SEMESTER: I** **CODE NO : CL151**

**COURSE NO: I** **CREDIT : 5**

**LEARNING OBJECTIVES**

1) Gain knowledge on different food groups and their nutritive value.
2) Understand the scientific principles underlying food preparation. 3) Apply the principles in food preparation

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOMES | K LEVEL |
|---|---|---|
| **CO1** | **Evaluate** foods according to basic five food groups. **Demonstrate** the different methods of cooking. (Youtube: Hospitality Doodle-cooking methods) -types of cooking(PO7 & PO9 (activity: model food pyramid)<br>**Practical – Demonstrate** the measuring techniques. (PO4,PO5) | **K1, K2, K3, K5, K6** |
| **CO2** | **Recall** the composition and nutritive value of different cereals and millets. List the types, uses and nutritional significance of products from cereals and millets. (You tube: SAARASWAT-structure, composition & nutritive value of cereals, millets &pulses) (PO7 & PO9)<br>**Practical – Analyze** the best method of cooking Rice. **Apply** the best method of cooking cereals in the preparation of upma. (PO3,PO4,PO5) | **K1, K2, K5, K3, K4** |
| **CO3** | **Evaluate** the different protein foods based on their nutritive value. Explain the effects of soaking and germinating pulses. Discuss the composition, processing and nutritional significance of various non-fermented milk products (aavinmilk.com). **Analyze** the changes taking place during the preparation of fermented milk products and during ageing of meat(PO7 & PO9)<br>**Practical** – **Analyze** the effect of cooking pulses in acid, alkali and hard water.**Apply** the best method of cooking pulses in the preparation of dhal masiyal. **Analyze** the factors affecting egg foam formation. **Acquire** the skill to prepare paneer. (PO4,PO5) | **K1, K2, K3, K4, K5** |

| | | |
|---|---|---|
| **CO4** | **Classify** vegetables and fruits according to their nutritive value. **Explain** the process of enzymatic and non-enzymatic browning reaction. (youtube: video lecture on browning reaction in fruits and vegetables) (PO7 & PO9)<br>**Practical** – **Analyze** the effect of cooking on colour and texture of vegetables and fruits. **Demonstrate** the methods to prevent browning reaction in vegetables and fruits (PO4,PO5) | **K1, K2, K3, K4** |
| **CO5** | **Demonstrate an understanding** of the role of fat in cookery. **Explain** winterization, hydrogenation (youtube: video on -hydrogenation of oils) (PO7 & PO9), rancidity and smoking temperature of fat. **Discuss** classification of beverages and uses of spices in cookery<br>**Practical - Demonstrate** the smoking temperature of different fats and oils. **Acquire** the skill to prepare deep fried foods such as chips and vadai. **Demonstrate** the different stages of sugar cookery. **Acquire** the skill to prepare Gulabjamun. (PO4,PO5) | **K1, K2, K3, K4, K5** |

| **CO/PO (GC/GMEETPO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of Inquiy** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| **CO2** | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| **CO3** | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| **CO4** | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| **CO5** | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| **Avg** | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| **Tot** | 15 | 10 | 5 | 10 | 10 | 5 | 5 | 10 | 5 | 5 |

**COURSE OUTLINE**

| S.NO | CONTENT | NO. OF HOURS |
|---|---|---|
| UNIT I | **Food Groups and methods of cooking**<br>a. Classification of food –Basic Five food groups and functional foods-classification<br>b. Methods of cooking – Dry Heat Methods – types, advantages and disadvantages<br>c. Moist Heat methods - types, advantages and disadvantages<br>d. Combination methods - types, advantages and disadvantages<br>**Practical**: The measurement of food stuffs-use of standard measuring spoons & cups. Determination of edible portion of foods | 8+2 |
| UNIT II | **Cereal and Cereal Products**<br>a. Composition and nutritive value of Rice, Wheat, Maize<br>b. Products of cereals of Rice, Wheat, Maize<br>c. Composition and nutritive value of Ragi, Bajra, Jowar<br>d. Products of Ragi, Bajra, Jowar<br>**Practical:** Different methods of cooking rice – boiling, straining and pressure cooking, preparation of upma | 12+3 |
| UNIT III | **Protein Foods**<br>a. Pulses - Nutritive value of pulses, processing - soaking and germination, toxic factors present in pulses.<br>b. Milk - Composition and nutritive value of milk. Milk products- non-fermentedskim milk, khoa, standardized milk, ultra high temperature processed milk, cream, fermented milk products - butter, cheese, curd.<br>c. Eggs - Structure, composition and nutritive value.<br>d. Flesh foods -Composition and nutritive value of meat and fish, selection of fish, post mortem changes in meat, ageing of meat.<br>**Practical**: Factors affecting cooking of pulses-soaking, effect of acid, alkali, hard water, preparation of dhal masiyal. Milk and milk products –preparation of paneer.<br>Egg – factors affecting foam formation, preparation of boiled egg and omelet. | 20+5 |
| UNIT IV | **Vegetables and Fruits**<br>a. Vegetables – composition and nutritive value<br>b. Classification and types of pigments –water insoluble and water soluble.<br>c. Fruits – composition and nutritive value,<br>d. Classification, ripening and browning reaction-enzymatic and non- enzymatic. | 10+5 |

| | | |
|---|---|---|
| | **Practical**: -Effect of cooking on colour and texture of vegetables, addition of acid and alkali, prevention of browning reaction in fruits, preparation of vegetable kurma and fruit salad. | |
| UNIT V | **Fats, Sugars, Oils, Beverages and Spices**<br>a. Fats and Oil-Types – lard, butter margarine- Role in cooking – as a medium in cooking, fat absorption, effect on fried foods, fat turn over, effect on texture andpalatability. Processing – hydrogenation, winterization and rancidity of fats.<br>b. Sugar-Products, stages of sugar cookery and role of sugar in cooking.<br>c. Beverages-Classification and uses in cookery.<br>d. Spices – Functions of spices and Uses in cookery.<br>**Practical**: **Fats and oils** –demonstration of smoking temperature of different fats and oils, preparation of chips and vadai.<br>**Sugar** - Demonstration of different stages of sugar cookery, preparation of gulabjamun | 20+5 |
| | | 90 |

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1. Shakuntala.M .2006,Foods and Nutrition- Facts and Figures, New age publishers,New Delhi.
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7. Krishna.A 2005, Theory of Cookery, Frank Bros. & Co, New Delhi.
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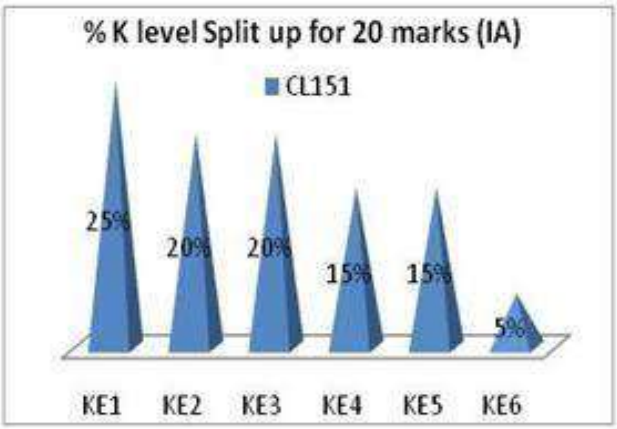
**WEBSITES**

www.fda.org

www.foodsafety.org

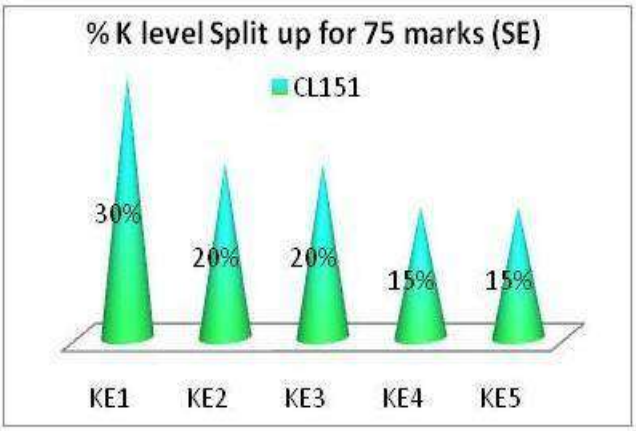
## CIE – CONTINUOUS INTERNAL EVALUATION (25 MARKS)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 2 | | 1 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (3) | 1 | 0 | | 2 |
| Create (1) | 0 | 1 | | 0 |




## ESE – SEMESTER END EXAMINATION (75 MARKS; WEIGHTAGE 75%)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | 30% |
| Understand | 20% |
| Apply | 20% |
| Analyze | 15% |
| Evaluate | 15% |



# PRINICIPLES OF RESOURCE MANAGEMENT

**SEMESTER: I** **CODE NO:CL152**

**COURSE NO: II** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students to

1. Gain knowledge about the principles of management
2. Acquire ability to make use of resources efficiently
3. Learn various types of decisions and methods of resolving conflicts.

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) at the end of each unit the student will be able to :**

| CO | COURSE OUTCOME | K Level |
|---|---|---|
| CO1 | **Define** and **value** the significance of management. **Summarize** the management process and submit a report (PO2). **Apply** management steps (planning controlling and evaluating) in everyday life to maximize quality of living. **Identify** the essential qualities of an ideal Home maker and present as PPT followed by group discussion (PO7) | K1, K2, K3, K5 |
| CO2 | **Define** and **Distinguish** the values, goals and standards (Submit a typed assignment on individual goals and values). **Understand** the meaning of Resources. **Classify** and **compare** human vs. non human resources. **Identify** and **List** resources available to individual and motivate to utilize maximum. **Demonstrate** the optimal use of family resources. **Define** Decisions and **Classify** the type of decisions. **Explain** the process of Decision making<br>**Apply** the methods of resolving conflicts in everyday life.<br>(Video lecture :https://www.youtube.com/watch?v=4MPpl6r25xY followed by question answer session http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827) (PO9) | K1, K2, K3, K4 |
| CO3 | **Define** time management **Value** the importance of Time. **Outline** the Tools in Time Management as Peak Loads, work curve and rest periods. **Discuss** the time management process with suitable examples followed by group discussion **Identify and Adapt** the steps in making time schedule and **plan** an effective time schedule in an organized manner using these steps for themselves and submit it as typed assignment. **Compare** the quality of life before and after adapting time management steps. | K1, K2, K3, K4, K5, K6 |

| | | |
|---|---|---|
| CO4 | **Define** Work simplification **Identify** the techniques of work simplification and Mundel's classes of changes and submit a typed report. **Apply** work simplification techniques to modify current stressful work routine. (Video lecture :https://www.youtube.com/watch?v=P_KycWNmJhE, http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827 ) (PO9) **Understand** the concept of fatigue and **distinguish** the types of fatigue. (Question answer session) **Recommend** various ways to overcome fatigue with illustration and **relate** them to current situations. | K1, K2, K3,K4, K5 |
| CO5 | **Understand** the meaning of Family Income and **classify** it's types. **Explain** the different methods of handling family income. **Discover** the methods of augmenting family income and **utilize** these methods to improve family income. **Define** Budget and **Plan** a budgetfor family using the steps involved in planning a budget for their family income and submit it as typed assignment. (Video lecture : https://www.coursera.org/lecture/financial-planning/lecture-budgeting-overviewdHF7n followed by group discussion http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827) (PO9)<br>**Identify** the advantages of budgeting.. **Classify** Financial Records and **evaluate** the financial records. (Group Activity - Prepare an audio visual aid to educate the family about money management.) | K1, K2, K3, K4, K6 |

| **CO/PO (GC/GMEETPO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of Inquiy** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 2 | | 1 | | | 2 | 1 | | 1 |
| **CO2** | 3 | 2 | 1 | 1 | | | 2 | 2 | 2 | 1 |
| **CO3** | 3 | 2 | 1 | 1 | | | 2 | 2 | | 1 |
| **CO4** | 3 | 1 | | 1 | | | 2 | 1 | 2 | 1 |
| **CO5** | 3 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 1 |
| **Avg** | 3 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| **Total** | 15 | 7 | 3 | 5 | 2 | 1 | 10 | 8 | 6 | 5 |

**COURSE OUTLINE**

| S. No | Content | No of hours |
|---|---|---|
| **Unit I** | **Management**<br>a. Definition and significance of management<br>b. Management process – planning controlling and evaluating<br>c. Qualities of an ideal Home maker | **10** |
| **Unit II** | **Managerial Inputs**<br>a. Values, goals and standards – Definition and Classification<br>b. Resources-meaning and classification. Optimizing the use of family resources.<br>c. Decisions – Definition, types of decision. Decision making process<br>d. Methods of resolving conflicts. | **28** |
| **Unit III** | **Time Management**<br>a. Tools in Time Management – Peak Loads, work curve and rest periods.<br>b. Time management process – Planning – Steps in making time schedule, Controlling and Evaluating. | **16** |
| **Unit IV** | **Energy Management**<br>a. Work simplification Definition, techniques and Mundel's classes of changes.<br>b. Fatigue – Concept, types – Physiological and Psychological fatigue. Ways to overcome fatigue. | **18** |
| **Unit V** | **Money Management**<br>a. Family Income – types, methods of handling family income, methods of augmenting family income.<br>b. Family expenditure – Budget – Meaning, steps involved in planning a budget. Advantages of budgeting. Financial Records – types and evaluation. | **18** |
| | | **90** |

**PRACTICAL**

1. Identification of personal and family values and goals – their interrelationship.
2. Formulation of family budget.
3. Assessment of convenient work heights – maximum and comfortable reach in sitting and standing positions.
4. Preparation of a time schedule.

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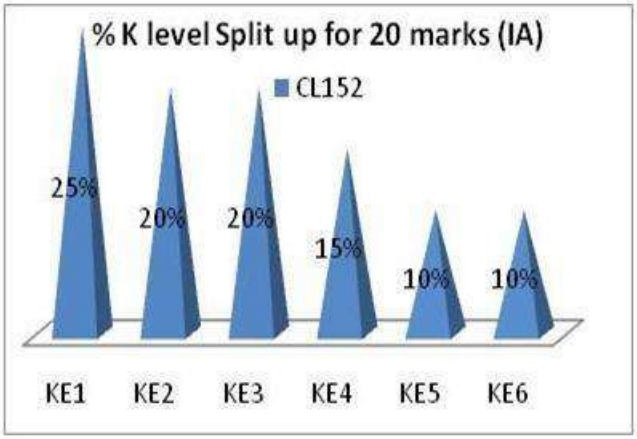
## WEBSITES

www.managementstudyguide.com/management_importance.htm
www.inspirationbit.com/the-importance-of-values-goals
mario88lua.tripod.com/decision making
www.timemanagement.com ezinearticles.com/? Importance-of-Money-Management-Skills

### ASSESSMENT PATTERN

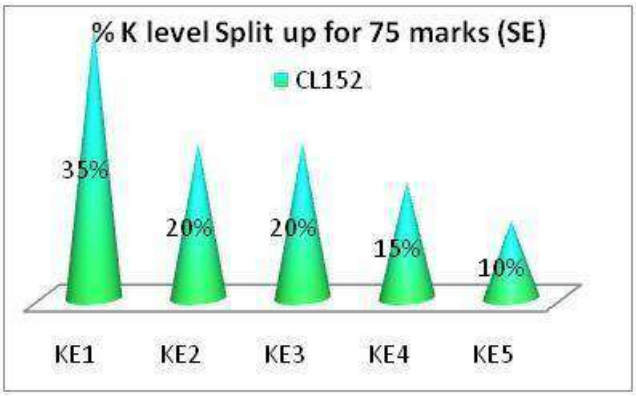
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 1 | | 2 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (2) | 1 | 0 | | 1 |
| Create (2) | 0 | 2 | | 0 |



**ESE- Semester End Examination (75 Marks; weightage 75 %)**

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | 35% |
| Understand | 20% |
| Apply | 20% |
| Analyze | 15% |
| Evaluate | 10% |



# FAMILY MEAL MANAGEMENT

**SEMESTER: I** **CODE NO:CL153**

**COURSE NO: III** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable students to learn

1. The principles involved in planning diets for various stages of life cycle.
2. To plan balanced diets for various activities and for various socio economic levels.

**COURSE OUTCOMES**

**At the end of each unit the student will be able to : Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create)**

| CO | COURSE OUTCOMES | K Level |
|---|---|---|
| **CO1** | **Define** and construct a Balanced diet. **Remember** the basic four food groups. **Build** a food pyramid model that exhibits the basic four food groups ( group activity) followed by question session. **Skilfully use** food exchange lists in menu planning. **Understand** the principles involved in planning diets(**PPTs**). **Construct** a menu using the principlesof menu planning. **Use** the food guide pyramid to make dietary recommendations **Identify** the nutrient requirement of different age groups using Recommended dietary allowances and **apply** it in menu planning | K1 K2 K3 |
| **CO2** | **Explain** the nutritional requirements of infancy, early childhood and late childhood. **Comprehend** the importance of breast feeding. **Describe** the role of supplementary foods in infancy. **Discuss** the causes, symptoms, treatment and prevention of Protein Energy Malnutrition, and Vitamin A deficiency (Lecture video http://epgp.inflibnet.ac.in/Home/Download followed by discussion). **Understand** the importance of packed lunches for school going children and suggest nutritionally dense packed lunch recipes with calculated nutritive values. **Poster presentation** on breast feeding (group activity) | K1, K2, K3, K4, K6 |
| **CO3** | **Remember** the nutritional requirements of adolescence and adulthood. **Understand** the causes of nutritional problems in adolescents (**e-Poster presentation**)and **device** dietary and lifestyle changes to overcome them followed by group discussion. **Grasp** the concept of reference man and reference woman and its relevance in nutrition. (Assessment through | K1, K2, K3, K5 |

| | | |
|---|---|---|
| | question session). | |
| **CO4** | **Recall** the nutritional requirements of pregnancy and lactation **Explain** the physiological changes that occur during pregnancy and lactation. Lecture video - http://epgp.inflibnet.ac.in/Home/Download followed by discussion. **Translate** the special nutritional requirements into appropriate diet plans for pregnancy and lactation with calculated nutritive values. Assignment on the importance of nutritional requirements during pregnancy as well as lactation through charts and PPTs (Individual Activity). | K1, K2, K3, K4, K6 |
| **CO5** | **Understand**nutritional requirements of old age. **Explain the** dietary modifications required during old age. **Recommend** appropriate food choices during old age followed by group discussion. **Identify** the nutrition related problems which occur during old age. (E-quiz on dietary modification of elderly). | K1, K2, K3,K5 |

| **CO/PO (GC/GMEET-PO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of Inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| CO1 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 |
| CO3 | 3 | 3 | 1 | 2 | 2 | 1 | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 3 |
| CO5 | 3 | 3 | | 2 | 2 | 1 | 2 | 3 | 1 | 2 |
| Avg | 3 | 3 | 1 | 2 | 3 | 2 | 3 | 3 | 2 | 3 |
| Total | 15 | 14 | 7 | 11 | 13 | 8 | 13 | 14 | 8 | 13 |

**COURSE OUTLINE**

| S. No | Content | No of hours |
|---|---|---|
| **Unit I** | **Menu planning**<br>a. Balanced diet- definition, four food groups, food exchange lists.<br>b. Principles of planning diets, steps involved in planning a diet, food guide pyramid<br>c. Recommended dietary allowances | **5** |
| **Unit II:** | **Nutrition during infancy and childhood**<br>a. Infancy –Nutritional requirements, breast feeding- advantages supplementary foods for infants.<br>b. Early childhood (Toddler/Pre-schooler) – Nutritional requirements, nutrition related problems – Protein Energy Malnutrition, Vitamin A deficiency.<br>c. Late Childhood – Nutritional requirements, importance of packed lunch. | **25** |
| **Unit III** | **Nutrition during Adolescence and Adulthood**<br>a. Adolescence – Nutritional requirements, nutritional problems – eating disorders, obesity, underweight and anaemia.<br>b. Adulthood – Nutritional requirements of adult woman involved in various activities, concept of reference man and woman. | **20** |
| **Unit IV** | **Nutrition during pregnancy and lactation**<br>a. Pregnancy – Physiological changes during pregnancy, nutritional requirements, complications in pregnancy.<br>b. Lactation – Physiology of lactation, nutritional requirements. | **30** |
| **Unit V** | **Nutrition during old age**<br>a. Nutritional requirements, dietary modifications and nutrition related problems. | **10** |
| | | **90** |

**REFERENCES**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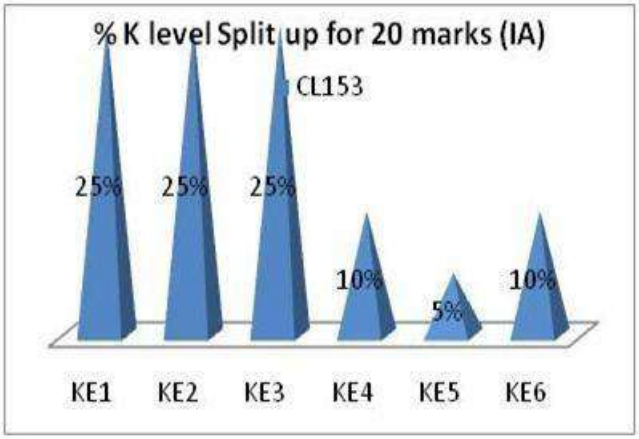
13. Dr.ShrinandanBansal, Food and Nutrition, AITB,2nd edition,2012

**ASSESSMENT PATTERN**

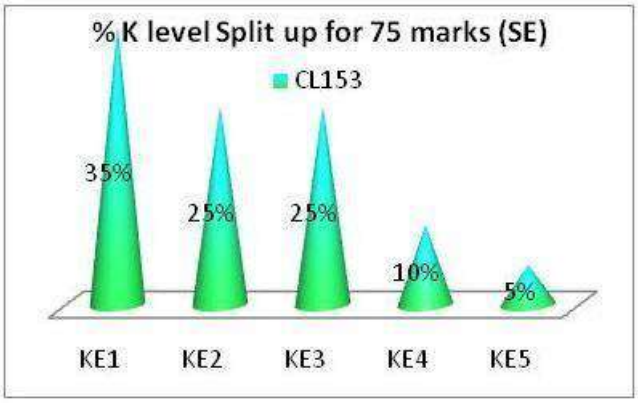
**CIE- Continuous Internal Evaluation (25 marks)**

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 0 | | 3 |
| Understand (5) | 1 | 0 | | 4 |
| Apply (5) | 2 | 2 | | 1 |
| Analyse (2) | 0 | 1 | | 1 |
| Evaluate (1) | 0 | 0 | | 1 |
| Create (2) | 0 | 2 | | 0 |




**ESE- Semester End Examination (75 Marks; weightage 75 %)**

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | 35% |
| Understand | 25% |
| Apply | 25% |
| Analyze | 10% |
| Evaluate | 5% |



# FAMILY MEAL MANAGEMENT PRACTICAL

**SEMESTER: I** **CODE NO:CL154**

**COURSE NO: IV** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students to learn

1. The dietary principles to be followed in the preparation of meals for the family.
2. The techniques in planning and preparing diets for the family.
3. The nutrient requirements of different age groups in the human life cycle.

