QUEEN MARY'S COLLEGE (AUTONOMOUS)

Chennai - 600 004

POST GRADUATE DEPARTMENT OF HOMESCIENCE

M.Sc. HOME SCIENCE – FOOD SERVICE MANAGEMENT AND DIETETICS

CO-K, PO - CO MAPPED SYLLABUS

2021-22 onwards

QUEEN MARY'S COLLEGE (A), CHENNAI – 4
DEPARTMENT OF HOME SCIENCE
BOARD OF STUDIES (2021-2022)
MINUTES OF THE BOARD MEETING HELD ON 18.3.2021
REVISION OF PG SYLLABI

The board of studies meeting was held on 18.3.2021. The proposed new syllabi for all three PG courses- **M.Sc. Home science- Foods and Nutrition**, **M.Sc. Home Science- Food Service Management and Dietetics and M.Sc. Home Science- Family Resource Management** were presented to the board members.

CHANGES MADE

- The syllabi of all three courses were revised and updated.
- Mapping of the PG syllabi for all three courses were done in accordance to LOCF, K, CO, PO and PSO.

Specific changes made in the M.Sc. Home Science- Food Service Management and Dietetics course:

1. Nutrition care process and Diet Counselling Unit II- Inclusion of pros and cons of keto diet, Mediterranean diet, intermittent fasting, paleo diet, atkins diet and vegan diet

2. Quantity Food Production paper in semester IV for II M.Sc. FSMD is shifted to semester III

3. Nutrition care process and Diet Counselling in semester III for II M. Sc FSMD is shifted to semester IV.

4. Public Health Nutrition Inclusion of SARS, COVID, Ebola and Swine flu in II unit

5. Inclusion of Obesity, Cardiovascular Diseases and Diabetes in Unit II Non communicable diseases

6. Research Methodology Inclusion of Plagiarism, Ethical reporting of research results, Protecting the rights and welfare of research participants.

7. In Therapeutic Dietetics sub topic b from unit I was shifted to Unit II under liver disease and consequences of alcohol consumption was also added under the same topic. In Unit II under Gall bladder Cholangitis was added. In Unit III sodium and potassium exchange list was added under Kidney. In Unit IV consequences of lifestyle and surgery were added. In Unit V chemotherapy, radiotherapy, surgery was included.

8. In Therapeutic Dietetics Practical all the disorders were compiled and divided into five units. Planning and preparation of diets for four disorders namely Gout was included in Unit II, Cholelithiasis was included in Unit III. Obesity was included in Unit IV and Pancreatitis was included in Unit V.

QUEEN MARY'S COLLGE (AUTONOMOUS) CHENNAI-600 004

DEPARTMENT OF HOME SCIENCE

BOARD OF STUDIES

The board of studies of the department of Home Science held on 18.03.2021. The board of members were

S .no	Name	Designation	Signature
1	Dr. C. Kalaivani Ashok	**CHAIRPERSON** Associate Professor and Head Department of Home Science Queen Mary's College, Chennai - 4	C. Kalaivani Ashok 18/3/21
2	Mrs. Bavani Pazhani	**UNIVERSITY NOMINEE** Assistant Professor Department of Nutrition, Food Service Management and Dietetics Ethiraj College for Women, Chennai-8	Bavani Pazhani 18/03/21
3	Dr. Nancy Angeline Rani	**SUBJECT EXPERT** - Family Resource Management, Associate Professor and Head (UG) Department of Home Science Women's Christian College, Chennai - 6	Nancy Angeline 18/3/2021
4	Dr. A. Mary Pramela	**SUBJECT EXPERT** - Food Service Management and Dietetics Associate Professor, Department of Home Science Women's Christian College, Chennai - 6	Mary Pramela A 18/3/2021
5	Dr. Gowri Ramesh	**SUBJECT EXPERT** - Foods and Nutrition, Associate Professor, Department of Home Science Women's Christian College, Chennai - 6	Gowri Ramesh 18/3/2021
	Faculty Members		
6	Nisha Solomon	Associate Professor	Nisha Solomon 18.3.21
7	Dr. K. Kasthuri	Associate Professor	Kasthuri 18/3/2021
8	Dr. Mrs. S. Prema	Assistant Professor	S. Prema 18/3/2021
9	Dr. Mrs. S. Vijayapriya	Assistant Professor	Vijaya 18/3/2021
10	P. Muthulakshmi	Ex student	P. Muthulakshmi 18/3/21
11	S. Rubini	Ex student	Rubini 18/3/21
12	N. Sunithra.	Student	N. Sunithra
13	M. Reshma	Student	M. Reshma

QUEEN MARY'S COLLEGE (AUTONOMOUS)
CHENNAI – 600 004
PG BOARD OF STUDIES