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5** (Evaluate), K6 (Create) A**t the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOMES | K Level |
|---|---|---|
| **CO1** | **Recall** the dietary principles to be followed while planning menu for an adult, pregnant and nursing women. **Understand** the need of essential nutrients during pregnancy and lactation (**PPTs**). **Plan** menus that specifically meet the recommended dietary allowances of adults, pregnant and lactating mothers. **Calculate** the nutritive value of menus prepared for pregnant women and nursing mothers. (Discussion, Observation Note (PO2, PO4,PO5). **Chart presentation** on the importance of nutritious food intake during pregnancy as well as lactation period (Individual Activity). | K1, K2, K3, K5, K6 |
| **CO2** | **Highlight** the importance of weaning for infants. **Plan** suitable weaning foods that meet the RDA requirement and calculate their nutritive value. (Discussion, Maintenance of Observation Note). **Group assignment** on the importance of weaning for infants with nutritious recipes meeting infant's nutritional requirements (**PPTs**). | K1, K2, K3, K4, K5 |
| **CO3** | **Apply** the basic dietary principles to be followed while planning and preparing nutritionally dense and attractive packed lunches for school going child. **Develop** skills in preparation of various food items using five food groups appropriately. **Recall** the principles of planning a menu for an adolescent girl and **prepare** recipe which meets her nutritional requirement. (Followed by group discussion, Observation Note) **e- quiz**on packed lunch. | K1,K2,K3,K4, K6 |

| | | |
|---|---|---|
| **CO4** | **Analyze**the common nutritional disorders of children and adolescents. **Acquire** the skills to plan and preparecost effective diets for special conditions such as Anemia, Vitamin A deficiency and PEM (Protein Energy Malnutrition)<br>(Lecture Videohttp://epgp.inflibnet.ac.in/Home/Download<br>Group activity on imparting knowledge about adolescent nutritional disorders along with cost effective recipes among themselves (Audio and Video presentation) | K1, K2, K3, K4, K5 |
| **CO5** | **Plan** a menu which meets the nutritional requirement of the elderly **Acquire** the skill to prepare modified recipes that suit the special needs and prevent nutritional disorders in the elderly. (Group Discussion and Observation Note) | K1, K2, K3, K4 |

| **CO/PO (GC/GMEETPO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| CO1 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 |
| CO2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 |
| CO3 | 3 | 3 | 3 | 3 | 2 | 1 | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| CO5 | 3 | 3 | 3 | 3 | 2 | 1 | 2 | 3 | 2 | 2 |
| Avr | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 |
| Total | 15 | 15 | 15 | 15 | 13 | 8 | 14 | 15 | 11 | 14 |

**COURSE OUTLINE**

| S. No | Content | No of hours |
|---|---|---|
| **Practical 1** | Planning and preparation of diets for adult women | **10** |
| **Practical 2** | Planning and preparation of balanced diets for pregnant women | **10** |
| **Practical 3** | Planning and preparation of balanced diets for nursing mothers | **15** |
| **Practical 4** | Preparation of weaning foods for infants | **10** |
| **Practical 5** | Planning and preparation of packed lunch for school going children and adolescents | **15** |
| **Practical 6** | Planning and preparation of diets for old age people. | **10** |
| **Practical 7** | Planning and preparation of diets for nutritional deficiencies – anaemia | **10** |
| **Practical 8** | Planning and preparation of diets for nutritional deficiencies vitamin A deficiency and PEM. | **10** |
| **Total** | | **90** |

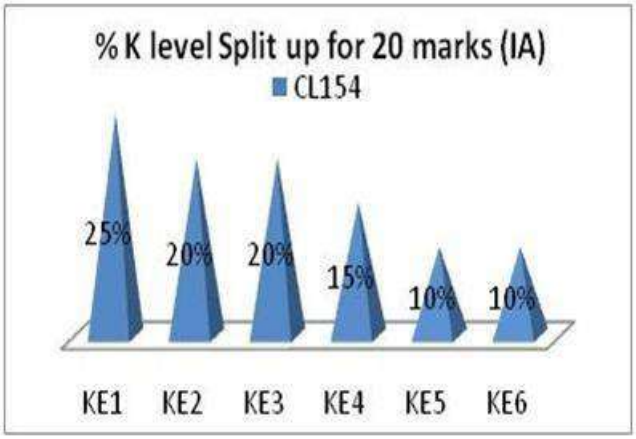
**REFERENCES**


1. Whitney, E.N. and Rolfes, S.R., 1999, Understanding Nutrition, West Wadsworth - An International Thomson Publishing Company, New York.
2. Robinson. C.H. 1998. Normal and Therapeutic Nutrition. London, Oxford and IBH Pub. Co.
3. Shills et al. 1994. Modern Nutrition in Health and Disease. Vol. I and II. New York, Lea and Febiger..
4. Sri Lakshmi. B. 2014. Dietetics. New Delhi, New Age International Pub. Ltd.
5. Williams. S.R. 1994. Nutrition and Diet Therapy. New York, Mosby Mirror Publishing Co.
6. Corrolllutz& Karen Przytulski, Nutrition and Diet Therapy, Jaypee, 14teen edition
7. Madhu Sharma, Therapeutic Paediatric Nutrition, Japee,1st edition,2011
8. Rekha Sharma , Diet Management , Elsevier,4th edition,2011
9. DeeptiChauhan, Nutrition, Lotus,1st edition, 2011
10. L.C.Gupta,KusumGupta,Abhishek Gupta, Food and Nutrition ,Japee,6th edition,2010
11. DarshanSohi , Nutrition and Therapeutic Diets , Japee,1st edition,2013
12. C.Gopalan,B.V.RamaSastri and S.C.Balasubramanian , Nutritive Value of Indian Foods . Japee,1st edition,1971
13. Dr.ShrinandanBansal, Food and Nutrition,AITB,2nd edition,2012

## ASSESSMENT PATTERN

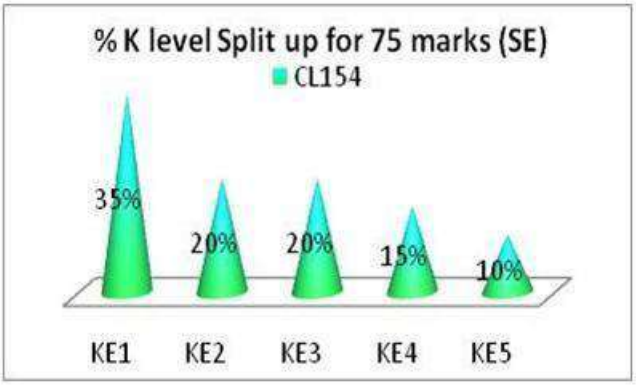
### CIE- Continuous Internal Evaluation (25 marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 1 | | 2 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (2) | 1 | 0 | | 1 |
| Create (2) | 0 | 2 | | 0 |




### ESE – Semester End Examination (75 marks; weightage 75%)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | 35% |
| Understand | 20% |
| Apply | 20% |
| Analyze | 15% |
| Evaluate | 10% |



# NUTRITION

**SEMESTER: I** **CODE NO:CL155**

**COURSE NO: V** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable students to

1. Gain knowledge about nutrients and their functions.
2. Understand the effects of nutrients on health

**COURSE OUTCOMES:**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of each unit the student will be able to**

| CO | COURSE OUTCOME | K LEVEL |
|---|---|---|
| **CO1** | **Recall** the Types, Classification, Functions, Sources, requirements of carbohydrate. **Explain** the process of Digestion and Absorption of carbohydrates. **Analyse** the factors that affect the glucose levels in the body. **List** the harmful effects of sugars {PO3}. **List** the sources and **Identify** the role of dietary fiber in health and disease (Lecture Video: https://www.youtube.com/watch?v=F59RwK9hya8 followed by discussion) {PO9, PO10}. (**Lecture Video**: https://www.youtube.com/watch?v=Uf_4uNxujRs followed by group discussion) {PO9, PO10}. **(Lecture Video:** https://www.youtube.com/watch?v=HL7fYBtJ1Y followed by group discussion) {PO9, PO10}. (**e-Resources**: Digestion and Absorption of carbohydrates: http://pressbooksdev.oer.hawaii.edu/humannutrition/chapter/digestion-and-absorption-ofcarbohydrates/ ) {PO9}. | K1 K2 K3 K4 |
| **CO2** | **Recall** the functions, sources and requirements of protein. **Evaluate** protein based on nutritional classification. **Explain** the process of digestion and absorption of proteins. **Outline** the etiology, classification, symptoms and treatment of PEM. **Analyse** the methods used to estimate the quality of proteins{PO3} (**Lecture Video**: https://www.youtube.com/watch?v=HL7-fYBtJ1Y followed by discussion) {PO9, PO10}. (Prepare a detail PPT on PEM followed by question and answer session) {PO7}. **(e- resources:** Estimate the quality of proteins, file:///C:/Users/ADMIN/Downloads/Protein_Evaluation_of_Foods.pdf) {PO 9} | K1 K2 K3 K4 K5 |

| | | |
|---|---|---|
| **CO3** | **Recall** the classification, sources, functions and requirement of lipids. **Explain**the process of digestion and absorption of Lipids. **Discuss** the different classifications of fatty acids. **Identify** the nutritional significance of saturated fatty acids, unsaturated fatty acids, trans fatty acids. **List out** the nutritional significance of essential fatty acids, triglyceride, phospholipids, cholesterol and lipoproteins. **Relate** the sources of fats to their composition and infer thenutritional implications. **(Lecture Video**: https://www.youtube.com/watch?v=hnWk0dVb8fQ&t=576s followed by group discussion) {PO5, PO6, PO7, PO9, PO10}. (Prepare a poster on Health implications of fats followed by group discussion) {PO3} (Prepare a PPT about the significance of essential fatty acids, triglyceride, phospholipids, cholesterol and lipoproteins and upload in google classroom followed by question and answer session){PO9}. | K1<br>K2<br>K3<br>K4<br>K6 |
| **CO4** | **Define** energy. **Demonstrate** an understanding of determination of energy value of foods. **Distinguish** between direct and indirect calorimetry. **Identify**the component of energy expenditure and the methods of estimating energy expendiure. **Explain** Basal metabolic rate, its determination and factors affecting it. **Analyse** how physical activity and thermogenesis contribute to energy expenditure. **Measure** TER of an individual usingthe factorial method (Group discussion on difference between direct and indirect calorimetry) {PO3, PO5}.(Diagrammatic illustration of direct and indirect calorimetry submit through mail followed by question and answer session) {PO 9} ( Prepare PPT for determination of energy value and measurement of TEM and upload in google classroom) {PO 9}. (Lecture Video: https://www.youtube.com/watch?v=ssQhZiO6vqs followed by discussion) {PO 9, PO10} | K1<br>K2<br>K3<br>K4<br>K5 |
| **CO5** | **Explain** the functions and importance of maintaining water balance. **Define** Dehydration and intoxication and **explain** its causes. **Identify** the foods sources of vitamins and minerals, **Summarize** the functions, sources, requirement, deficiency and toxicity of fat and water soluble vitamins – A, D, E, K and vitamin C, B1, B2, B3, B6, B12, biotin, folic acid and pantothenic acid. **Discuss** about the functions, sources, deficiency and toxicity of macro minerals -calcium, phosphorus, magnesium, sodium, potassium and chloride. **Compile** the functions, sources, deficiency and excess of trace minerals such as iron, copper, fluorine, iodine and zinc. **Explain** other trace minerals function, sources of selenium, manganese, chromium and cobalt. ( Prepare audio visual aids for different minerals and its deficiency followed by question and answer session) {PO 10 }. (Prepare the | K1<br>K2<br>K3<br>K5<br>K6 |

| | | |
|---|---|---|
| | functions of different vitamins and upload in google classroom) {PO2, PO9}<br>(Conduct a quiz competition about different vitamins and minerals followed by group discussion) { PO3, PO4, PO5, PO6, PO7,PO9} ( **Lecture Video:** https://www.youtube.com/watch?v=audgTg1vyl0 followed by discussion) {PO9, PO10} | |

| **CO/PO (GC/GMEET-PO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 |
| **CO2** | 3 | 1 | 1 | 1 | 1 | | 2 | 2 | 2 | 1 |
| **CO3** | 3 | 1 | | 1 | 2 | 1 | 1 | 1 | 1 | 1 |
| **CO4** | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 |
| **CO5** | 3 | 1 | | 1 | 1 | | 2 | 1 | 2 | 1 |
| **Avg** | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 |
| **Total** | 15 | 5 | 2 | 5 | 5 | 2 | 8 | 6 | 8 | 5 |

**COURSE OUTLINE**

| **S. No** | **THEORY** | **HOURS** |
|---|---|---|
| 1 | **Unit I:Carbohydrates**<br>Carbohydrates – Classification, functions, sources, digestion and absorption, requirements, factors affecting blood glucose levels. Harmful effects of sugars.<br>Dietary fibre-types, therapeutic effects | 10 |
| 2 | **Unit II: Proteins**<br>Proteins - Nutritional classification of amino acids and proteins;<br>Complementary proteins. Digestion and absorption of proteins, functions, sources, requirements. Factors affecting protein needs. Protein energy malnutrition-etiology, classification, signs and symptoms, clinical effects, treatment and rehabilitation. | 20 |

| | | |
|---|---|---|
| | Determination of protein quality-biological value, nitrogen balance, digestibility coefficient, NPU, PER, chemical score, Protein digested corrected amino acid score(PDCAAS). | |
| 3 | **Unit III: Lipids**<br>Classification of lipids, classification of fatty acids, sources, digestion and absorption of lipids, functions and requirements. Nutritional significance of saturated fatty acids, unsaturated fatty acids, trans fatty acids, essential fatty acids, triglyceride phospholipids, cholesterol and lipoproteins. | 10 |
| 4 | **Unit IV: Energy**<br>Determination of energy contents of foods, Direct and Indirect calorimetry, Components of energy expenditure – BMR- determination, factors affecting it. Physical activity, Thermogenesis. Determination of Total energy requirement.<br>Energy balance, Energy adaptation during fasting and overeating. | 10 |
| 5 | **Unit V: Vitamins and Minerals**<br>Water – Functions, dehydration, intoxication and water balance.<br>Vitamins – Functions, sources, requirement, deficiency and toxicity of fat soluble vitamins – A,D,E,K and Functions, sources, requirement and deficiency of water soluble vitamins – vitamin C, B1,B2, B3, B6, B12, biotin, folic acid and pantothenic acid.<br>Macro minerals- Functions, sources, effects of deficiency and excess of calcium, phosphorus, magnesium, sodium, potassium and chloride.<br>Trace Minerals- Functions, sources, deficiency and excess (if applicable) of iron, copper, fluorine, iodine and zinc. Function and sources of selenium, manganese, chromium and cobalt. | 40 |

**REFERENCES**


1. Bamji. M.S. et al.1996. Text book of Human Nutrition. New Delhi ,Oxford and IBH publishing Co. Pvt. Ltd
2. Davidson S.R. et al. 1975. Human Nutrition and Dietetics. London, ELBS.
3. Gopalan et al. 1981. Nutritive value of Indian foods. Hyderabad, MLM Publication.
4. Mahan K.I and Stump S.E. 1996. Krause Food Nutrition and Diet Therapy. U.S.A, M.B. Saunders Co
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9. Srilakshmi B. (2015). Nutrition Science. New Age International (P) Limited. Chennai.

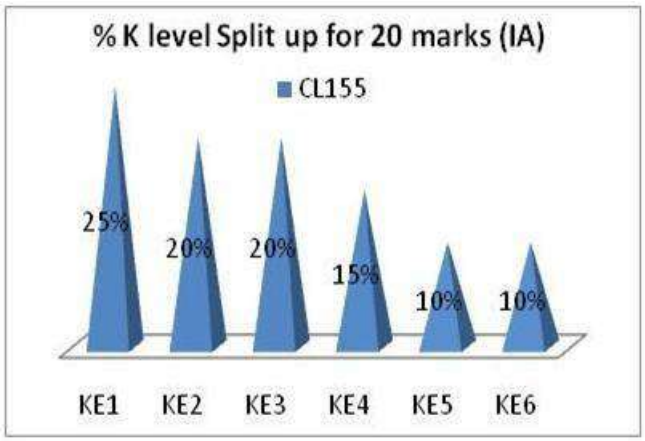
**WEBSITES**

www.bda.uk.com
www.nutrition.org.uk
www.nal.usda.gov/fnic/foodcomp/search
www.grub4life.org.uk
www.nhs.uk/livewell

**ASSESSMENT PATTERN**

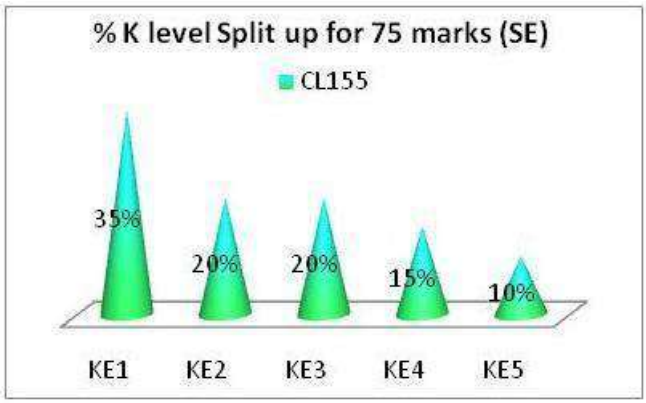
**CIE- Continuous Internal Evaluation (25 Marks)**

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 1 | | 2 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (2) | 1 | 0 | | 1 |
| Create (2) | 0 | 2 | | 0 |




**ESE – Semester End Examination (75 marks; weightage 75%)**

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | 35% |
| Understand | 20% |
| Apply | 20% |
| Analyze | 15% |
| Evaluate | 10% |



# BASIC DIETETICS

**SEMESTER: I** **CODE NO:CL156**

**COURSE NO: VI** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students to

1. Understand the role of a dietitian and the significance of diet counseling.
2. Gain knowledge and develop skills and techniques in planning therapeutic diets for selected disease conditions.
3. Provide insight into the areas of nutritional support towards health optimization

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) A**t the end of the Course, the Student will be able to:

| **CO** | | **K levels** |
|---|---|---|
| CO1 | **Define** the term dietetics and therapeutic diets. **Enumerate** the scope of dietetics and the role of dietitians in healthcare. **Discuss** the adaptations of normal diet to therapeutic diet. **Develop** therapeutic modifications to diets with respect to consistency, frequency of meals and methods of cooking. Assignment: Group - Market Survey on elemental feeds (PO5) (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) (https://www.youtube.com/watch?v=1Gd_LSR9VIA&t=153s) (https://www.youtube.com/watch?v=palZrQb02pE) (PO9) | K1, K2, K3, K4, K5, |
| CO3 | **Define** fever and categorise fevers based on their causes and metabolic changes. **Acquire** the skill to plan diets for fevers. **Demonstrate** an understanding of the causes, nutrition care and treatment of HIV. **Apply** dietary principles to **plan** a diet suitable for the condition. Assignment: ( individual - Menu plan) (PO3) (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) (PO9) | K1, K2, K3, K4, K5 |
| CO3 | **Demonstrate** an understanding of dietary management in surgical conditions and burns. **Develop** dietary modifications for preoperative, post-operative and burns condition. **Exhibit** knowledge in the preparation and administration of tube feeds. (https://www.youtube.com/watch?v=U-lexxob-80) (https://www.youtube.com/watch?v=5eyW7i1V1e4) (PO9) | K1, K2, K3, K4, K5 |

| | | |
|---|---|---|
| CO4 | **Define** obesity and underweight. **Explain** the etiological factors, assessment parameters, complications and dietary modification in obesity and underweight. **Apply** dietary principles and **plan** an individualized diet for conditions such as obesity and underweight.<br>(https://www.youtube.com/watch?v=iQUJ1HV0PWc) (PO9)<br>(Assignment: obesity dietary awareness Quiz) (PO7) | K1, K2, K3, K4, K5, K6 |
| CO5 | **Demonstrate** the ability to explain the causes, symptoms and dietary management in food sensitivity, constipation and diarrhoea. **Evaluate** conditions such as food sensitivity, constipation and diarrhoea by relating the symptoms to causes. **Apply** dietary principles and plan a diet suitable for the condition. **Acquire** the skill to counsel and recommend a personalized diet plan.<br>http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444<br>http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444 (PO9)<br>(Assignment : Menu planning (group activity) (PO5, PO3) | K1, K2, K3, K4, K5, K6. |

| **CO/PO (GC/ GMEET - PO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of Inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| **CO2** | 3 | 1 | 1 | 2 | 1 | | 1 | 1 | 2 | 1 |
| **CO3** | 3 | 1 | 2 | 2 | 1 | | 1 | 1 | 2 | 1 |
| **CO4** | 3 | 1 | 1 | 2 | 1 | | 2 | 1 | 1 | 1 |
| **CO5** | 3 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 |
| **Total** | 15 | 6 | 7 | 9 | 7 | 2 | 6 | 5 | 9 | 5 |
| **Average** | 3 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 |

**COURSE OUTLINE**

| S.NO | CONTENT | HOURS |
|---|---|---|
| Unit I | **Role of Dietitians and Introduction to Therapeutic diets**<br>a. Dietitians- Role of dietitian in diet counseling and nutrition education.<br>b. Introduction to therapeutic diets-Routine hospital diets- clear fluid, full fluid, soft diet, regular normal diet.<br>c. Special feeding methods- enteral and parenteral feeds | 15 |
| Unit II | **Diet in Fevers and AIDS**<br>a. Fever- Definition, types and causes of fever, metabolic changes. Dietary management in typhoid, malaria influenza, tuberculosis.<br>b. Acquired Immunodeficiency Syndrome ( AIDS)- Stages of HIV diseases, Nutritional problems in HIV patients, dietary management | 15 |
| Unit III | **Diet in General Surgical conditions and Burns**<br>a. Preoperative and post-operativediets - Dietary management in general surgical conditions.<br>b. Dietary management in burns – classification and dietary modification | 15 |
| Unit IV | **Diet in Obesity and Underweight**<br>a. Obesity- Definition, causes, assessment, grades, complications and dietary modifications<br>b. Diet in underweight – Definition, causes, assessment, complications and dietary modifications | 20 |
| Unit V | **Food sensitivity, constipation and diarrhoea**<br>a. Food sensitivity - Definition, common food allergens, symptoms, diagnosis and treatment.<br>b. Constipation –Definition, types, causes, symptoms and dietary management.<br>c. Diarrhoea - Definition, types - weanling diarrhea and diarrhoea in adults, causes, symptoms and dietary management | 25 |
| | **Total Hours** | **90** |

**RELATED EXPERIENCE**

Two weeks Dietary internship in a teaching hospital

**PRACTICAL**

Planning and preparation of

1. Normal, soft and liquid diet., Tube feeds,
2. Diet in typhoid, tuberculosis and AIDS,
3. Diet in underweight and obesity,
4. Diet in diarrhoea and constipation.

**REFERENCES**


1. Antia. F.P.. 2010. Clinical Dietetics and Nutrition. Bombay, Oxford University Press .
2. Robinson. C.H. 1998.Normal and Therapeutic Nutrition. London, Oxford and IBH Pub. Co.
3. Shills et al. 1994. Modern Nutrition in Health and Disease. Vol.I and II. New York, Lea and Febiger..
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5. Williams. S.R. 1994.Nutrition and Diet Therapy. New York, Mosby Mirror Publishing Co.
6. Whitney, E.N. and Rolfes, S.R., 1999, Understanding Nutrition, West Wadsworth - An International Thomson Publishing Company, New York.

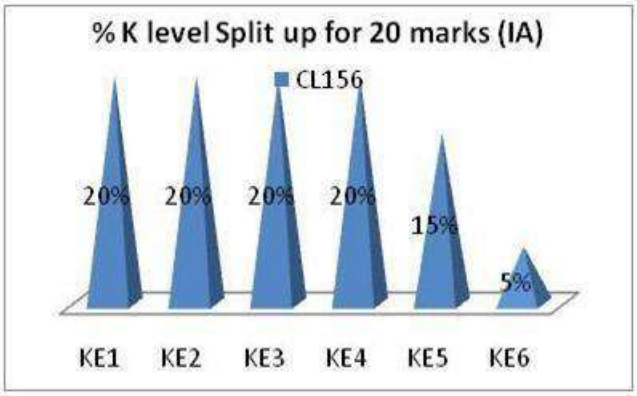

**E – REFERENCE:**

http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444

## ASSESSMENT PATTERN

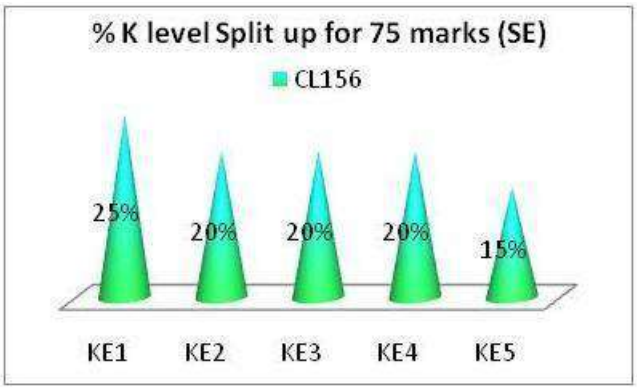
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (4) | 2 | 2 | | 0 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (4) | 0 | 1 | | 3 |
| Evaluate (3) | 1 | 0 | | 2 |
| Create (1) | 0 | 1 | | 0 |




### ESE – Semester End Examination (75 marks; weightage 75%)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | 25% |
| Understand | 20% |
| Apply | 20% |
| Analyze | 20% |
| Evaluate | 15% |



# BIOCHEMISTRY

**SEMESTER: I** **CODE NO:CL157**

**COURSE NO: VII** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students to learn

1. The structure, occurrence and nutritional importance of certain biochemical compounds.
2. Learn the basic metabolic pathways of nutritional significance.

**COURSE OUTCOME**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of each unit, the student can:**

| CO | COURSE OUTCOME | K levels |
|---|---|---|
| **CO1** | **Recall** the classification and properties of enzymes. **Explain** the mechanism of enzyme action and factors affecting the enzyme action. **Outline** the coenzymes and its mechanism. (Lecture Video: https://www.youtube.com/watch?v=nJTkPyIhC-k followed by group discussion) {PO7, PO9, PO10}. (Prepare PPT for the classification of enzymes and followed by question, answer session) {PO3, PO4}. ( E-resource - Mechanism of enzyme action - http://www-plb.ucdavis.edu/courses/bis/105/lectures/EnzMechanisms.pdf) {PO 9} | **K1** **K2** **K5** |
| **CO2** | **Classify** the carbohydrates as Monosaccharides, Disaccharides and Polysaccharides and recall the structure.**Relate** the sources of mono, di and poly saccharides to their nutrtitional significance. **Model** and **examine** the metabolism of carbohydrates through various anabolic and catabolic pathways like glycolysis, Kreb's cycle and gluconeogenesis and calculate the energy yield. (Lecture video: https://www.youtube.com/watch?v=D5RdWVBAN1c followed by Group discussion) {PO9, PO10}. (Lecture video :https://www.youtube.com/watch?v=ubzw64PQPqM followed by question & answer session) {PO9, PO10} (Lecture Video: https://www.youtube.com/watch?v=ydhr0QAyxYg followed by group discussion) {PO3, PO9, PO10}. (E- Resources – Krebs cycle http://chemistry.creighton.edu/~jksoukup/lec18TCASTUD.pdf ) {PO9} | **K1** **K2** **K3** **K4** |

| | | |
|---|---|---|
| **CO3** | **Remember** the structure of amino acids. **Classify** the types of amino acids, **Explain** the classification of proteins. **Describe** structural organization of proteins- primary, secondary, tertiary and quaternary. **Explain** catabolism of proteins- Oxidative deamination, transamination, transdeamination, **Infer** fate of amino group - Urea cycle; **Summarize** the Fate of carbon skeleton from the cycle. (**Lecture Video**: https://www.youtube.com/watch?v=OPAvXQsPCqQ followed by question and answer session) {PO9, PO10}. (Lecture Video: https://www.youtube.com/watch?v=PPJ7C3hcnPw followed by group discussion). ( Prepare illustration of Urea Cycle, upload in google classroom followed by question and answer) {PO3, PO7} ( e-Resources file:///C:/Users/ADMIN/Downloads/Ch-4Protein.pdf ) {PO9} | **K1**<br>**K2**<br>**K3**<br>**K4**<br>**K5** |
| **CO4** | **Recall** the structure and classification of lipids and fatty acids. **Identify** the sources of triacylglycerols, saturated fatty acids, unsaturated fatty acids and essential fatty acids and **relate** it to their nutritional significance. **Illustrate and Explain** the ß oxidation of saturated fatty acids. **Analyse** the integration of metabolism of carbohydrates, fat and proteins (PO3).**Explain** ketogenesis and ketosis. (**Lecture Video**: https://www.youtube.com/watch?v=I-W1ihnoqc followed by **group discussion**) {PO7, PO9, PO10}. (Prepare a list of sources of different types of fatty acids and upload in Google classroom). ( Prepare a list of processed foods with high transfat and discuss in class about the transfat content and its health effects) {PO6} ( e- Resources – Fatty acids structure and properties – https://www.uio.no/studier/emner/matnat/farmasi/nedlagteemner/FRM2041/v06/undervisningsmateriale/fatty_acids.pdf) {PO9} | **K1**<br>**K2**<br>**K3**<br>**K4**<br>**K5**<br>**K6** |
| **C05** | **Distinguish** the structure and functions of DNA and RNA. **Demonstrate** an understanding of the Watson Crick Model of DNA. **Develop** a model for DNA and RNA structure. **Recall** the significance of DNA and the functions of the different types of RNA. ( **Lecture Video**: https://www.youtube.com/watch?v=ufvZ8bYtyO8 followed by group discussion)<br>( **Lecture Video**: https://www.youtube.com/watch?v=ufvZ8bYtyO8&t=108s followed by group discussion and question, answer session) (Illustrate the structure of DNA and RNA and upload in google classroom) {PO2,PO9, PO10}. | **K1**<br>**K2**<br>**K3**<br>**K4** |

| CO/PO (GC/GMET-PO7) | PO | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Disciplinary Knowledge and skills | 2 Skilled Communicator | 3 Critical thinker and problem solver | 4 Sense of inquiry | 5 Team player/worker | 6 Skilled project manager | 7 Digitally Efficient | 8 Ethical awareness / reasoning | 9 National and international perspective | 10 Lifelong learners |
| **CO1** | **3** | 1 | | 1 | 1 | | 1 | 1 | 2 | 1 |
| **CO2** | **3** | 1 | 1 | 1 | 1 | | 2 | 1 | 2 | 1 |
| **CO3** | **3** | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| **CO4** | **3** | 1 | 1 | 1 | 1 | | 2 | 1 | 2 | 1 |
| **CO5** | **3** | 1 | | 1 | 1 | | 1 | 1 | 2 | 1 |
| **Avg** | **3** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| **Total** | **15** | 5 | 3 | 5 | 6 | 1 | 8 | 5 | 8 | 5 |

**COURSE OUTLINE**

| S.No | Theory | Hours |
|---|---|---|
| 1 | **Unit I: Enzymes and Electron Transport chain**<br>a. Enzymes- Properties of enzymes; Classification of enzymes. Mechanism of enzyme action- MichaelisMenton equation. Coenzymes- Mechanism of coenzyme action. Factors affecting enzyme action.<br>b. Mitochondrial Electron Transport chain- Oxidative Phosphorylation. | 12 |
| 2 | **Unit II: Carbohydrates**<br>a) Classification, Structure and occurrence - Monosaccharides- glucose, fructose, galactose, ribose, deoxyribose;<br>b) Disaccharides- sucrose, lactose, maltose; Polysaccharides- starch, glycogen, cellulose and inulin. Metabolism of carbohydrates Glycolysis, TCA cycle, gluconeogenesis. | 13 |
| 3 | **Unit III: Proteins and Amino acids**<br>a. Classification and structure of amino acids.<br>b. Proteins – Classification of proteins. Structural organization of proteinsprimary, secondary, tertiary and quaternary structure. Catabolism of Proteins- Oxidative deamination, transamination, transdeamination, Fate of | 18 |

| | | |
|---|---|---|
| | amino group- Urea cycle; Fate of carbon skeleton. | |
| 4 | **Unit IV:Lipids**<br>a. Lipids – Classification. Structure and occurrence of triacylglycerols, saturated fatty acids, unsaturated fatty acids and essential fatty acids. ß oxidation of saturated fatty acids. Ketogenesis- ketosis.<br>b. Integration of carbohydrate, protein and fat metabolism. | 18 |
| 5 | **Unit V: Nucleic Acids**<br>a. DNA- structure – Watson and Crick model and function<br>b. RNA- Types – mRNA, tRNA, rRNA - structure and function. | 14 |

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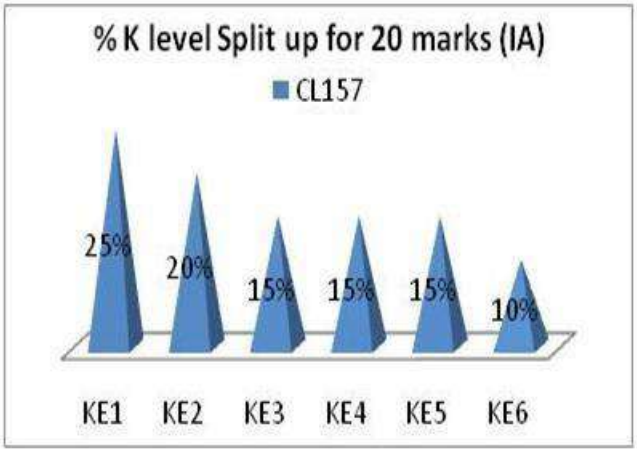
1. Chatterjea M.N and ShindeRana (2000), Textbook of Medical Biochemistry, Lordson Publishers (P) Ltd, Delhi.
2. ShanmugamAmbika (2006), Fundamentals of Biochemistry for Medical Students, Revised Edition, Nagaraj and Company Pvt Ltd, Chennai.
3. Murray K. Robery et al. (2000), Harper's Biochemistry, New York, M.C. Grain Hill.
4. Conn E E and Stump P K (1981), Outlines of Biochemistry –Wiley Eastern (P) Ltd, New Delhi.
5. West E S, Todd W R, Mosses R S and Van Burggon J S (1968), Text book of Biochemistry The Macmillan Co.,New York.
6. Leninger. A. L (1992), The molecular basic of cell structure and functions, New Delhi, Kalyani Publishers.
7. William P J (1972), An introduction to Biochemistry Nostrand Co., Inc. London

## ASSESSMENT PATTERN

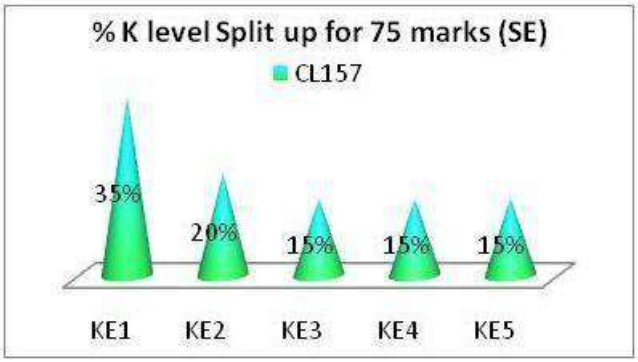
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 1 | | 2 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (3) | 1 | 1 | | 1 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (3) | 1 | 0 | | 2 |
| Create (2) | 0 | 2 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | 35% |
| Understand | 20% |
| Apply | 15% |
| Analyze | 15% |
| Evaluate | 15% |



# NUTRITION AND CLINICAL BIOCHEMISTRY
# PRACTICAL BIOCHEMISTRY

**SEMESTER: IV** **CODE NO:CL158**
**COURSE NO: VIII** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students

1. To develop skill in qualitative and quantitative analysis of food.
2. Acquire the skill to determine nutrients and metabolites in serum.

**Course Outcomes:**

**Knowledge level - K1 (Remembering) , K2 (Understanding), K3 (Applying), K4(Analyzing) , K5(Evaluating) , K6(Creating), At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOME | K LEVEL |
|---|---|---|
| **CO1** | **Recall** the procedures for analysis. **Understand** basic principles and reactions in the qualitative test for sugars and minerals, **Identify** the sugars(as mono, di, aldo, keto). **Apply** the knowledge to identify the sugars based on microscopic crystal shapes, Able to write the conclusion, **Interpret** the results. **Group Discussion on video about osazone crystals https://youtu.be/R2Jhyp7ZU5sAssignment – individual- maintaining observation note, (PO2,PO3, PO4 , PO7, PO8,PO10)}** | K1,K2,K3,K4,K5 |
| **CO2** | **Choose** the food sample for analysis. **Demonstrate** the procedure for estimation of nutrients in food stuffs. **Understand** the procedure for estimation of nutrients in food (vitamin C and reducing sugar)**Experiment** with the given food stuff for estimation of Vitamin C or other nutrients. **Estimate** the amount of nutrients present in the given food sample. **Test** the food sample (cabbage/amla) to **estimate** the given parameter **{Group Discussion, calculation from estimated OD value, Assignment – individual- maintaining observation note, video seeing _** https://youtu.be/riQmahKOLfw **, Submission Of Calculated Values (mean vitamin C)In Excel Sheet To The Email (PO2,PO3, PO4,PO5, PO6PO7, PO8,PO10)}** | K1, K2, K3, K4, K5, K6 |

| | | |
|---|---|---|
| **CO3** | **Define** the principles to estimate various parameters in blood, **Understand** the procedure to estimate various parameters in blood, **Schedule** various techniques used for the food (iron) analysis and serum analysis glucose)**Compare** the estimated values with the standard values **{Discussion about video seeing - https://youtu.be/IemvWkHs-9w centrifugation, observation note , Submission Of Calculated Values (mean protein)In Excel Sheet To The Email (PO2, PO3,PO4,PO5,PO6, PO7,PO8,PO9,PO10)}** | K1, K2, K3, K4 |
| **CO4** | **How** to treat the serum for blood analysis. **Recall** the clinical significance of normal parameters present in blood (total protein, urea, creatinine, **Apply** the procedure for serum Analysis. **Classify** various clinical conditions based on clinical interpretation of various parameters in blood **Compare** the estimated value with the normal values**{Discussion,** maintaining observation note, video discussion on protein estimation and AG Ratio https://youtu.be/t4JUgjnXaJE**,** https://youtu.be/ohc19yqBlcA **(PO2,PO3, PO4, PO5,PO7,PO8,PO9)}** | K1, K2, K3, K4, K5 |
| **CO5** | **Demonstrate an understanding of the** Principles underlying the estimation of various blood parameters (cholesterol and hemoglobin), **Demonstrate** the skill to estimate reducing sugar or iron in the given food stuff. **Analyze and Interpret** the results obtained. **{video seeing and Discussion https://youtu.be/FjNcywJIA4c maintaining observation note, , Complete report submission (Record work), Calculated Values (mean hg)In Excel Sheet To The Email (group) (PO2,PO3 PO4, PO5, PO7,PO8,PO9,PO10)** | K1, K2, K3,K4 |

| **CO/PO (GC/GMEET-PO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | **3** | **2** | **3** | | **1** | | **1** | **1** | **1** | **1** |
| **CO2** | **3** | **2** | **3** | | **1** | **1** | **1** | **1** | **1** | **1** |
| **CO3** | **3** | **2** | **3** | **2** | **1** | **1** | **1** | **1** | **1** | **1** |
| **CO4** | **3** | **2** | **3** | **2** | **1** | | **1** | **1** | **1** | **1** |
| **CO5** | **3** | **2** | **3** | **2** | **1** | **2** | **1** | **2** | **1** | **1** |
| **TOTAL** | **15** | **10** | **15** | **6** | **5** | **4** | **5** | **6** | **5** | **5** |
| **AVER** | **3** | **2** | **3** | **1** | **1** | **1** | **1** | **1** | **1** | **1** |

**COURSE OULINE**

| S. No | Content | No of hours |
|---|---|---|
| **QUALIATIVE AND QUANTITATIVE ANALYSIS** | | |
| **INSTRUCTION** | | **5** |
| **Unit 1** | Qualitative tests for sugars - Glucose, fructose, lactose, maltose and sucrose | **25** |
| **Unit** | Qualitative tests for protein - albumin | 6 |
| **Unit 2** | Quantitative estimation of reducing sugar. | 6 |
| | Quantitative estimation of vitamin C | 6 |
| **Unit 3** | Quantitative estimation of iron | 6 |
| | Estimation of blood glucose | 6 |
| **Unit 4** | Estimation of total protein | 6 |
| | Estimation of serum urea | 6 |
| | Estimation of serum creatinine | 6 |
| **DEMONSTRATION EXPERIMENTS** | | |
| **Unit 5** | Estimation of haemoglobin | 6 |
| | Estimation of cholesterol | 6 |
| | | **90 HOURS** |

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1. ICMR. 1978. Laboratory techniques in Nutrition. Hyderabad, NIN.
2. Oser. B.L. 1965.Hawk's Physiological Chemistry. New Delhi,Tata McGraw HillPublishing Co.
3. Chawla. R. 1995. Practical Clinical Biochemistry.Methods and Interpretations. New Delhi,Jaypee Brothers. Medical Publishers (P) Ltd.
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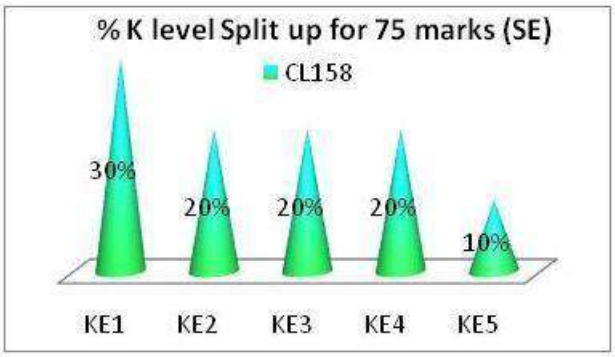
6. Talwar G P, SriVatsava L N and Moudgil KD (1989) Textbook of Biochemistry Human Biology Prentice Hall of India (P) Ltd, New Delhi

## ASSESSMENT PATTERN
## CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 2 | | 1 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (4) | 0 | 1 | | 3 |
| Evaluate (2) | 1 | 0 | | 1 |
| Create (1) | 0 | 1 | | 0 |


### ESE- Semester End Examination (75 Marks; weightage 75 %)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | 30% |
| Understand | 20% |
| Apply | 20% |
| Analyze | 20% |
| Evaluate | 10% |



# MICROBIOLOGY

**SEMESTER: V** **CODE NO:CL159**
**COURSE NO: IX** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable students to

1. Learn the classification of microorganisms and their economic importance.
2. Understand therole of microorganisms in diseases
3. Gain knowledge on the steps to be taken to prevent diseases caused by microorganisms.

**COURSE OUTCOMES:**

**Knowledge level-K1(Remembering) , K2(Understanding), K3(Applying), K4(Analyzing) , K5(Evaluating) , K6(Creating). At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOME | K Level |
|---|---|---|
| CO1 | **Recall** the structure and characteristics of Yeasts, moulds, Bacteria and Virus **Define** enzymes , toxin, , bacteriophages. **Explain** the economic importance of Yeasts, moulds, Bacteria and Virus **Discuss** about the products of bacterial activity Demonstrate theParts of microscope, use and care. **Identify** moulds, yeast and bacteria. **Examine** the motility of micro-organisms – **Invent** the motility of microorganism in different samples Hanging drop preparation.<br>**{Activity**<br>1 Teaching with powerpoint tool and discussion – structure and characteristics of Yeasts, moulds, Bacteria and Virus<br>2 Assignment – economic importance of Yeasts, moulds, Bacteria and Virus<br>3.Question bank preparation<br>4. lecture video followed by group discussion - https://youtu.be/VVuYGkk_I8s - structure of moulds<br>5.Prepare any one model – chart/poster/ demonstration – individual<br>6. examine the motility of microorganism in different samples and submit a group report**PO2, PO3, PO5, PO6, PO7, PO8,PO9,PO10**} | K1, K2, K3, K4, K6 |

| | | |
|---|---|---|
| CO2 | **Recall** about the microorganisms in water and **name** the microorganism in water. **Describe** and **summarize** the microorganisms in water, **Explain** different methods of water purification at domestic level. **Make use** of procedures for water purification at domestic level. List the different techniques of water purification. **Demonstrate** Simple staining, identification of organism in contaminated water and food**.**<br>**Activity**<br>1 Lecture and discussion – microorganisms in water<br>2 Assignment - different methods of water purification at domestic level<br>3.Question bank preparation<br>4. lecture video followed by group discussion – https://youtu.be/q3DmzIW3ip4 - Microbiology of water<br>5) **Demonstrate** Simple staining, identification of organism in contaminated water and food. And submission of report (group)<br>**PO2, PO3, PO5, PO6, PO7, PO8,PO9,PO10**} | K1, K2, K3, K4, K5, K6 |
| CO3 | **Recall** Microbiology of food. **Understand** the beneficial changes of microorganism in foods. **Describe** the methods of preparation of non fermented milk products. **Develop** fermented milk products. **Test** the quality of milk by methylene blue reductase test<br>**Activity**<br>1 Lecture and discussion – Beneficial changes of microorganism in foods<br>2 Assignment - methods of preparation of non fermented milk products,<br>3.Question bank preparation<br>4. lecture video followed by group discussion – https://youtu.be/XU2xUAaH8Uoquality of milk by methylene blue reductase test<br>**PO2, PO3, PO4, PO7, PO8, PO9, PO10**} | K1, K2, K3, K4 |

| | | |
|---|---|---|
| CO4 | **Describe** thesources, modes of transmission of diseases, prevention of bacterial and viral diseases. **Outline** different bacterial and viral diseases. **Define and Classify** immunity. **Explain** different types of immunity, **Apply** the knowledge in the prevention of various bacterial and viral diseases. **Distinguish** the types of immunity.<br>**(Activity**<br>1.Lecture and discussion – sources, modes of transmission of diseases, prevention of bacterial and viral diseases<br>2.Assignment -bacterial and viral diseases<br>3.Question bank preparation<br>4. lecture video &PPT followed by group discussion – **https://www.slideshare.net/mobile/Amithag/immunity-100255347** Immunity<br>**PO2, PO3, PO4, PO7, PO8,PO9,PO10**} | K1, K2, K3, K4 |
| CO5 | **Recall** the basic concepts of sterilization and disinfection. **Classify** and **explain** the methods of sterilization and disinfection. **Experiment** with Hot air oven and autoclave **{Activity**<br>1 Lecture and discussion – basic concepts of sterilization and disinfection<br>2 Assignment - Methods of sterilization and disinfection<br>3.Question bank preparation<br>4. video and group discussion – **https://youtu.be/hT--rx6pG5E - sterilization PO2, PO3, PO4, PO7, PO8,PO9,PO10**} | K1, K2, K3, K4 |

| **CO/PO (GC/GMEET-PO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 2 | 2 | | 2 | 2 | 2 | 2 | 2 | 2 |
| **CO2** | 3 | 2 | 2 | | 2 | 2 | 2 | 2 | 2 | 2 |
| **CO3** | 3 | 2 | 2 | 2 | | | 2 | 2 | 2 | 2 |
| **CO4** | 3 | 2 | 2 | 2 | | | 2 | 2 | 2 | 2 |
| **CO5** | 3 | 2 | 2 | 2 | | | 2 | 2 | 2 | 2 |
| **Total** | 15 | 10 | 10 | 6 | 4 | 4 | 10 | 10 | 10 | 10 |
| **Ave** | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |

**COURSE OUTLINE**

| S. No | Content | No of hours |
|---|---|---|
| **Unit I** | **Microorganisms**<br>a. Yeasts and moulds- characteristics, structure and economic importance<br>b. Bacteria- General characteristics, nutrition of bacteria, reproduction and products of bacterial activity – definition of enzyme and toxin.<br>c. Virus- characteristics and classification, bacteriophages.<br>**Practical -** Parts of microscope, use and care.<br>Identification of moulds, yeast and bacteria.<br>Examination of the motility of micro-organisms – Hanging drop preparation. | 20 |
| **Unit II** | **Microbiology of water**<br>Microorganisms in water, purification at domestic level<br>**Practical -** Simple staining, identification of organism in contaminated water and food. | 15 |
| **Unit III** | **Microbiology of food**<br>Microorganisms in food-spoilage, beneficial changes- conversion of sugar into alcohol, leavening agent, sauerkraut, cucumber pickles, preparation of vinegar, silage, fermented milk products, food infection and food poisoning.<br>**Practical -** Determination of the quality of milk by methylene blue reductase test | 22 |
| **Unit IV** | **Infection and immunity**<br>a. Infection-sources, modes of transmission of diseases, prevention<br>b. Bacterial diseases-cholera, typhoid, tuberculosis and bacillary dysentery<br>c. Viral diseases-common cold, hepatitis, chicken pox and HIV infection, Immunity-natural and acquired immunity | 18 |
| **Unit V** | **Destruction of micro organisms**<br>Sterilization and disinfection-physical and chemical methods<br>**Practical -** Demonstration of sterilization methods - Hot air oven and autoclave | 15 |
| | | **90** |

## REFERENCES


1. Adams. M.R and Moss M.O., 2005, Food Microbiology UK, New Age International Private limited.
2. James M., 2006 Modern Food Microbiology, New Delhi.
3. Jay. T.N., 1978 Modern food Microbiology, New Delhi.
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5. Sharma P.D., 2003, Microbiology, New Delhi. Rastogi Publication of India.
6. Pelzer M.J., And Raid R.D., 1972, Microbiology, Tata McGraw Hill New york.
7. Frazier. W.C., 2012 Food Microbiology, Tata McGraw Hill New york.


## WEBSITES

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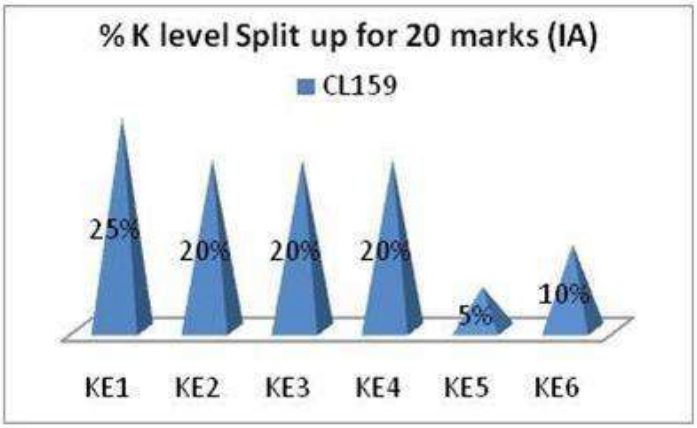
2. bacteriamuseum.org/cms/Bacteria/what-are-bacteria.html
3. donald-reinhardt.suite101.com › ... › Biology › Mycology
4. www.bionewsonline.com/s/what_is_water_purification.htm
5. www.waterpurifiers.in/
6. https://youtu.be/uFf0zxQ3rBU
7. http://epgp.inflibnet.ac.in/Home/Download

## ASSESSMENT PATTERN

### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 3 | 1 | | 1 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (4) | 0 | 1 | | 3 |
| Evaluate (1) | 0 | 0 | | 1 |
| Create (2) | 0 | 2 | | 0 |



**ESE- Semester End Examination (75 Marks; weightage 75 %)**

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | 35% |
| Understand | 20% |
| Apply | 20% |
| Analyze | 20% |
| Evaluate | 5% |

# BASICS IN SPORTS NUTRITION

**SEMESTER: V** **CODE NO:CL160**
**COURSE NO: X** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students

1. To understand the nutritional requirement for sports activities.
2. To understand when and how the body utilizes carbohydrate, fat and protein to fuel various types of physical activity.
3. To apply nutritional knowledge to enhance sports performance.

**COURSE OUTCOME**

**Knowledge level -K1(Remembering), K2(Understanding), K3(Applying), K4(Analyzing) , K5 (Evaluating) , K6(Creating), At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOME | K Level |
|---|---|---|
| CO1 | **Recall** benefits of exercise and fitness (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) {PO9, PO10}. **Describe** the physical activity pyramid using power point {PO7}. **Identify** the components of fitness and **Differentiate** between aerobic and anaerobic exercise (by assignment, question and answer session) {PO4} | K1, K2, K3, K4 |
| CO2 | **Recall** and **Understand** energy systems. **Explain** the types of energy systems (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444). **Differentiate** the energy system based on physical activity (https://www.youtube.com/watch?v=PIrhiSJcapc) Lecture video followed by group discussion and question and answer session {PO3, PO4, PO9, PO10} | K1, K2, K3, K4 |
| CO3 | **Find and Explain** the sources of macro nutrients (using power point {PO7}). **Identify** the requirements of macro nutrients for different types of athletes. **Determine** the quantity, quality and timing of macro nutrients for athletes before, during and after competition. {PO2} (group assignment and discussion based on the menu planned for the athletes before, during and after competition and present it) {PO5, PO6} (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) {PO9, PO10} | K1, K2, K3, K4 |

| | | |
|---|---|---|
| CO4 | **Find and Explain** the sources of vitamins and minerals (using power point {PO7}). **Identify** the requirements of vitamins and minerals for athletes. **Explain** the female athlete triad. **Recommend** nutritional guidelines for female athlete triad and sports anaemia and **Plan** a diet to avert the occurrence of female athlete triad (group assignment and discussion {PO3, PO5, PO6}<br>(Lecture video https://www.youtube.com/watch?v=VfrKDIN_fy4 followed by discussion) {PO9, PO10} | K1, K2, K3, K5, K6 |
| CO5 | **Recall and Understand** the fluid and electrolyte balance. **Explain** the effects of exercise on fluid and electrolyte balance. **Recommend** fluid intake for athletes before, during and after exercise. (https://youtu.be/tcAfouHY9i0 {PO9, PO10}) **Report** the list of sports drinks available in the market {PO2, PO5, PO6}. **Explain** the use of nutritional ergogenic aids.(Submit list of ergogenic aids which are used by the athletes, followed by group discussion) {PO3, PO5} | K1, K2, K3, K5, K6 |

| **CO/PO (GC/GMEETPO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 2 | | 1 | | | 1 | 1 | 1 | 1 |
| **CO2** | 3 | 2 | 1 | 1 | 1 | | | 1 | 1 | 1 |
| **CO3** | 3 | 2 | 2 | | 1 | | 1 | 1 | 1 | 1 |
| **CO4** | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **CO5** | 3 | 2 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| **Total** | 15 | 10 | 5 | 4 | 4 | 2 | 3 | 5 | 5 | 5 |
| **Avg** | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**COURSE OUTLINE**

| S. No | CONTENT | No of hours |
|---|---|---|
| Unit I | **Physical Activity**<br>Definition – Physical activity, Exercise, Fitness and its components, Physical activity pyramid. Benefits of physical activity. Types of exercise – Aerobic and Anaerobic. | 10 |
| Unit II | **Energy Systems**<br>Role of Phosphagen, Anaerobic and Aerobic Energy Systems in fuelling physical activity. | 20 |
| Unit III | **Carbohydrate, Protein and Fat**<br>Carbohydrate, Protein and Fat as a source of fuel before, during and after competition; glycogen loading. Importance of Pregame meal, Postgame meal and protein in an athlete's diet. | 25 |
| Unit IV | **Vitamins and Minerals**<br>Effect of exercise on vitamin and mineral requirements, Female athletic triad and sports anaemia. | 20 |
| Unit V | **Water and Ergogenic Aids**<br>Effect of exercise on fluid balance and strategies to maintain fluid balance before, during and after exercise. Dehydration, Over hydration – causes and effects. Nutritional Ergogenic aids. | 15 |
| | | 90 |

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2. Bean A (2000) 'The complex guide to sports nutrition' A&C Black Publishers, London
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8. Burke LM and Deakin V (eds). Clinical Sports Nutrition, 5th ed. Australia: McGraw-Hill; 2015.
9. Maughan R. Sports Nutrition, the Encyclopedia of Sports Medicine and IOC Medical Commission Publication.Hoboken, NJ: John Wiley and Sons, Ltd; 2014.
10. Rosenbloom C. Sports Nutrition: A Practice Manual for Professionals. 5th ed. Chicago, IL: SCAN Dietetic Practice Group, the Academy of Nutrition and Dietetics; 2012.
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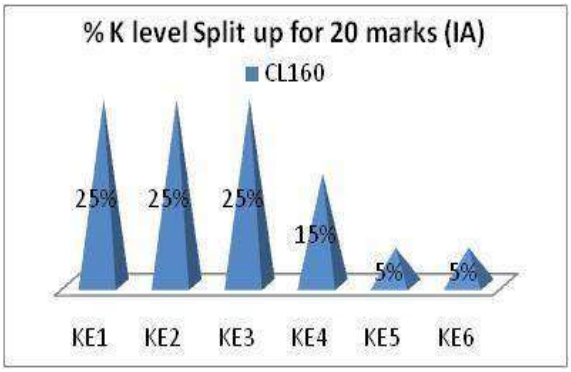
## ASSESSMENT PATTERN

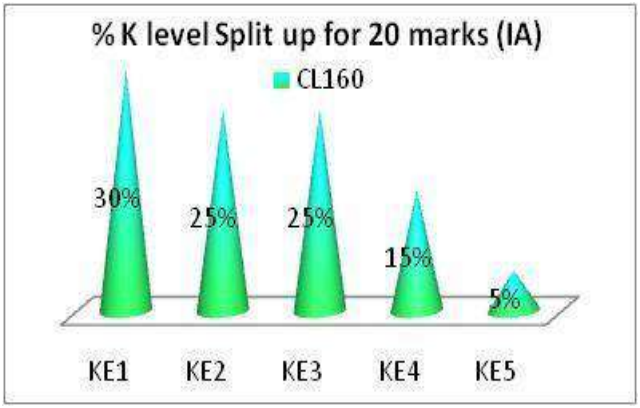
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 1 | | 2 |
| Understand (5) | 1 | 0 | | 4 |
| Apply (5) | 2 | 2 | | 1 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (1) | 0 | 0 | | 1 |
| Create (1) | 0 | 1 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **30%** |
| Understand | 25% |
| Apply | 25% |
| Analyze | 15% |
| Evaluate | 5% |



# COMMUNITY NUTRITION

**SEMESTER: V** **CODE NO:CL161**

**COURSE NO: XI** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable students

1. To understand the role of nutrition at the community level
2. To learn the methods of nutritional assessment and nutrition education.
3. To get acquainted with the role of national and international agencies in combating nutritional problems of the community

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOME | K Level |
|---|---|---|
| CO1 | **Define** the concepts of community, optimum nutrition and malnutrition, **Illustrate** the factors contributing to malnutrition in the country, **Explain** the indicators of health ,**Demonstrate**the preparation of nutritious snack to the vulnerable groups, **Analyze**nutritional problems of the community, **Assess** the food habits, customs, socioeconomic status of a community, **Formulate** a tool to assess eating habits of the community – ( Video Lecture and discussion - https://youtu.be/Q-oK6uWkuJM http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444 {**Activity-**1) submission of Assignment on low cost nutritious meal( Individual) , 2) Group Activity – Demonstration of low cost nutritious meal, 3)Submission of report on low cost nutritious meal (Individual), Formulate a tool(Group) **(PO2,PO3,PO5,PO6,PO7,PO8,PO9,PO10) }** | K1, K2,K3, K4,K5, K6 |
| CO2 | **Define** the nutritional status and methods of assessment, **Explain** ABCD methods of assessing nutritional status, **Discuss** the importance of Nutritional monitoring and surveillance, **Use** ABCD parameters to assess Nutritional status of the community, **Differentiate** Malnutrition and Over nutrition, **Conduct** A nutritional Assessment survey among the selected population {**Activity- 1) Assignment submission on** ABCD methods of assessing nutritional status(Individual), 2) Video lecture on ABCD methods of assessing nutritional status,-http://epgp.inflibnet.ac.in/Home/Download3)Conduct a | K1, K2, K3 K4, K6 |

| | | |
|---|---|---|
| | survey to assess Dietary pattern of the community (Group), 4) Submit the survey report in excel format through mail (Group) PO2, PO3, PO6, PO7, PO8,PO9,PO10} | |
| CO3 | **List** the nutritional problems of the community, **Identify** the major nutritional problems in a community. **Explain** the causes, signs, symptoms and treatment of various nutritional problems. **List** the services of nutritional intervention programmes in alleviating nutritional deficiencies. **Suggest** appropriate nutritional interventions to solve the Nutritional Problems in the community. **Plan** and conduct Nutrition Education programme for the community {**Activity- 1)** Video streaming and discussion about causes, signs, symptoms and treatment of various nutritional problems -https://youtu.be/UlKFO3VvcxE 2) prepare models (chart, flash cards, or any models) for the given topic (individual) 4) Assignment – plan and write NEP (original) at the community level (group) and submission of Report by email (group) **PO2, PO3, PO5,PO6, PO7, PO8,PO9,PO10**} | K1,K2, K3,K4, K5,K6 |
| CO4 | **List** the National and International agencies, **Explain** the role of National and International agencies in combating malnutrition, {**Activity- 1) Assignment submission on** role of National and International agencies in combating malnutrition (individual 2) Video on National and International agencies and discussion-https://youtu.be/iYyOOgdflk4, http://www.fao.org/about/meetings/global-parliamentary-summit/en/ 3) Visit to an ICDS centre and submission of Report by email (Group) 4.Question and answer session **PO2, PO4, PO5 , PO7,PO8,PO9, PO10**} | K1, K2 |
| CO5 | **Define** the meaning of nutrition education. **Explain** purpose and methods of nutrition education. **Classify** audio visual aids. **Develop** audio, visual and audio visual teaching aids. **Select** appropriate AV aids for the NE programme **Formulate** Nutritional Education Intervention programme for the community using appropriate audio visual aids. {**Activity-**1) Class Lecture video on Audio Visual Aids – http://epgp.inflibnet.ac.in/Home/Download https://youtu.be/ZW4uBJfrVSw 2)question bank preparation- One unit for one group (group) 3)Group Activity –preparation of visual, audio and audio visual aid and exhibit | K1,K2, K3,K4, K5,K6 |

| | | |
|---|---|---|
| | at the class and discussion of its merits and demerits -group) **(PO2,PO3, PO4 PO5,PO6,PO7,PO8,PO9,PO10) }** | |

| CO/PO (GC/GMEET-PO7) | PO | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Disciplinary Knowledge and skills | 2 Skilled Communicator | 3 Critical thinker and problem solver | 4 Sense of inquiry | 5 Team player/worker | 6 Skilled project manager | 7 Digitally Efficient | 8 Ethical awareness / reasoning | 9 National and international perspective | 10 Lifelong learners |
| CO1 | 3 | 2 | 2 | | 2 | 1 | 2 | 1 | 2 | 1 |
| CO2 | 3 | 2 | 2 | | 2 | 1 | 3 | 1 | 2 | 2 |
| CO3 | 3 | 3 | 2 | | 2 | 1 | 2 | 2 | 1 | 1 |
| CO4 | 3 | 1 | | 1 | 1 | | 2 | 1 | 2 | 1 |
| CO5 | 3 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| TOT | 15 | 10 | 8 | 2 | 9 | 4 | 11 | 6 | 9 | 6 |
| AVE | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |

**COURSE OUTLINE**

| S. No | Content | No of hours |
|---|---|---|
| Unit I | **Concept of Community and Nutrition**<br>Concept of community, optimum nutrition and mal nutrition, Factors contributing to mal nutrition in the community – Food habits, customs, food availability, socioeconomic status , indicators of health | 10 |
| Unit II | **Assessment of nutritional status of a community**<br>Assessment of nutritional status - Direct and Indirect methods. Anthropometry, Biochemical, Clinical, Functional indices and Dietary methods, Nutritional monitoring and nutritional Surveillance | 15 |
| Unit III | **Nutritional problems of the Community and Nutrition Intervention Programmes**<br>Nutritional problems in India – Causes, incidence, signs, symptoms and treatment of PEMand Fluorosis, deficiencies of Vitamin A, iron, iodine. Nutritional intervention programme- National Nutritional Policy - Direct and indirect intervention; mid-day meal programme, Integrated child development services, Special Nutrition Programme, Nutritional anaemia Prophylaxis | 20 |

| | | |
|---|---|---|
| | Programme, Prophylaxis Programme against vitamin A deficiency, Iodine Deficiency Disorder control programme | |
| **Unit IV** | **Role of National and International Agencies in combating malnutrition**<br>a) National agencies – Beneficiaries, services and ongoing Projects of Indian council of Medical Research, Indian Council of Agricultural Research, Central Food Technology Research Institute and National Institute of Nutrition<br>b) International Agencies – Beneficiaries, services and ongoing Projects of World Health Organization, Food and Agriculture Organization, Cooperative Assistance and Relief Everywhere, and United Nations International Children' s Emergency Fund | 30 |
| **Unit V** | **Nutrition Education for community**<br>Meaning, purpose and methods of nutrition education.<br>Audio visual aids – types, advantages and limitations<br>Developing Audio visual aids and a nutritional education programme for the community | 15 |
| | | **90** |

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1. Park, K.,and Park, K., 2017. Textbook of Preventive and Social Medicine, BanasaridasBharat Publications, Jabalpur.
2. Pressman , A.H and Adams, A.A., 1990. Clinical Assessment of Nutritional Status – A working Manual, Williams and Wilkins, London.
3. Rattan, V., 2002. Handbook of Preventive and Social Medicine, Jaypee Brothers, New Delhi.
4. Waterlow, J.C., 1992, Protein Energy Malnutrition, Hodder Arnold Publishers, London.
5. Srilakshmi B., 2016, Nutrition Science, New Age International Pub. Ltd, New Delhi.
6.


**WEBSITE**

1. www.cdc.gov / nchs
2. www.whoindia.org
3. **https://youtu.be/uFf0zxQ3rBU**

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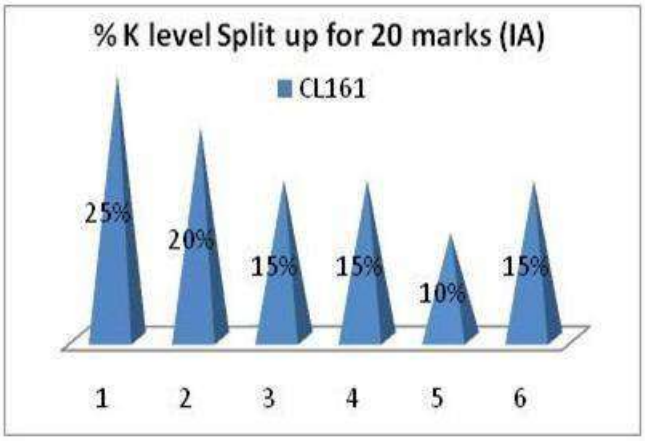
## ASSESSMENT PATTERN

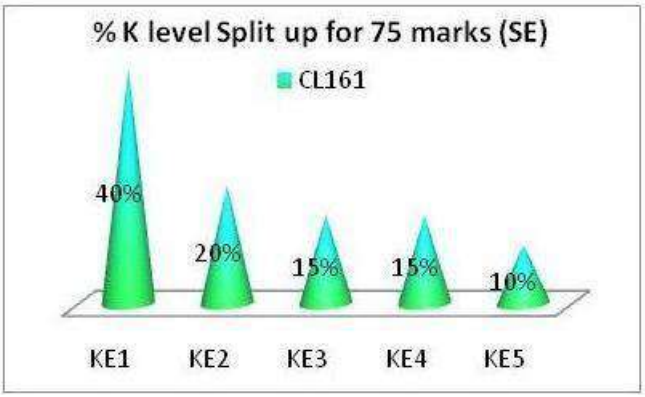
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 0 | | 3 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (3) | 1 | 1 | | 1 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (2) | 1 | 0 | | 1 |
| Create (3) | 0 | 3 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **40%** |
| Understand | 20% |
| Apply | 15% |
| Analyze | 15% |
| Evaluate | 10% |



# QUANTITY FOOD PRODUCTION AND SERVICE

**SEMESTER: V** **CODE NO:CL162**
**COURSE NO: XII** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable students to learn

1. The factors involved in designing food service facilities
2. The skills required for quantity food preparation and table setting.
3. The methods of sanitation and maintain hygiene in a food service unit

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOME | K Level |
|---|---|---|
| CO1 | **Define**the layout of food facilities. **Understand** the factors to be considered for planning and designing a food service unit. **Analyze** the methods to ensure smooth work flow in various work areas **Describe** the types of kitchens. **Select** suitable kitchen layouts for different types of catering services. **Design** layouts for various types of food service facilities.[PO5]https://youtu.be/d20wp5d8z8A https://youtu.be/s3fdXdQ6KR8 | K1,K2, K4,K5, K6 |
| CO2 | **Recall** the classification of equipments. **Understand** the parameters required in selection of equipment. **Apply** knowledge to select suitable food production and service equipments. **Understand** the purchasing procedures. **Analyze** the various purchasing methods for equipments and raw materials required for operating a food service unit. **Discuss** the factors to be considered in the selection of equipments.[PO5]https://youtu.be/opkVZQSxrik | K1,K2, K3,K4, K5 |
| CO3 | **Define** menu planning. **Understand** the factors affecting menu planning. **Discuss** the advantages of menu planning. **Classify** the types of menus. **Analyze** the menus based on their characteristics and suitability for various cuisines and food outlets. **Understand** the methods of standardization and portion control. **Apply** the concepts of standardization in food production. **Evaluate** the menus for different food service facilities. **Construct** menus and prepare the dishes based on the principles of standardization and portion control[PO5][PO6]https://youtu.be/IV3bPyq-GDo, https://youtu.be/inCyi3T1mLs https://youtu.be/6uJwbE4B_Pk | K1, K2, K3, K4, K5, K6 |

| | | |
|---|---|---|
| CO4 | **Recall** the styles of service. **Understand** the criteriarequired for each style of service. **Analyze** the styles of service and their suitability for the different food outlets. **Apply** the rules for setting a table and cover. **Assemble** a cover based on the principles and style of service. **Demonstrate** the service of food according to their respective cuisine and style of service. **Evaluate** the various styles ofservice.[PO5] https://youtu.be/LmzFuQV1jfQhttps://youtu.be/z37KarYASrw https://youtu.be/fNCW_fNrChE | K1,K2, K3,K4, K5 |
| CO5 | **Understand** the importance of maintaining hygiene and sanitation in the environment. **Identify** the structural features and physical facilities required for successful operation of a food service unit. **Analyze** the need for safety engineering, education and enforcement to prevent accidents in the work areas. **Recognize** the importance of food safety in the process of food purchase, storage and handling. **Interpret** the principles of HACCP for various food outlets. **Describe** different layouts of catering establishments based on hygiene and sanitation[PO5][PO8]https://youtu.be/Xm-HNBGTiPM https://youtu.be/DpnlbpjLOL8/youtu.be/DpnlbpjLOL8 | K1,K2, K3,K4, K5 |

| **CO/PO (GC/GMEETPO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 1 | 1 | 1 | 2 | | 2 | 1 | 2 | 2 |
| **CO2** | 3 | 1 | 1 | 1 | 2 | | 2 | 1 | 2 | 2 |
| **CO3** | 3 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 |
| **CO4** | 3 | 1 | 1 | 1 | 2 | | 2 | 1 | 2 | 2 |
| **CO5** | 3 | 1 | 1 | 1 | 2 | | 2 | 2 | 2 | 2 |
| **Avg** | 3 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 |
| **Total** | 15 | 5 | 5 | 5 | 10 | 1 | 10 | 6 | 10 | 10 |

**COURSE OUTLINE**

| S. No | Content | No of hours |
|---|---|---|
| Unit I | **Food service facilities**<br>a.Designing food facilities –Definition of layout, factors to be considered for planning and designing a food service facility.<br>b.Establishing smooth work flow in various work areas and work centres<br>c.Types of Kitchens – U shaped, L shaped, Rectangular, Square shaped , Straight line, Island and combination of shapes | **20** |
| Unit II: | **Equipment**<br>a. Classification - According to weight / size, order of use and mode of operation.<br>b. Factors influencing selection of equipment,<br>c. Purchasing – Purchasing procedure and methods of buying | **15** |
| Unit III | **Quantity food production**<br>a. Menu planning –Definition,factors affecting menu planning and advantages of planning menus<br>b. Types of menu - A la Carte and Table d' hote menu, South and North Indian thali meals, cyclic menu and their characteristics<br>c. Quantity cookery – Definition and methods of standardization, Stepping up of recipes, Portion control equipment's and the advantages of portion controlling. | **25** |
| Unit IV | **Styles of Service and Table Setting**<br>a. Styles of service –Waiter service - banquet, restaurant and room service. Self service- Buffet and cafeteria. Vending.<br>b. Meals on wheels-online food ordering services<br>c. Rules for setting a table and cover | **15** |
| Unit V | **Sanitation and safety.**<br>a. Maintaining sanitation in the environment - Structural features Drainage, water supply, electricity, lighting and ventilation - Waste Disposal and Pest control.<br>b. Three E s of safety-safety engineering, safety education and safety enforcement<br>c. Hygiene in food handling - Receiving, storage and production, personnel Hygiene, principles of HACCP in Food Service | **20** |
| | | **90** |

**IN-BUILT PRACTICAL**

1. Standardization of selected recipes
2. Stepping up of standardized recipes to 10 servings
3. Demonstration of table setting and napkin folds

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5. Malhotra. R.K. 2019.Food service and catering Management.New Delhi, Anmol Publications.
6. Sethi. M. Malhan.S. 2017. Catering Management-An Integrated Approach, New Delhi, John Wiley and Sons.
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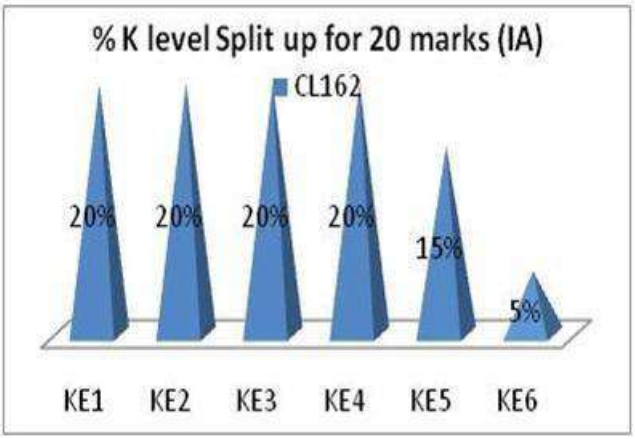
3. www.ific.org
4. wwwvrg. Org
5. http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827
6.

## ASSESSMENT PATTERN

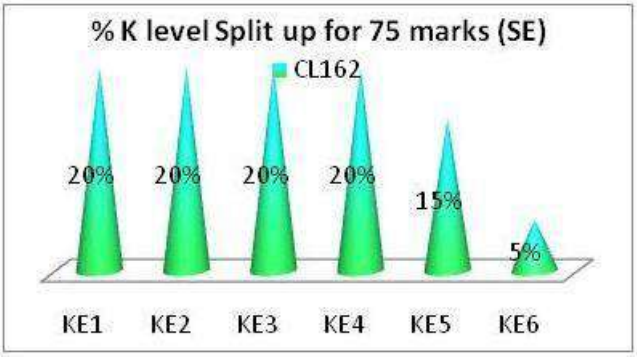
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (4) | 2 | 2 | | 0 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (4) | 0 | 1 | | 3 |
| Evaluate (3) | 1 | 0 | | 2 |
| Create (3) | 0 | 1 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **25%** |
| Understand | 20% |
| Apply | 20% |
| Analyze | 20% |
| Evaluate | 15% |



# ENTREPRENEURSHIP FOR WOMEN

**SEMESTER: V** **CODE NO:CL163**

**COURSE NO: XIII** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students to learn
1. Qualities of an entrepreneur
2. Process and procedure of setting up an enterprise.
3. Managerial skill.

**COURSE OUTCOMES**
**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) A**t the end of the Course, the Student will be able to:

| CO | COURSE OUTCOME | K LEVEL |
|---|---|---|
| CO1 | **Define** entrepreneur and entrepreneurship, **understand** the concept of entrepreneurship, understand and**explain** the qualities, skill and motivation required by an entrepreneur( Question and answer session) (PO4) and **assess** how the entrepreneurship management can help to shape one's career. **Differentiate** between entrepreneur and employee. (Assignment: submit on qualities and skills required for an entrepreneur). (https://www.youtube.com/watch?v=xGQYp7QlnTs ) (PO9) | K1, K2, K3, K4 |
| CO2 | **Define** and **recall** capital intensive and labour intensive, **understand** the concept of capital and labour intensives and intermediate technology .**Gain knowledge** on technologies and its pros and cons. understand the forms and practices adopted at small scale enterprises, choose resources needed for a business | K1, K2, K3 |
| CO3 | **Gain knowledge** on Small scale industries and Agencies. **Understand** the forms and practices adopted at small scale enterprises. **Evaluate** and choose an appropriate source of finance for the business. (Assignment : E quiz) | K1, K2, K3 |

| | | |
|---|---|---|
| CO4 | **Understand** the concept of book keeping, acquire knowledge on book keeping and balance sheet. **Understand** the concept of cost and its components. **Define** various methods of pricing, explain various channels of distribution. **Appreciate and discuss** the various factors affecting the channels of distribution. **Discuss** types of components of sales strategy. **Understand** the meaning and objectives of advertising. **Distinguish** and **use**various methods of advertising. http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827 http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827 http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827 (PO9) | K1, K2, K3,K4, K5 |
| CO5 | **Understand** the meaning of voluntary organisations, Self-help groups. **Acquire** knowledge on SHG. **Gain knowledge** on women entrepreneur and the social and financial problems faced by them. **Analyse** the problems and find a solution for the problems in future. **Identify** and advance their skills in competitive analysis. **Understand** the concept of project report and its need, scope. **Formulate** and approach for projects in future, **Plan** a project (group) http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827(Assignment: Create a project report) (PO2 , PO3, PO5) | K1,K2, K3, K4, K5,K6 |

| **CO/PO (GC/GMEET-PO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 2 | 1 | 1 | | | 2 | 1 | 1 | 1 |
| **CO2** | 3 | 1 | | 1 | | | 1 | 1 | | 1 |
| **CO3** | 3 | 1 | | 2 | | | 1 | 1 | | 1 |
| **CO4** | 3 | 1 | | 1 | | | 2 | 1 | 3 | 1 |
| **CO5** | 3 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 |
| **TOTAL** | 15 | 7 | 3 | 6 | 2 | 1 | 8 | 5 | 5 | 5 |
| **Average** | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |

**COURSE OUTLINE**

| UNITS | CONTENTS | NO. OF HOURS |
|---|---|---|
| UNIT I | **Entrepreneur**<br>Definition of entrepreneur and entrepreneurship, Qualities and skills, Functions of an entrepreneur , Motivational and discouraging factors of entrepreneurship. | 10 |
| UNIT II | **Production Technology**<br>Choice of Technology - Labour intensive-Concept, advantages and disadvantages -Capital intensive -concept, advantages and disadvantages. Intermediate technology-concept, advantages and disadvantages | 15 |
| UNIT III | **Interface with small scale industries and agencies**<br>Assistance by SSI and SISI - Registration – Licensing availability of subsidies - Incentives to backward areas - Industrial institutions - SIDCO. ITCOT. SIPCOT. Banking - NABARD.IDBI. | 15 |
| UNIT IV | **Management of Business**<br>Labour issues - HR training - Basics of book keeping – Definition, Rules of double entry book keeping,, Balance sheet<br>Cost concepts - Pricing of product. Marketing techniques. Channels of distribution, sales management, advertisement. | 25 |
| UNIT V | **Women Entrepreneurs**<br>Voluntary organisations - SHG. Women Entrepreneur-problems and constraints faced by women entrepreneurs - Social problems and financial problems<br>Project report – Need, scope and approaches for project formulation. Elements andguidelines for preparation of project report. | 25 |
| | **Total** | 90 |

**RELATED EXPERIENCE**

Visit to different units exhibitions run by women

**REFERENCES**


1. Gupta and Srinivasan. N.P.. 1985. Entrepreneurial development. New Delhi, Sultan Chand and Sons Educational Publishers.
2. Holt. D.H. 1990.Entrepreneurship development.New Delhi, Prentice Hall of India.

3. Khanka. S.S. 1990.Entrepreneurship development. New Delhi, Chand and Co. Ltd.
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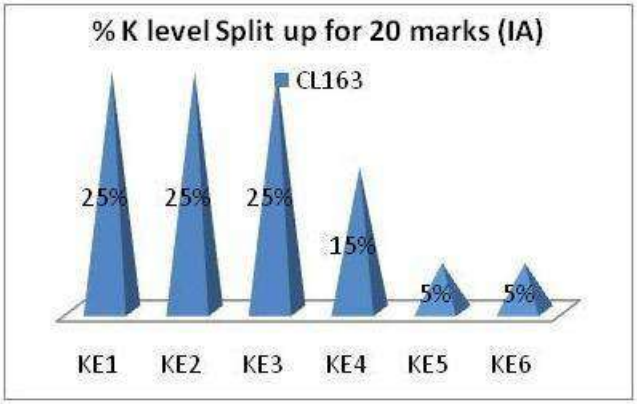
5. Yadav. C.P. 2000.Encyclopaedia of Entrepreneurship Development. Volumes I, ,. Lucknow, Anmol Publication Ltd
6. Yadav. C.P. 2000.Encyclopaedia of Entrepreneurship Development. Volumes, II I ,. Lucknow, Anmol Publication Ltd
7. Yadav. C.P. 2002.Encyclopaedia of Entrepreneurship Development. Volumes, , IV. Lucknow, Anmol Publication Ltd
8. Poornima M. Charantimath copyright 2006, 2012 Seventh Impression Entrepreneurial Development Small Business Enterprises Dorling K indersley India pvt Ltd
9. Patrice .J McGinnis 2016 ,The 10 % Entrepreneur .Penguin Publishers .United Kingdom

## ASSESSMENT PATTERN

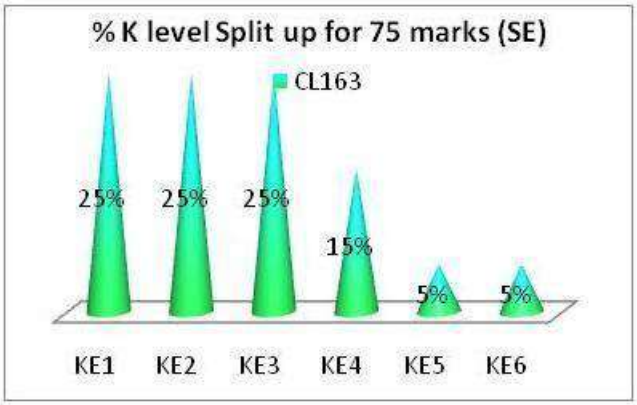
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 1 | | 2 |
| Understand (5) | 1 | 0 | | 4 |
| Apply (5) | 2 | 2 | | 1 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (1) | 0 | 0 | | 1 |
| Create (1) | 0 | 1 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **30%** |
| Understand | 25% |
| Apply | 25% |
| Analyze | 15% |
| Evaluate | 5% |



# FOOD SERVICE MANAGEMENT

**SEMESTER: VI** **CODE NO:CL164**
**COURSE NO: XIV** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable students to learn

1. Understand the principles and functions of catering management
2. Develop managerial skills.
3. Gain knowledge about laws governing food service establishments.

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create)**

**At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOME | K Level |
|---|---|---|
| CO1 | **Recall** the definition of hotel. **Understand** the difference between hotel, motel and restaurant. **Describe** the history of catering industry. **Classify** the types of catering establishments. **Apply** the knowledge in classifying commercial and non-commercial catering units. **Differentiate** between commercial and non-commercial catering units. **Evaluate** the types of catering units.[PO3][PO5] https://youtu.be/kjt4vr0Afsc | K1, K2, K3, K4, K5 |
| CO2 | **State** the principles of management. **Understand** the importance of the principles of management in administration. **Describe** the functions of management. **Understand** the tools of management. **Apply** the knowledge of management tools in an organization. **Design** an organizational chart for various catering units. **Recall** the process and types of communication. **Understand** the barriers of communication. **Analyze** the types of leaders. **Evaluate** the styles of leadership. Role play to demonstrate efficient leadership[PO3][PO5] (https://youtu.be/zmtfl8mjrII, https://youtu.be/aviHhA5d7wc) | K1, K2, K3, K4, K5, K6 |

| | | |
|---|---|---|
| CO3 | **Recall** the definition of recruitment and selection. **Understand** the process of recruitment and selection of employees for a catering unit. **Understand** the importance and methods of training. **Analyze** the various training methods. **Evaluate** the appropriate training method that can be used in a catering establishment. **Apply** the guidelines for promotion and dismissal of employees. **Analyze** the criteria that call for termination of an employee.[PO3][PO5] https://youtu.be/F1gL8G2hNpk https://youtu.be/lEAAXqTFtM4 | K1, K2, K3, K4, K5 |
| CO4 | **Recall** the elements of cost. **Understand** the factors affecting cost control. **Apply** the types of pricing methods to determine the selling price of the product. **Analyze**the various pricing methods. **Understand** the principles of double entry book keeping. Apply the rules of double entry booking in accounting process. **Analyze**the different books of account.**Create** menus, calculate cost and arrive at the selling price of the dishes. [PO6][PO3][PO5]https://youtu.be/1WzjGJSCzGo https://youtu.be/QW8NRrcj2rw | K1, K2, K3, K4, K6 |
| CO5 | **Recall** the labor laws pertaining to the food service industry. **Apply** the appropriate laws for any given situation**. Understand** the importance of food standards in a catering establishment. **Analyze** the types of food standard and their role in food safety. **Evaluate** the food standards and safety measures adopted in selected food service units. [PO3][PO5][PO8]https://youtu.be/TyW3lZuOMDQ | K1, K2, K3, K4, K5 |

| CO/PO (GC/GMEETPO7) | PO | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Disciplinary Knowledge and skills | 2 Skilled Communicator | 3 Critical thinker and problem solver | 4 Sense of inquiry | 5 Team player/worker | 6 Skilled project manager | 7 Digitally Efficient | 8 Ethical awareness / reasoning | 9 National and international perspective | 10 Lifelong learners |
| **CO1** | 3 | 2 | 2 | 1 | 2 | | 2 | 1 | 2 | 2 |
| **CO2** | 3 | 2 | 2 | 1 | 2 | | 2 | 1 | 2 | 2 |
| **CO3** | 3 | 2 | 2 | 1 | 2 | | 2 | 1 | 2 | 2 |
| **CO4** | 3 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 |
| **CO5** | 3 | 2 | 2 | 1 | 2 | | 2 | 2 | 2 | 2 |
| **Avg** | 3 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 |
| **Total** | 15 | 10 | 10 | 5 | 10 | 1 | 10 | 6 | 10 | 10 |

**COURSE OUTLINE**

| S. No | Content | No of hours |
|---|---|---|
| **Unit I** | **Origin of hotel industry**<br>a. History of hotel industry.<br>b. Different types of catering establishments - Commercial and noncommercial. | **10** |
| **Unit II:** | **Organisation and management**<br>a. Principle and functions of management<br>b. Tools of management –organization chart, Job Description, Job Specification, job analysis and work Schedule.<br>c. Communication –types and barriers, leadership quality and styles of leadership | **20** |
| **Unit III** | **Personnel Management**<br>a. Recruitment and selection - Sources of recruitment, steps involved in selection.<br>b. Training – Importance and methods of training.<br>c. Promotion and dismissal of employees. | **20** |

| | | |
|---|---|---|
| **Unit IV** | **Financial management**<br>a. Elements of cost, cost control and pricing.<br>b. Principles of double entry book keeping<br>c. Books of account- cash book, sales book, purchase book, sales return book, purchase return book, Ledger and Journal. | **20** |
| **Unit V** | **Laws governing food service establishments**<br>a. Labour laws related to employee – Fatal Accident Act, Workmen's Compensation Act,Industrial Dispute Act, Factories Act, The Minimum wages Act, Employees State Insurance Act, The Provident Fund Act, Shops and Establishments Act. Payment of Bonus Act, Tamil Nadu Catering Establishment Act.<br>b. Food Standards – FSSAI,ISI/BIS,AGMARK,FPO | **20** |
| | | **90** |

**REFERENCES**


1. Kington.C. Cesarani. 1984. The theory of catering. London, Arnold Heinemann.
2. Sethi. M. Malhan.S. 2015. Catering Management-An Integrated Approach, New Delhi, John Wiley and Sons.
3. Spears.M. Vaden.. 1988. Food service organizations - A managerial and systems approach. New York, Mac Millan and Co.
4. West et al. 1993. Food service in institutions. New Delhi, John Wiley and Sons.
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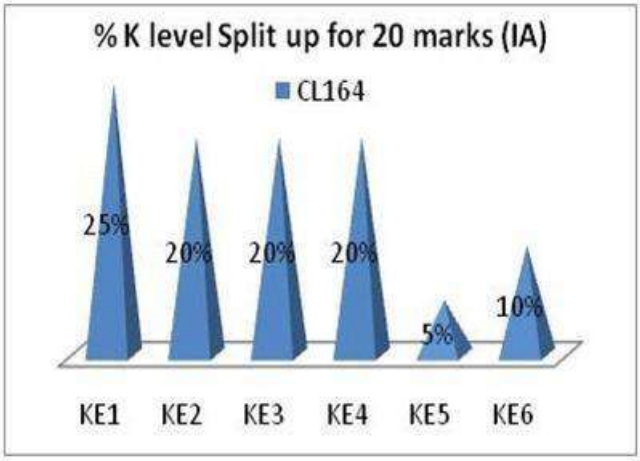
**E-REFERENCES**


1. www.fda.gov
2. www.wadsworth.com/nutrition
3. www.ific.org
4. wwwvrg. Org
5. http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827

**ASSESSMENT PATTERN**

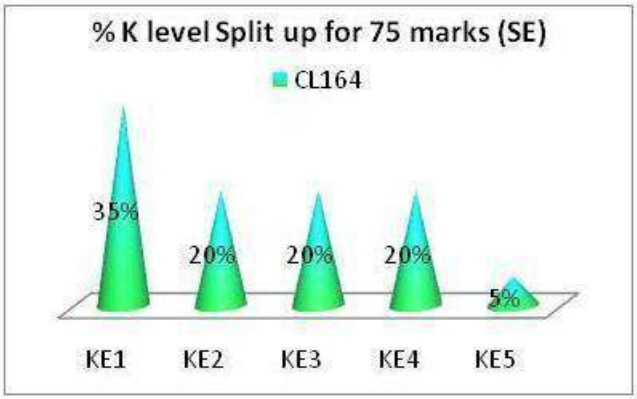
**CIE- Continuous Internal Evaluation (25 Marks)**

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 3 | 1 | | 1 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (4) | 0 | 1 | | 3 |
| Evaluate (1) | 0 | 0 | | 1 |
| Create (2) | 0 | 2 | | 0 |




**ESE- Semester End Examination (75 Marks; weightage 75 %)**

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **35%** |
| Understand | 20% |
| Apply | 20% |
| Analyze | 20% |
| Evaluate | 5% |



# CLINICAL NUTRITION

**SEMESTER: VI** **CODE NO:CL165**
**COURSE NO: XV** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students to

1. Learn the basic pathophysiology of various diseases.
2. Understand the clinical significance of biochemical findings.
3. Understand the interaction between nutrients and disorders.

**COURSE OUTCOME**

**Knowledge level - K1(Remembering), K2(Understanding), K3(Applying), K4(Analyzing), K5(Evaluating), K6(Creating). At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOME | K Level |
|---|---|---|
| CO1 | **Relate** the biochemical changes to specific inborn errors of metabolism. (https://youtu.be/8XdVrKkFdAM) **Interpret**basic biochemical findings of Diabetes Mellitus and Cardiovascular diseases (using power point {PO7}).**Explain** the metabolic changes in diabetes mellitus (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444 http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) {PO9, PO10} and cardiovascular disease conditions (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) reviewing the lecture. **Classify** different foods or combination of foods based on glycemic index. Make use of nutritional guidelines for diabetes mellitus and cardiovascular diseases. **Modify** the menu using food exchange list (Group assignment, Question and answer session) {PO4, PO5} | K1, K2, K3, K4, K5, K6 |
| CO2 | **List** the causes and **Explain** the pathophysiology of gastrointestinal disorders. (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444, http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444 and http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) {PO9, PO10} **Understand** the relationship between diet and specific gastrointestinal disorders. (https://youtu.be/qcV62gO-aFc) followed by group discussion {PO3}. Make use of nutritional guidelines for the management of gastrointestinal disorders. (Group assignment {PO5}) | K1, K2, K3 |

| | | |
|---|---|---|
| CO3 | **Outline** the causes and **Explain** the pathophysiology of the specific diseases of the liver, gall bladder and pancreas (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444). {PO9, PO10} **Apply** nutritional guidelines for the management of specific diseases of the liver, gall bladder and pancreas, **Evaluate** and **interpret** basic clinical and biochemical findings in specific diseases of the liver, gall bladder and pancreas (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) (Group assignment and question and answer session) {PO4, PO5} | K1, K2, K3, K4, K5 |
| CO4 | **Remember** the causes and **Explain** the pathophysiology of specific renal diseases (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444). {PO9, PO10} **Interpret** the basic biochemical findings in conditions such as nephritis, nephrosis, renal calculi and renal failure. **Evaluate** renal diseasesbased on biochemical findings. Make use of medical nutritional therapy in the management of renal diseases. **Explain** types of dialysis (using power point {PO7}) and **Discuss** nutritional management during dialysis(https://youtu.be/FklCXzhvUiQ). **Plan** a sodium restricted diet for dialysis patient. (Group assignment followed by discussion and justifying their diet in maintaining the fluid, electrolyte balance {PO3, PO5, PO6}) | K1, K2, K3, K4, K5, K6 |
| CO5 | **Enumerate** the etiological factors in the development of cancer **Explain** the pathogenesis of cancer. Discuss the medical nutrition therapy for cancer and make use of nutritional guidelines for the dietary management of cancer. (https://youtu.be/pN2UeU_85i8 lecture video after that group discussion and e quiz {PO4, PO9, PO10} | K1, K2, K3 |

| CO/PO (GC/GMEETPO7) | PO | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Disciplinary Knowledge and | 2 Skilled Communicator | 3 Critical thinker and problem solver | 4 Sense of inquiry | 5 Team player/worker | 6 Skilled project manager | 7 Digitally Efficient | 8 Ethical awareness / reasoning | 9 National and international perspective | 10 Lifelong learners |
| **CO1** | 3 | 1 | 1 | 1 | 1 | | 1 | 1 | 3 | 1 |
| **CO2** | 3 | 2 | 1 | | 2 | 1 | 1 | 1 | 1 | 1 |
| **CO3** | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **CO4** | 3 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |
| **CO5** | 3 | 2 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| **Total** | 15 | 9 | 4 | 4 | 6 | 4 | 5 | 5 | 7 | 5 |
| **Avg** | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**COURSE OUTLINE**

| S. No | CONTENT | No of hours |
|---|---|---|
| Unit I | **Biochemical changes due to disorders of metabolism**<br>Diabetes mellitus, Inborn errors of metabolism with respect to lactose, galactose, phenyl alanine and uric acid (Gout), Metabolic and nutritional implications of Hyperlipoprotenemia, Atherosclerosis, Myocardial infarction, Hypertension and Metabolic syndrome. | **20** |
| Unit II | **Gastrointestinal Disorders**<br>Pathophysiology and Nutritional implications of Diarrhoea, constipation. gastritis, ulcers, colitis, malabsorption syndrome – Celiac disease, lactose intolerance,<br>Steatorrhoea, Inflammatory Bowel Syndrome, and Irritable bowel syndrome- | **25** |
| Unit III | **Gastro intestinal Disorders of the Liver, Gall Bladder and Pancreas**<br>Metabolic and nutritional implications of Hepatitis. Cirrhosis of liver, Hepatic coma, Pancreatitis, Cholecystitis and Cholelithiasis. | **15** |
| Unit IV | **Renal System**<br>Metabolic and nutritional implications of Nephritis, Nephrotic syndrome, Renal failure. Renalcaliculi and Dialysis. | **15** |

| | | |
|---|---|---|
| **Unit V** | **Neoplasia**<br>Predisposition to Cancer, Pathogenesis, cancer cachexia and medical nutrition therapy | **15** |
| | | **90** |

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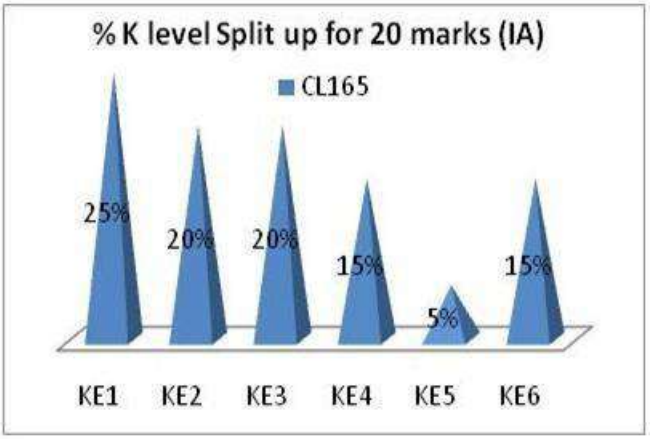
1. Bamji et al. 2009. Text Book of Human Nutrition.NewOxford and IBH Publishing Co. Pvt. Ltd.
2. Devlin. T.M.. 2010. Text book of Biochemistry with clinical correlations. New York, John Wiley and Sons.
3. Harper. H.A.. 1997. Review of Physiological Chemistry. 21st edition.Los Angeles, Lange Medical Publications.
4. Leninger. A. L.. 1992. The molecular basis of cell structure and functions. New Delhi, Kalyani Publishers.
5. Ramakrishnan. S. and VenkatRao.. 1995. Nutritional Biochemistry. Chennai, T.R. Publications.
6. Shils et al. 2012. Modern Nutrition in Health and Disease. New York, LWW.
7. Williams S.R.. 2000. Basic Nutrition and Diet Therapy. New York, Mosby Publishers.

## ASSESSMENT PATTERN

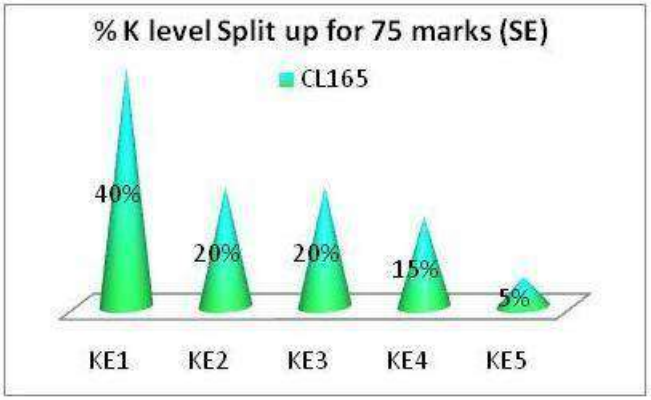
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 3 | 0 | | 2 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (1) | 0 | 0 | | 1 |
| Create (3) | 0 | 3 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **40%** |
| Understand | 20% |
| Apply | 20% |
| Analyze | 15% |
| Evaluate | 5% |



# ADVANCED DIETETICS

**SEMESTER: VI** **CODE NO:CL166**

**COURSE NO: XVI** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students to

1. Understand the modifications in nutrient requirements for various disease conditions.
2. Develop skills in planning and preparing therapeutic diets for various diseases.
3. Provide insight into areas of nutritional support for health optimization

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of the Course, the Student will be able to:**

| | COURSE OUTCOMES | K LEVEL |
|---|---|---|
| **CO1** | **Demonstrate** an understanding of disease conditions of the gastrointestinal tract namely Peptic ulcer, Hepatitis and Cirrhosis of Liver, Ulcerative colitis, Cholecystitis and Cholelithiasis. **Analyze**the various factors leading to peptic ulcer, Hepatitis and Cirrhosis of Liver, Ulcerative colitis, Cholecystitis and Cholelithiasis. **Apply** principles of dietary management in disease condition such as peptic ulcer, Hepatitis and Cirrhosis of Liver, Ulcerative colitis, Cholecystitis and Cholelithiasis (writing menu (Po8) and have a group discussion (Po4), PPT on menu planned (Po7). Youtube:upstate medical universities (PO9) | **K1,K2,K3, K4,K5, K6** |
| **CO2** | **Define and Describe** Diabetes mellitus, Gout and Glycaemic index. **Evaluate** foods based on their glycaemic index. **Analyze**the various factors leading to Diabetes mellitus and Gout. **Apply** principles of dietary management in the treatment of Diabetes mellitus and Gout (planning menus) (Po8) along with group discussion (Po4), PPT on menu planned (Po7). (Youtube: josline diabetes centre – carbohydrate counting) (PO9). | **K1,K2,K3, K4,K5, K6** |
| **CO3** | **Demonstrate** the ability to distinguish Glomerulonephritis, Nephrosis, Renal failure, Urinary Calculi and Dialysis. **Analyze**the various factors leading to Glomerulonephritis, Nephrosis, Renal failure, Urinary Calculi. **Apply** principles of dietary management in the treatment of Glomerulonephritis, Nephrosis, Renal failure, Urinary Calculi. **Explain** the types of Dialysis (youtube: Nucleus Medical Msdia-Dialysis) (PO9) and evaluate its drawbacks (writing menus) (Po8) group discussion (Po4), PPT on menu planned (Po7). | **K1, K2, K3, K4, K5,K6** |

| | | |
|---|---|---|
| **CO4** | **Demonstrate** an understanding of the development of Cardiovascular disease. **Analyze**the relationship between dietary fat and Cardiovascular disease. **Apply** principles of dietary management in the treatment of Cardiovascular disease (youtube: Lee Health-Role of Diet in Cardiovascular Disease) (PO9)<br>(writing menu (Po8) followed by group discussion (Po4), PPT on menu planned (Po7) | **K1, K2, K3, K4,K5,K6** |
| **CO5** | **Define** cancer and its types. **Analyze**the various factors leading to Cancer. **Apply** the knowledge of dietary principles (youtube: nptelhrd-Diet in Cancer) (PO9) and use of functional foods in the treatment of cancer(writing menus ) (Po8)followed by a group discussion (Po4), PPT on menu planned (Po7) | **K1, K2, K3, K4,K5,K6** |

| **CO/PO (GC/GMEET-PO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| **CO2** | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| **CO3** | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| **CO4** | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| **CO5** | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| **Total** | 15 | 10 | 5 | 10 | 5 | 5 | 5 | 10 | 5 | 5 |
| | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |

**COURSE OUTLINE**

| **S.NO** | **CONTENT** | **NO. OF HOURS** |
|---|---|---|
| UNIT I | **Gastrointestinal Diseases**<br>a. Peptic ulcer – meaning, mechanism of ulcer formation, types of ulcer, etiology, symptoms and clinical findings, diagnosis and dietary management,<br>b. Etiology, symptoms and dietary modifications for ulcerative colitis, hepatitis, cirrhosis of liver, cholecystitis and cholelithiasis | **20** |

| | | |
|---|---|---|
| UNIT II | **Metabolic Disorders**<br>a. Diabetes mellitus - Types, predisposing factors, symptoms, complications and dietary management.Definition - Glycaemic index, Glycaemic Load and factors influencing glycaemic Index<br>b. Gout -Nature and occurrence of uric acid crystals, causes, symptoms and dietary management. | **20** |
| UNIT III | **Renal diseases**<br>a. Predisposing factors, symptoms and dietary management of acute glomerulonephritis, nephrosis, renal failure and urinary calculi.<br>b. Dialysis -Types of dialysis and characteristics of types of dialysis and its drawbacks | **20** |
| UNIT IV | **Cardiovascular diseases**<br>a. Predisposing factors, role of fat in the development of atherosclerosis and dietary management in atherosclerosis. Role of functional foods in the prevention and treatment of cardiovascular diseases<br>b. Hypertension- Causes, types, symptoms and dietary management | **15** |
| UNIT V | **Diet in Cancer**<br>Meaning, Causes, types, clinical symptoms and role of functional foods in the prevention of cancer | **15** |

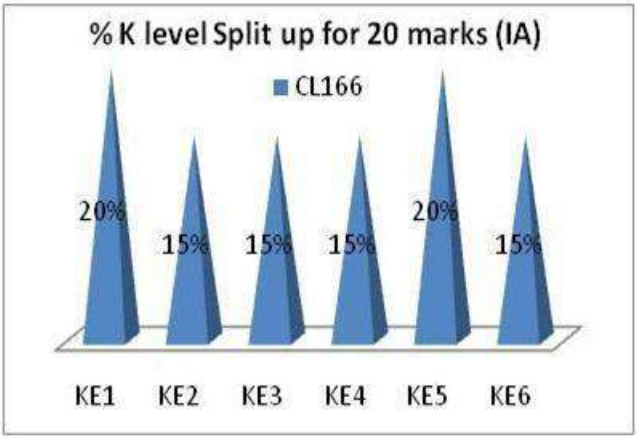
**REFERENCES**


1. Antia. F.P. 2010. Clinical Dietetics and Nutrition. Bombay, OxfordUniversity Press.
2. Passmore. P and Eastwood. M.A. 1986. Human Nutrition and Dietetics. London, ELBS.
3. Robinson. C.H 1990. Normal and Therapeutic Nutrition. 17th editionNew York, Macmillan and Co.
4. Williams. S.R. 2017. Nutrition and Diet Therapy. 15th edition New York., Mosby Mirror Publishing Co.
5. Sri Lakshmi. B. 2019. Dietetics.8th edition New Delhi, New Age International Pub. Ltd.
6. Malhan, K.N and ArlimKrauses. 2016 Food Nutrition and Diet Therapy. 14th edition W.B Saunders Company, Philadelphia.
7. Whitney, E.N. and Rolfes, S.R. 2019, Understanding Nutrition, 15th edition West Wadsworth - An International Thomson Publishing Company, New York.

## ASSESSMENT PATTERN

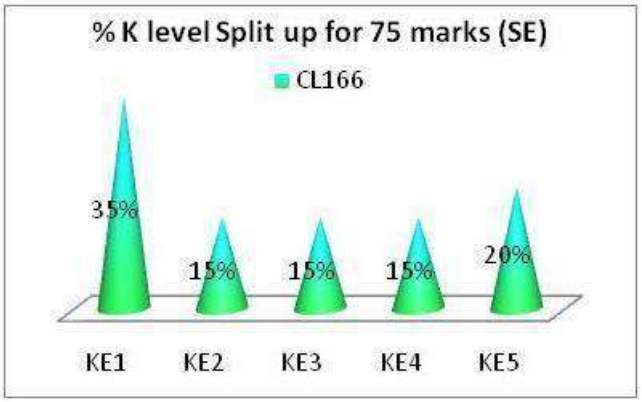
### CIE – Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (4) | 2 | 0 | | 2 |
| Understand (3) | 1 | 0 | | 2 |
| Apply (3) | 1 | 1 | | 1 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (4) | 1 | 0 | | 3 |
| Create (3) | 0 | 3 | | 0 |




### ESE – Semester End Examination (75 marks; weightage 75%)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **35%** |
| Understand | 15% |
| Apply | 15% |
| Analyze | 15% |
| Evaluate | 20% |



# ADVANCED DIETETICS PRACTICAL

**SEMESTER: VI** **CODE NO:CL167**

**COURSE NO: XVII** **CREDIT: 5**

## LEARNING OBJECTIVES

To enable the students to

1. Understand the modifications introduced in therapeutic diets suited to different disease conditions.
2. Learn the foods to be included and avoided in specific disease conditions
3. Acquire the skill to plan and prepare therapeutic diets

## COURSE OUTCOMES

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of the Course, the Student will be able to:**

| | COURSE OUTCOMES | K LEVEL |
|---|---|---|
| **CO1** | **Recall** the principles of dietary management in the treatment of various disease conditions such asPeptic ulcer, Ulcerative colitis and colon cancer. **Apply** the knowledge of foods to be included and avoided in planning diets for Peptic ulcer, Ulcerative colitis and colon cancer. **Develop** a menu plan and innovate recipes suitable for Peptic ulcer, Ulcerative colitis and colon cancer. **Acquire** the skill to prepare therapeutic diets, calculate its nutritive value and cost. Discuss individual's menu (PO4), writing menu & present through PPT (PO8 &PO7). Nutritive value calculation (PO3). (Youtube: WS Westwood. Stomach ulcer diet: what should you eat when you have stomach ulcer) (PO9). | **K1, K2, K3, K4, K5, K6** |
| **CO2** | **Recall** the principles of dietary management in the treatment of various disease conditions such asHepatitis & Cirrhosis of Liver. **Apply** the knowledge of foods to be included and avoided in planning diets for Hepatitis & Cirrhosis of Liver. **Develop** a menu plan and innovate recipes suitable for Hepatitis & Cirrhosis of Liver **Acquire** the skill to prepare therapeutic diets, calculate its nutritive value and cost. (Discuss individual menu (PO4), writing menu & present through PPT (PO8 &PO7). Nutritive value calculation (PO3).youtube: Dr. Joe Galatispecial diet for liver disease patients? (PO9). | **K1, K2, K3, K4, K5, K6** |

| | | |
|---|---|---|
| **CO3** | **Recall** the principles of dietary management in the treatment of various disease conditions such as Insulin and Non insulin dependent Diabetes mellitus. **Apply** the knowledge of foods to be included and avoided in planning diets for Diabetes mellitus. **Develop** a menu plan and innovate recipes suitable for Diabetes mellitus. **Acquire** the skill to prepare therapeutic diets, calculate its nutritive value and cost. Discuss individual's menu (PO4), writing menu & present through PPT (PO8 &PO7). Nutritive value calculation (PO3) (youtube: PharmaEasy App – Diabetes diet plan, foods for diabetes, Dr.Shehla sheikh) (PO9). | **K1, K2, K3, K4, K5, K6** |
| **CO4** | **Recall** the principles of dietary management in the treatment of various disease conditions such **as** Nephritis and Nephrosis. **Apply** the knowledge of foods to be included and avoided in planning diets for Nephritis and Nephrosis. **Develop** menu plans and innovate recipes suitable for Nephritis and Nephrosis. **Acquire** the skill to prepare therapeutic diets, calculate its nutritive value and cost. **Discuss** individual's menu (PO4), writing menu & present through PPT (PO8 &PO7). Nutritive value calculation (PO3). (Youtube: Natural Health Tricks. Dirts for patients with nephritic syndrome-247naturalhealthtricks.com) (PO9). | **K1, K2, K3, K4, K5, K6** |
| **CO5** | **Recall** the principles of dietary management in the treatment of various disease conditions such as Atherosclerosis, Hypertension. **Apply** the knowledge of foods to be included and avoided in planning diets for various disease conditions. **Develop** a menu plan and innovate recipes suitable for various disease conditions. **Acquire** the skill to prepare therapeutic diets, calculate its nutritive value and cost. (Discuss individual menu (PO4 present menus through PPT (PO8 &PO7). Nutritive value calculation (PO3). (You tube :Lee Health-Role of Diet in Cardiovascular Disease) (PO9). | **K1,K2, K3, K4, K5, K6** |

| CO/PO (GC/GMEET-PO7) | PO | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Disciplinary Knowledge and skills | 2 Skilled Communicator | 3 Critical thinker and problem solver | 4 Sense of inquiry | 5 Team player/worker | 6 Skilled project manager | 7 Digitally Efficient | 8 Ethical awareness / reasoning | 9 National and international perspective | 10 Lifelong learners |
| **CO1** | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 |
| **CO2** | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 |
| **CO3** | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 |
| **CO4** | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 |
| **CO5** | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 |
| **Total** | 15 | 10 | 15 | 10 | 15 | 5 | 10 | 10 | 10 | 10 |
| **Ave** | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 |

**COURSE OUTLINE**

**PLANNING AND PREPARATION OF DIETS FOR**

| S.NO | CONTENT | NO. OF HRS |
|---|---|---|
| 1 | Peptic Ulcer | **9** |
| 2 | Ulcerative Colitis | **9** |
| 3 | Hepatitis | **9** |
| 4 | Cirrhosis of Liver | **9** |
| 5 | Diabetes Mellitus | **9** |
| 6 | Nephritis | **9** |
| 7 | Nephrosis | **9** |
| 8 | Atherosclerosis | **9** |
| 9 | Hypertension | **9** |
| 10 | Colon Cancer | **9** |

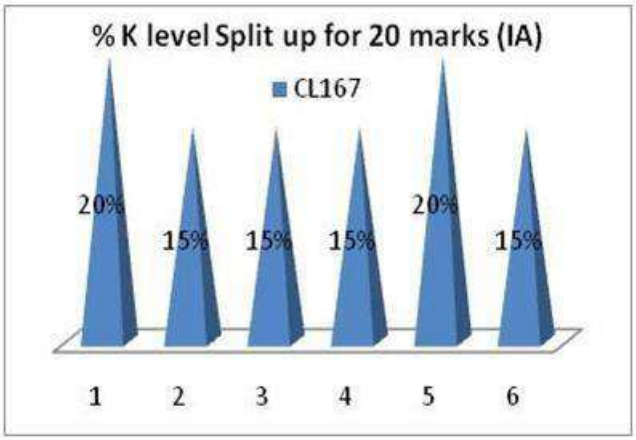
## REFERENCES


1. Antia. F. P. 2010. Clinical Dietetics and Nutrition. Bombay, OxfordUniversity Press.
2. Passmore. P.and Eastwood. M.A. 1986. Human Nutrition and Dietetics.London, ELBS.
3. Robinson. C.H. et al. 1990. Normal and Therapeutic Nutrition. 17th editionNew York, Macmillan and Co.
4. Williams. S.R. 2017. Nutrition and Diet Therapy. 15th edition New York., Mosby Mirror Publishing Co.
5. Sri Lakshmi. B. 2019. Dietetics. 8th edition, New Age International Pub. Ltd. New Delhi
6. Mahan, K.N and ArlimKrauses, 2016 Food Nutrition and Diet Therapy. 14th edition W.B Saunders Company, Philadelphia.
7. Whitney, E.N. and Rolfes, S.R. 2019, Understanding Nutrition, West Wadsworth - 15th edition An International Thomson Publishing Company, New York.


## ASSESSMENT PATTERN

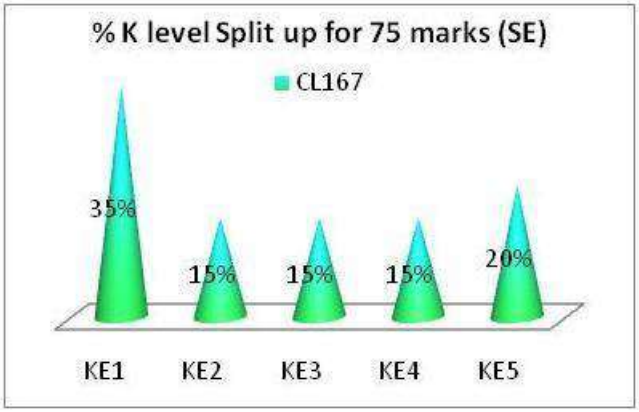
### CIE – CONTINUOUS INTERNAL EVALUATION (25 MARKS)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (4) | 2 | 0 | | 2 |
| Understand (3) | 1 | 0 | | 2 |
| Apply (3) | 1 | 1 | | 1 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (4) | 1 | 0 | | 3 |
| Create (3) | 0 | 3 | | 0 |




### ESE – Semester End Examination (75 marks; weightage 75%)

| Bloom's Taxonomy | Weightage |
|---|---|
| Remember | **35%** |
| Understand | 15% |
| Apply | 15% |
| Analyze | 15% |
| Evaluate | 20% |



# HUMAN DEVELOPMENT

**SEMESTER: VI** **CODE NO:CL168**

**COURSE NO: XVIII** **CREDIT: 5**

**LEARNING OBJECTIVES**

To enable the students to

1. Learn the stages of development of in an individual from infancy to old age.
2. Gain awareness on the problems of children, adolescents and those with special needs.

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of the Course, the Student will be able to**

| CO | | K Level |
|---|---|---|
| CO1 | **Demonstrate an understanding of** the meaning of growth and development, **Identify** the principles of development. **Compare** the stages in human development. **Understand** the concept and stages of Prenatal development. **Summarize** the various factors influencing prenatal development and present as PPT followed by group discussion. (PO2, PO7). **Explain** the birth process (Video Lecture: https://www.youtube.com/watch?v=5gSAzw-iP0Q http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827) (PO9) **Recognize** the complications during pregnancy. | K1, K2, K3, K4, K5 |
| CO2 | **List** the characteristics of development in infancy and baby hood and submit as a typed report.(PO2). **Evaluate** the social, emotional, intellectual and language development in baby hood **Understand** and **utilize** the knowledge of child rearing practices like feeding, weaning, supplementary feeding, immunization, toilet training, bathing, sleeping, clothing of infants in present life (Question answer session) | K1, K2, K3, K5 |
| CO3 | **Compare and contrast** the characteristics of physical, social, emotional, language and moral development of Early childhood and late childhood. **Summarize** the objectives of preschool education (Submit as assignment) and **Identify** the need of preschool education in early childhood. **Distinguish** various types of play. (Video Lecture :https://www.youtube.com/watch?v=EQhuSeKB7pQ followed by group discussion http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827 ) (PO9) **Explain** the significance of school and **remember** the importance of peer group | K1, K2, K3, K4 |
| CO4 | **Recall** the characteristics, physical, social, emotional, intellectual, language and moral development of adolescents. **Compile a literature review** onthe problems of adolescence especially juvenile delinquency and present as in PPT (Group Activity) **Demonstrate an understanding of** the Physical changes, personal, social and | K1, K2, K3, K4, K6 |

| | | |
|---|---|---|
| | vocational adjustments of adulthood. **Analyse** the psychology of old age and submit a report. (PO2) **Identify** the problems of old age followed by question answer session | |
| CO5 | **Define and discuss** theconditions such as physically handicapped, blind, deaf, speech impairment, gifted children, Autism mentally retarded. **Relate** these conditions to their specific causes. **Identify** the meaning of special children and **categorize** children with special needs. **Recommend** rehabilitation intervention for children with special needs<br>Video lecture :https://www.youtube.com/watch?v=GVvc2TFnfWE followed by group discussion http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827 ) (PO9) | K1, K2, K3, K4, K5, K6 |

| **CO/PO (GC/GMEETPO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 2 | | 1 | | | 2 | 1 | 2 | 1 |
| **CO2** | 3 | | | 1 | | | 2 | 1 | | 1 |
| **CO3** | 3 | 2 | | 1 | | | 2 | 1 | 2 | 1 |
| **CO4** | 3 | 1 | 1 | | 2 | 1 | 2 | 1 | | 1 |
| **CO5** | 3 | 1 | | 1 | | | 2 | 1 | 2 | 1 |
| **Avg** | 3 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| **Total** | 15 | 6 | 1 | 4 | 2 | 1 | 10 | 5 | 6 | 5 |

**COURSE OUTLINE**

| S. No | Content | No of hours |
|---|---|---|
| **Unit I** | **Growth and development**<br>a. Meaning of growth and development, principles of development, stages in human development.<br>b. Prenatal development-concept, stages of prenatal development, factors influencing prenatal development, birth process, complications during pregnancy. | **15** |
| **Unit II** | **Infancy and Babyhood**<br>a. Infancy (0-2 weeks) characteristics, adjustments, physical and emotional development<br>b. Babyhood (2 weeks - 2 years) Characteristics, physical, social, emotional, intellectual and language development. Child rearing practices - feeding, weaning, supplementary feeding, immunization, toilet training, bathing, sleeping, clothing. | **20** |
| **Unit III** | **Early and Late childhood**<br>Characteristics, physical, social, emotional, language and moral development-definition, objectives of preschool education -types, school-significance, peer group-importance | **20** |
| **Unit IV** | **Adolescence, Adulthood and old age**<br>a. Adolescence – Characteristics, physical, social, emotional, intellectual, language and moral development. Problems of adolescence-juvenile delinquency<br>b. Adulthood - Physical Changes, personal, social and vocational adjustments.<br>c. Old age-Psychology of old age, problems of old age. | **20** |
| **Unit V** | **Children with special needs**<br>Physically handicapped, blind, deaf, speech impairment, gifted children, Autism mentally retarded-Definition, causes, classification and rehabilitation. | **15** |
| | | **90** |

**REFERENCES**


1. Laura E. Berk, 2015, Child Development, 9th Edition, New Delhi, PHI learning PVT. LTD.
2. Craig, G., 1986.Human Development. New Jersey, Prentice hall.
3. Hurlock, E.B., 1978. Child Growth and Development. New Delhi, Tata McGraw – Hill Publishing Company limited.
4. Mangal, S.K., 1996. AbnormalPsychology. New Delhi, Sterling Publisher Private Limited.
5. Papalia, D.E., and Olds, S.W., 1992, Human development, Tata McGraw – Hill Publishing company. New Delhi
6. Stoppard, M. 1993. Conception, Pregnancy and Birth. London, Dorling Kindersley.
7. Sroufe, L.A., and Cooper, R.G., 1988, Child development. New York, Alfred A. Knopf.
8. Suriakanthi, A., 1997. Child Development – An introduction, Gandhigram, Kavitha publications.

9. Pati, R. N., 2002. Reproductive child health. New Delhi, A.P.H. Publishing Corporation.
10. Dr.ShushilaSrivastava and Dr.K.Sudha Rani, 2010, Textbook of Human Development, Chand Publishing.

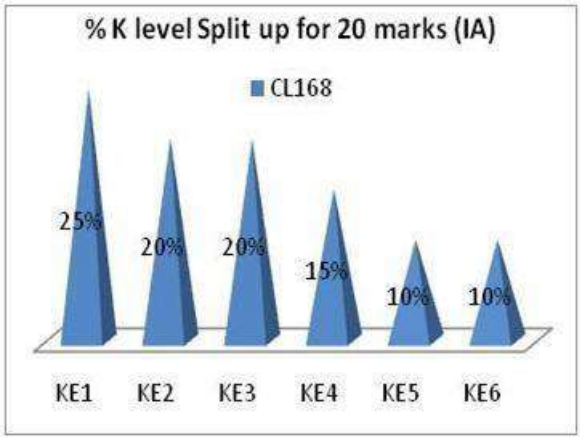
**WEBSITE**

1. www.psychologistworld.com/behavior/erikson.php
2. childdevelopmentinfo.com
3. www.milestoneshome.org/

## ASSESSMENT PATTERN

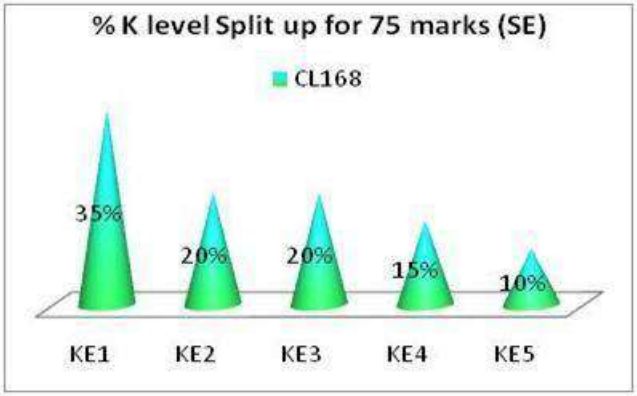
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 1 | | 2 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (2) | 1 | 0 | | 1 |
| Create (2) | 0 | 2 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **35%** |
| Understand | 20% |
| Apply | 20% |
| Analyze | 15% |
| Evaluate | 10% |



# PHYSIOLOGY – I

**SEMESTER: I** **CODE NO:CLA15**
**COURSE NO: Allied I** **CREDIT: 5**

**LEARNING OBJECTIVES:**

**To enable the students to**

1. Understand the structure and functions of the various systems of the body.
2. Comprehend the integrated functions of the various systems in the body.

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of the Course, the Student will be able to:**

| S.No | Content | K level |
|---|---|---|
| CO1 | **Recall** the structure and function of cell organelles and Explain the structure, classification and functions of tissues. **Understand** the process of cell division. **Identify** the types of tissues , **Analyse** the relationship between the structure and function of tissues, Develop a model<br>(**Activity:** 1.Assignment and power point presentation of – structure and functions of cell2.Question bank preparation3.Video seeing – cell division and discussion https://youtu.be/ba9u48D_voEhttps://youtu.be/UYUcbKs02wU - Anatomy of tissue4.Prepare any one model for- cell organelles/cell division/ tissue- (individual) {**PO2, PO3, PO4, PO7, PO8,PO9,PO10**} | K1, K2, K3, K4, K6 |
| CO2 | **Recall** the structure and functions of RBC, WBC and platelets. **Understand and explain** the process of hemopoiesis and blood coagulation. **Identify** the factors involved in blood clotting mechanism **Analyz e**the compatibility between blood groups. **Comprehend** the importance of spleen and reticuloendothelial system in the defense mechanism.<br>1. power point presentation of composition and functions of blood , RE system<br>2.Assignment on blood clotting mechanism<br>3.Question bank Preparation<br>4.Video seeing and discussion https://youtu.be/UPl_1EZn3mEhttp://epgp.inflibnet.ac.in/Home/Download blood coagulation5. Determine the blood group and submit report in excel | K1, K2, K3, K4 |

| | | |
|---|---|---|
| | file by email - percentage distribution of blood groups in the class(group) **{PO2, PO3, PO4, PO5, PO6, PO7, PO8,PO9,PO10**} | |
| CO3 | **Describe** the structure and function of the heart. **Understand** the origin and conduction of the heart beat and cardiac cycle. **Acquire** the skill to interpret a normal ECG. **Measurement of** blood pressure using sphygomanometer, **evaluate** blood pressure values and **analyse** the factors affecting it. (PO3)<br>1. Powerpoint presentation and discussion – structure of heart - 2. assignment – origin and conduction of heartbeat and ECG3.Question bank preparation<br>4. lecture video on cardiac cycle - https://youtu.be/R_8lx3Nt0OMcardiac<br>Followed by group discussion5.Prepare any one model – structure of heart/ ECG (Group)6. Measurement of blood pressure and submission of report (mean blood pressure ) by email (group)**PO2, PO3, PO4, PO5, PO6, PO7, PO8,PO9,PO10**} | K1, K2, K3, K4, K5,K6 |
| CO4 | **Understand** the structure and function of parts of the brain and the spinal cord. **Sketch the lobes of the cerebrum and functions, Analyse** the relationship between the stimulation of the sympathetic and parasympathetic nerves and their effects on the body. **Recall** the names and functions of the cranial nerves<br>1. Assignment – structure and functions of brain and spinal cord<br>2.Question bank preparation3.lecture Video – brain and spinal cord –structure https://youtu.be/Zvd1Rt4vrLs , http://epgp.inflibnet.ac.in/Home/Download4 Group discussion on effects of sympathetic and parasympathetic nerves on different system{**PO2, PO3, PO4,PO7, PO8,PO9,PO10**} | K1, K2,K3, K4 |
| CO5 | **Recall** the structure and functions of the organs of respiration. Explain the mechanism of respiration. **Understand** the process of gaseous exchange during respiration. **Recall** lung volume and capacities, **make use** of spirometer to calculate lung volumes, **Determine** the factors involved in the regulation of respiration {1. assignment – structure of respiratory system<br>2. Question bank preparation 3.Video seeing – gaseous exchange **(**https://youtu.be/3ekPto9PHPU**)**<br>4. Group Discussion on the module (pdf file) of Mechanism of Respiration from http://epgp.inflibnet.ac.in/Home/Download**{PO2, PO3, PO5,PO4, PO7, PO8,PO9,PO10**} | K1, K2,K3, K5 |

| CO/PO (GC/GMEETPO7) | PO | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Disciplinary Knowledge and skills | 2 Skilled Communicator | 3 Critical thinker and problem solver | 4 Sense of inquiry | 5 Team player/worker | 6 Skilled project manager | 7 Digitally Efficient | 8 Ethical awareness / reasoning | 9 National and international perspective | 10 Lifelong learners |
| **CO1** | 3 | 2 | 1 | 1 | | | 1 | 1 | 1 | 1 |
| **CO2** | 3 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |
| **CO3** | 3 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 |
| **CO4** | 3 | 2 | 2 | 1 | | | 1 | 1 | 1 | 1 |
| **CO5** | 3 | 2 | 2 | 1 | | | 1 | 1 | 1 | 1 |
| **Total** | 15 | 10 | 8 | 5 | 3 | 4 | 5 | 5 | 5 | 5 |
| **Average** | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**COURSE OUTLINE**

| S.No | Content | No of hours |
|---|---|---|
| **Unit I** | **Cells and tissues**<br>Review of cell physiology- plasma membrane-structure, functions and transport, cell organelles-structure and functions, cell division-mitosis and meiosis. Tissues structure and functions of various types of tissues - epithelial, connective, muscular and nervous | **20** |
| **Unit II** | **Blood, lymph and tissue fluid**<br>Blood - Composition and functions, haemopoiesis, blood coagulation, blood groups, spleen, lymph and reticulo endothelial system | **15** |
| **Unit III** | **Cardiovascular system**<br>Structure of heart and blood vessels, origin and conduction of heart beat, regulation of heart action, ECG, cardiac cycle, cardiac output, blood pressure, pulse, nervous control of blood vessels. | **20** |
| **Unit IV** | **Central nervous system**<br>Structure of nervous tissue, Brain – structure and function of the cerebrum, cerebellum, brain stem. Spinal cord -reflex action - Functions of autonomic nervous system and cranial nerves | **20** |

| | | |
|---|---|---|
| **Unit V** | **Respiratory system**<br>Basic anatomy of respiratory system, mechanism of respiration, tidal volume, vital capacity and lung capacity, transport and exchange of gases in the lungs and tissues, control of respiration | **15** |

**PRACTICAL**

1. Histology of tissues - slides.

**Demonstration Experiments**

2. Blood cells - fresh mount and stained.
3. RBC and WBC count.
4. Determination of haemoglobin.
5. Clotting and bleeding time.
6. Measurement of blood pressure.
7. Determination of vital capacity.

**REFERENCE**


1. Chatterjee, C.C., 2016, Human Physiology, Vol. 1 and 2. CBS publishers & distributors Pvt Ltd, Calcutta.
2. Ganong, F.W., 2019, Review of medical physiology, Vol. 1 and 2. Tata McGraw Hill Education
3. Guyton, H.C., 2015, Textbook of medical physiology, W.B. Saunders and Co,
4. Ross and Williams (2000) Anatomy and physiology, Churchill Livingston, London
5. VidyaRatan (2004), Handbook of Human Physiology, Jaypee Bothers Medical publishers (p) ltd, New Delhi


**Website**

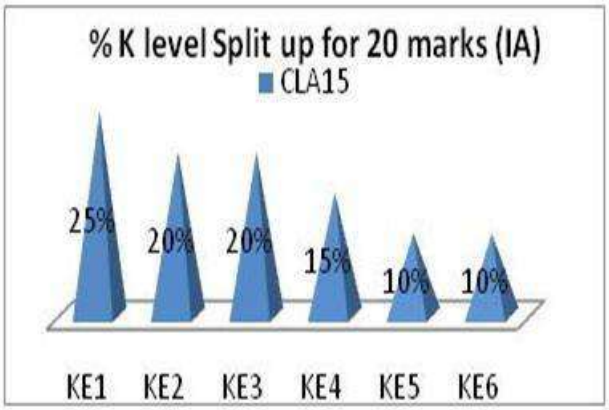
**1.** https://youtu.be/uFf0zxQ3rBU

**2.** http://epgp.inflibnet.ac.in/Home/Download

## ASSESSMENT PATTERN

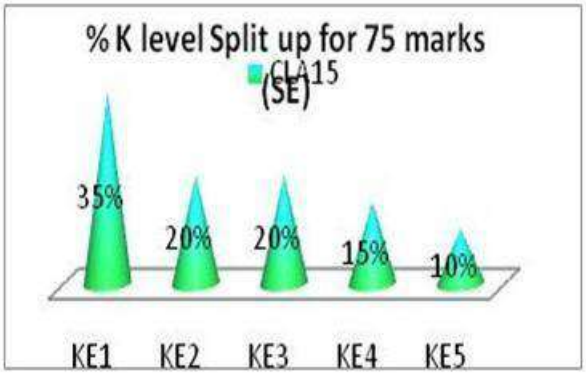
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 1 | | 2 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (2) | 1 | 0 | | 1 |
| Create (2) | 0 | 2 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **35%** |
| Understand | 20% |
| Apply | 20% |
| Analyze | 15% |
| Evaluate | 10% |



# PHYSIOLOGY – II

**SEMESTER: II** **CODE NO:CLA16**
**COURSE NO: Allied II** **CREDIT: 5**

**LEARNING OBJECTIVES**

**To enable the students to**

1. Understand the structure and functions of the various systems of the body.
2. Understand the integrated functioning of the various systems of the body.

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create) At the end of the Course, the Student will be able to:**

| S.No | COURSE OUTCOME | K level |
|---|---|---|
| **CO1** | **Recall** the anatomy and functions of Gastro Intestinal system, **understand** the role of each organ in the process of digestion, **Identify** the phases of gastric secretion in the process of digestion,**Explain** the process of digestion and absorption of carbohydrate, protein and fat, **Describe** the mechanism of absorption of nutrients **State and differentiate** the Types of GI tract movements, **create** a model of digestive system<br>**{Activity:** 1. Teaching using ppt**,**Assignment – anatomy and functions of Gastro Intestinal system<br>2.Question bank preparation<br>3.Video streaming– Group Discussion on video lecture about digestion of food & Movements of GI tract.<br>https://youtu.be/6Leau4GXPQUhttp://epgp.inflibnet.ac.in/Home/Download<br>https://www.youtube.com/watch?v=Ge71_wjBRJs&authuser=0 movements of GT tract<br>4. Student ppt presentation and submit the file in pdf format through email<br>4.Prepare any one model –organs of digestive system (**group chart making/poster/model) (PO2,PO3,PO4,PO5,PO6 PO7,PO8 PO9,PO10)** | K1, K2, K3, K4, K5, K6, |
| **CO2** | **List** the functions of Excretory system, **Describe** the structure of excretory organs, **Explain** the mechanism of urine formation, **Analyze** the role of kidney in maintaining acid base balance<br>**Activity: 1.**Assignment **–** structure of excretory organs, mechanism of urine formation | K1, K2, K3, K4 |

| | | |
|---|---|---|
| | 2**.** Powerpoint presentation **-** the role of kidney in maintaining acid base balance<br>3**.** Question bank preparation<br>4.Video streaming and group Discussion **-** **https://youtu.be/74A6d0SmPO4**http://epgp.inflibnet.ac.in/Home/Downloadmechanism of urine formation **(PO2,PO3,PO4,PO5, PO7,PO8 PO9,PO10)** | |
| **CO3** | **Recall and describe** the structure of Male and Female reproductive system, **Identify and Relate** the role of hormones in spermatogenesis, ovulation, menstruation, pregnancy and lactation( assignment PO2), **Evaluate** the physiological changes during Pregnancy and Lactation, **Develop** a model related to Reproductive system **Activity: 1**.Assignment – role of hormones in spermatogenesis, ovulation, menstruation, pregnancy and lactation<br>2.Question bank preparation<br>3.Video streaming and Group discussion–- https://youtu.be/NeEEQPAg5ms Menstrual cycle<br>4.prepare a model related to Reproductive system (GROUP)<br>**(PO2,PO3,PO4,PO5,PO6, PO7,PO8 PO9,PO10)** | K1, K2, K3, K4, K5, K6 |
| **CO4** | **Recall** the endocrine glands and the hormones secreted **Correlate** the hormones with their functions. **Understand** the feedback regulation of hormones. **Identify** the effects of hypo and hyperactivity of hormones. **Activity:** 1Teaching pptassignment – Endocrine glands function, Feedback mechanism<br>2.Question bank preparation, compiling the questions and submit the full question bank by email<br>3.Video streaming and Group discussion –Hypo and Hyper activity of endocrine hormones-<br>(https://youtu.be/uFf0zxQ3rBUhttp://epgp.inflibnet.ac.in/Home/Download<br>https://youtu.be/8ayBkYOAGBA - response to stress **(PO2,PO3,PO4,PO5, PO6, PO7,PO8 PO9,PO10)** | K1, K2, K3, K4 |
| **CO5** | **Describe** the structure of sense organs,**understand** the physiology of vision, hearing, taste and smell. **Identify** the cranial nerves related to functions of sense organs Examine the role of skin in regulating body temperature<br>**{Activity:** 1. Teaching using ppt, assignment by mail – describe the structure of the sense organs<br>2.Question bank preparation | K1,K2,K3,K4 |

| | | |
|---|---|---|
| | 3.Video lecture followed by Group Discussion– **sense organ-** (https://youtu.be/XpFOgi1Kdf4http://epgp.inflibnet.ac.in/Home/Download https://youtu.be/eQEaiZ2j9oc - mechanism of hearing) **(PO2,PO3,PO4,PO5, PO7,PO8 PO9,PO10)** | |

| CO/PO (GC/GMEET-PO7) | PO | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Disciplinary Knowledge and skills | 2 Skilled Communicator | 3 Critical thinker and problem solver | 4 Sense of inquiry | 5 Team player/worker | 6 Skilled project manager | 7 Digitally Efficient | 8 Ethical awareness / reasoning | 9 National and international perspective | 10 Lifelong learners |
| **CO1** | 3 | 2 | 2 | 1 | 2 | 1 | 3 | 1 | 2 | 2 |
| **CO2** | 3 | 2 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| **CO3** | 3 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 |
| **CO4** | 3 | 2 | 1 | 1 | 1 | | 2 | 1 | 2 | 1 |
| **CO5** | 3 | 2 | 1 | 1 | 1 | | 2 | 1 | 2 | 1 |
| **Total** | 15 | 10 | 7 | 5 | 7 | 2 | 9 | 5 | 8 | 6 |
| **Average** | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |

**COURSE OUTLINE**

| S.No | Content | No of hours |
|---|---|---|
| **Unit I** | **Digestive System** Structure and functions of salivary glands, oesophagus, stomach, liver, pancreas, small intestine and large intestine. Process of digestion in the mouth, stomach. Digestion and absorption in small intestine and large intestine. Movements of the GI tract | **20** |
| **Unit II** | **Excretory System** Kidney - Structure and functions, structure of nephron, Formation, composition of urine and micturition. Renal regulation of acid base balance | **15** |
| **Unit III** | **Reproductive System** Anatomy of male and female reproductive organs, menstrual cycle, maturation of sex cells, conception, pregnancy, parturition, physiology of lactation. | **20** |

| | | |
|---|---|---|
| **Unit IV** | **Endocrine System**<br>Pituitary, thyroid, parathyroid, adrenal and sex glands - Structure, Function and feed back mechanism. Hypo and hyper activities | **20** |
| **Unit V** | **Sense organs**<br>Structure of eye and Physiology of vision, Structure of ear and Mechanism of Hearing, Structure of Tongue and sensation of taste, Structure of nose and sensation of smell, Structure and function of skin | **15** |

**REFERENCE**


1. Chatterjee, C.C., 2016, Human Physiology, Vol. 1 and 2. CBS publishers & distributors Pvt Ltd, Calcutta.
2. Ganong, F.W., 2019, Review of medical physiology, Vol. 1 and 2. Tata McGraw Hill Education
3. Guyton, H.C., 2015, Textbook of medical physiology, W.B. Saunders and Co,
4. Ross and Williams (2000) Anatomy and physiology, Churchill Livingston, London
5. VidyaRatan (2004), Handbook of Human Physiology, Jaypee Bothers Medical publishers (p) ltd, New Delhi

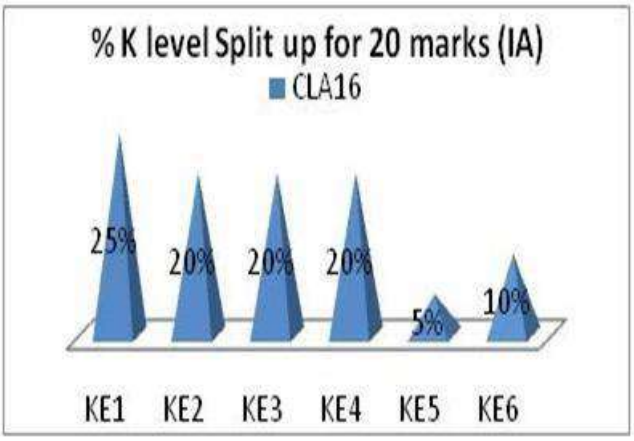

**Website**

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

## ASSESSMENT PATTERN

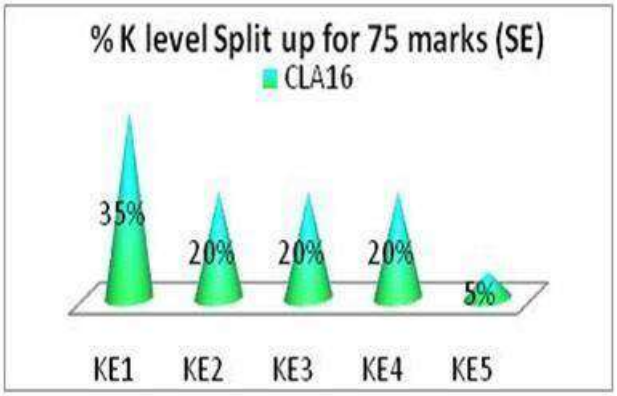
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 3 | 1 | | 1 |
| Understand (4) | 1 | 0 | | 3 |
| Apply (4) | 1 | 1 | | 2 |
| Analyse (4) | 0 | 1 | | 2 |
| Evaluate (1) | 1 | 0 | | 1 |
| Create (2) | 0 | 2 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **35%** |
| Understand | 20% |
| Apply | 20% |
| Analyze | 20% |
| Evaluate | 5% |



# BASICS IN FOOD, NUTRITION AND HEALTH

**SEMESTER: III** **CODE NO:HSNM5**
**COURSE NO:NME I** **CREDIT: 2**

**LEARING OBJECTIVES**

To enable the students to

1) Learn the fundamentals in Food Science.
2) Understand the role of nutrients and functional foods in health.

**COURSE OUTCOMES**

**Knowledge level - K1 (Remember), K2 (Understand), K3 (Apply), K4 (Analyze), K5 (Evaluate), K6 (Create).At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOME | K levels |
|---|---|---|
| **CO1** | **Identify** foods with respect to their Food Groups. **Demonstrate** an understanding of the relationship between food, nutrition and health. **Recall** the list of foods and its varieties from different food groups ( Prepare list of foods according to its food groups) {PO3} | **K1**<br>**K2**<br>**K3**<br>**K4** |
| **CO2** | **Recall** the functions of foods. **Organise** the components of a balanced diet. **Demonstrate** application of My plate concept in meal plans. (Prepare a list of balanced diet recipes and prepare a nutritive value chart of food items) {PO3, PO7} ( Lecture Video: https://www.youtube.com/watch?v=J1hmmy1OB4 followed by discussion) {PO9, PO10}. | **K1**<br>**K2** |
| **CO3** | **Define** the functions and dietary sources of macro nutrients-carbohydrates, lipids and proteins. **Outline** deficiency sign and symptoms of protein energy malnutrition and its **criteria** to measure its symptoms (Lecture Video: https://www.youtube.com/watch?v=C3wDKo1FZD4 followed by discussion) {PO9, PO10}. (Lecture Video: https://www.youtube.com/watch?v=E4W2DUtR988 followed by discussion) {PO9, PO10}. Group discussion on the signs and symptoms of the protein energy malnutrition. {PO 3} | **K1**<br>**K2**<br>**K5** |

| | | |
|---|---|---|
| **CO4** | **List** the functions, dietary sources of micronutrients - fat and water soluble vitamins, minerals. **Relate** the symptoms with deficiency conditions. **Examine** the electrolyte balance in the body. **Select** the different fat soluble and water soluble foods and its benefits (Lecture Video: https://www.youtube.com/watch?v=Cx62qJY36zQ followed by discussion) {PO9, PO10}. (Prepare a PPT about fat and water soluble vitamins / minerals) {PO7}. | **K1**<br>**K2**<br>**K3**<br>**K4** |
| **C05** | **Recall** the importance of functional foods and classify functional foods. **Relate and explain** in detail the medicinal functions of different variety of spices used in cooking. **Develop** a list of functional foods with its benefits. **Compare** the benefits of different types of functional foods. **Choose** the spices with more medicinal benefits and explain its usage in cookery ( Prepare list of functional foods and discuss about its benefits) {PO 5, PO10}. ( Present the list of spices and its medicinal values by any one method of visual aids) {P05, PO10}. | **K1**<br>**K2**<br>**K3**<br>**K4**<br>**K5**<br>**K6** |

| **CO/PO (GC/GMEETPO7)** | **PO** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1 Disciplinary Knowledge and skills** | **2 Skilled Communicator** | **3 Critical thinker and problem solver** | **4 Sense of inquiry** | **5 Team player/worker** | **6 Skilled project manager** | **7 Digitally Efficient** | **8 Ethical awareness / reasoning** | **9 National and international perspective** | **10 Lifelong learners** |
| **CO1** | 3 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 |
| **CO2** | 3 | 1 | 1 | 1 | 1 | | 2 | 1 | 2 | 1 |
| **CO3** | 3 | 1 | | 1 | 2 | | 1 | 2 | 2 | 1 |
| **CO4** | 3 | 1 | 1 | 1 | 1 | | 2 | 1 | 1 | 1 |
| **CO5** | 3 | 1 | | 1 | 1 | 1 | 2 | 1 | 2 | 1 |
| **Avg** | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 |
| **Tot** | 15 | 5 | 2 | 5 | 6 | 1 | 8 | 6 | 8 | 5 |

**COURSE OUTLINE**

| S.No | THEORY | HOURS |
|---|---|---|
| 1 | **UNIT I :Basic concepts in food and nutrition**<br>c. Basic terms used in study of food and nutrition<br>d. Relationship between food, nutrition and health. | 2 |
| 2 | **UNIT II :Basics in food science**<br>a. Illustration of food groups using My Plate<br>b. Functions of food<br>c. Balanced Diet | 3 |
| 3 | **UNIT III:Macro Nutrients - Functions, Dietary Sources**<br>a. Carbohydrates<br>b. Lipids<br>c. Proteins<br>d. Brief note on PEM. | 4 |
| 4 | **UNIT IV: Micro Nutrients – Dietary Sources, Functions & Deficiency (In brief)**<br>a. Fat soluble vitamins-A, D, E and K<br>b. Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C<br>c. Minerals – calcium, iron and iodine<br>d. Electrolyte – Potassium and sodium | 4 |
| 5 | **UNIT V:Role of food as medicine**<br>a. Importance and classification of functional foods<br>b. Medicinal functions of spices and Uses in cookery. | 2 |

**REFERENCES**


1. Srilakshmi . B (2018) Food Science, New Age international (p) limited ,Chennai
2. Srilakshmi . B (2014) Dietetics, New Age international (p) limited ,Chennai
3. Bamji MS, Krishnaswamy K, Brahmam GNV (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd.
4. Wardlaw and Insel MG, Insel PM (2004). Perspectives in Nutrition, Sixth Edition. Mosby. 5. Chadha R and Mathur P (eds). Nutrition: A Lifecycle Approach. Orient Blackswan, Delhi. 2015
6. Davidson S.R. et al. 1975. Human Nutrition and Dietetics. London, ELBS.
7. Wildman., 2000, Handbook of Nutraceuticals and Functional Foods, CRC press.

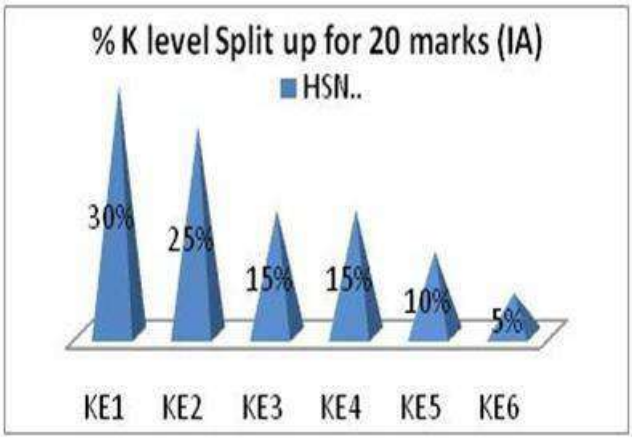
**WEBSITES**

www.nutrition.org.uk
www.nal.usda.gov/fnic/foodcomp/search
www.fda.org

## ASSESSMENT PATTERN

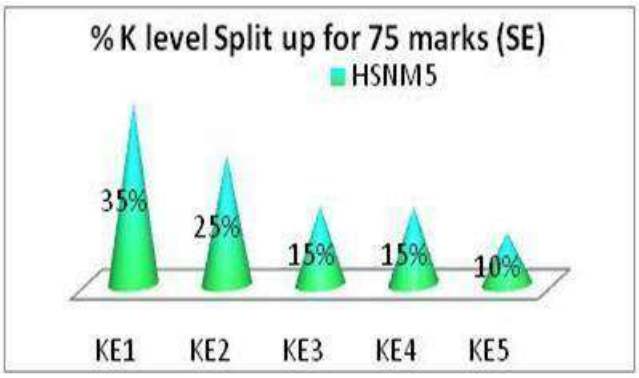
### CIE- Continuous Internal Evaluation (25 Marks)

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (6) | 2 | 2 | | 2 |
| Understand (5) | 1 | 0 | | 4 |
| Apply (3) | 1 | 1 | | 1 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (2) | 1 | 0 | | 1 |
| Create (2) | 0 | 1 | | 0 |




### ESE- Semester End Examination (75 Marks; weightage 75 %)

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **35%** |
| Understand | 25% |
| Apply | 15% |
| Analyze | 15% |
| Evaluate | 10% |



# FOOD SAFETY AND HYGIENE

**SEMESTER: IV** **CODE NO:HSNM6**
**COURSE NO:NME II** **CREDIT: 2**

**LEARNING OBJECTIVES**

To enable the students to

1. To learn safe food handling practices.
2. To know the importance of maintaining personal hygiene
3. To know the prevailing standards in quality control

**COURSE OUTCOMES:**

**Knowledge level - K1(Remembering) ,K2(Understanding),K3(Applying) ,K4(Analyzing) , K5(Evaluating) K6(Creating), At the end of the Course, the Student will be able to:**

| CO | COURSE OUTCOME | K Level |
|---|---|---|
| CO1 | **Define** the basic concepts of environmental hygiene, **List** various waste disposable techniques, **Identify** the techniques adopted for disposal of different categories of waste, **Analyze** the effect of improper lighting facility on environmental hygiene, **Understand** the importance of pure water supply, **Activity** 1) Submission of assignment on environmental hygiene 2) Question bank preparation3) Lecture video and discussion on waste disposable techniqueshttps://youtu.be/BF-jiIkyxs4**PO2, PO3, PO4, PO7, PO8, PO9,PO10**} | K1, K2, K3, K4 |
| CO2 | **Remember** the basic concepts of safe food handling practices, **Describe** the different food handling techniques to be followed from procuring to cleaning, **Apply** safe food handling techniques at household level, **Compare** different detergents and its suitability for cleaning the equipments **Activity-** 1) Submission of assignment on safe food handling practices 2) Lecture video on sanitation https://youtu.be/BFABjcFD8IM3) Discussion on cleaning procedures of equipment –http://epgp.inflibnet.ac.in/Home/DownloadPO2, PO3, PO7, PO8, PO9,PO10 | K1, K2, K3, K4 |
| CO3 | **Define** personal hygiene, **illustrate** and **understand** the personal hygienic practices to be followed by the food handlers, **Demonstrate** the hand washing procedure {**Activity** | K1, K2, K3, K4, K6 |

| | | |
|---|---|---|
| | 1) Submission of assignment on personal hygienic practices to be followed by the food handlers<br>2) Discussion using Module F02FQ07 - Personal hygiene http://epgp.inflibnet.ac.in/Home/Download<br>3) Preparation of models (chart/posters/video)– personal hygienic practices (Group) and submission by gmail (PO2, PO3, PO5,PO6, PO7, PO8, PO9,PO10) | |
| CO4 | **Define** Hazard**, classify** the types of hazard, **Define** food adulteration, **Explain** the methods involved in testing food adulterants and toxic substances, **Apply** the methods to **test** the presence of food adulterants, **evaluate** the food samples , {**Activity**<br>1) Submission of assignment onmethods involved in testing food adulterants and toxic substances,<br>2) Video streaming-chemical contamination https://youtu.be/bMv8ZrzAJPQ, http://epgp.inflibnet.ac.in/Home/Download<br>3) Demonstrate simple tests to find out the food adulterants- individual (group)<br>4) Submission of report on detecting adulterants in food pdf format (group) to mail PO2, PO3,PO5,PO6, PO7, PO8, PO9,PO10 | K1, K2, K3, K4, K5 |
| CO5 | **Define** food safety education **and illustrate** its objectives, **Identify and apply** the golden rules of food safety a household level, **Outline** the training schedule for food safety, **understand and explain** about HACCP<br>**(Activity**-<br>1) submission of assignment on food safety education<br>2) discussion on module 1459332775et39HACCPhttp://epgp.inflibnet.ac.in/Home/Download<br>3) Video Lecture on food safety training -https://youtu.be/FxPaYkBUdmo and Group Discussion (PO2, PO5 PO7, PO8, PO9,PO10) | K1, K2, K3 |

| CO/PO (GC/GMEET-PO7) | PO | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Disciplinary Knowledge and skills | 2 Skilled Communicator | 3 Critical thinker and problem solver | 4 Sense of inquiry | 5 Team player/worker | 6 Skilled project manager | 7 Digitally Efficient | 8 Ethical awareness / reasoning | 9 National and international perspective | 10 Lifelong learners |
| **CO1** | 3 | 1 | 2 | 1 | | | 1 | 1 | 1 | 1 |
| **CO2** | 3 | 1 | 1 | 1 | | | 1 | 1 | 2 | 1 |
| **CO3** | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| **CO4** | 3 | 1 | 1 | | 2 | 1 | 1 | 1 | 1 | 1 |
| **CO5** | 3 | 1 | 1 | | 1 | | 1 | 1 | 2 | 1 |
| **TOT** | 15 | 5 | 6 | 3 | 4 | 2 | 6 | 5 | 7 | 5 |
| **AVG** | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**COURSE OUTLINE**

| S. No | Content | No of hours |
|---|---|---|
| **Unit I** | **Environmental Hygiene**<br>a. Site, structure, ventilation, lighting<br>b. Water supply and waste disposal. | **3** |
| **Unit II:** | **Safe food handling**<br>a. Safety in food procurement, storage<br>b. Food handling,preparation, serving and clearing at commercial food service establishment. | **2** |
| **Unit III** | **Personal hygiene**<br>a. Importance of personal hygiene of food handlers<br>b. Personal hygienic practices | **2** |
| **Unit IV** | **Hazard and Food adulteration**<br>a. Meaning and types of Hazard<br>b. Food adulteration, methods of evaluation of food adulterants and toxic constituents. | 3 |

| | | |
|---|---|---|
| **Unit V** | **Food safety education and Applications of HACCP**<br>a. Definition and Objectives of food safety education, Golden rules of food safety<br>b. Teaching methods, training schedule<br>c. Principles of HACCP in food safety.(5 hours) | **5** |
| | | **15** |

**REFERENCES**


1 Jacob, M. 1989. Saffe food handling, A training guide for manager, WHO, Geneva
2 Hobbs, B C and Gilberth R J 1978 Food poisoning and Hygiene ELBS London
3 Longree K 1967 Quality food sanitation, Interscience publishers, New York
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5 Nambiar. V., 2004. Food Contamination and Safety, Anmol Publication Pvt.Ltd. New Delhi.
6 Sethi, M., 2016. Institutional Food Management, New Age International Publishers Ltd, New Delhi.

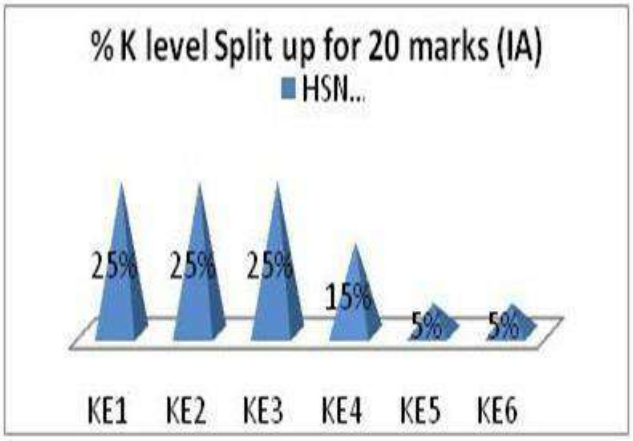

**WEBSITES**

1. http://www.fao.org
2. http://www.fssai.gov.in/
3. http://www.medindia.net
4. http://www.foodsafety.unl.edu/
5. **https://youtu.be/uFf0zxQ3rBU**
6. http://epgp.inflibnet.ac.in/Home/Download

# ASSESSMENT PATTERN

**CIE- Continuous Internal Evaluation (25 Marks)**

| Bloom's Taxonomy | Test | Assignment | Attendance | Model Exam |
|---|---|---|---|---|
| **Total (25)** | **5** | **5** | **5** | **10** |
| Remember (5) | 2 | 1 | | 2 |
| Understand (5) | 1 | 0 | | 4 |
| Apply (5) | 2 | 2 | | 1 |
| Analyse (3) | 0 | 1 | | 2 |
| Evaluate (1) | 0 | 0 | | 1 |
| Create (1) | 0 | 1 | | 0 |




**ESE- Semester End Examination (75 Marks; weightage 75 %)**

| Bloom's Taxonomy | Weightage % |
|---|---|
| Remember | **30%** |
| Understand | 25% |
| Apply | 25% |
| Analyze | 15% |
| Evaluate | 5% |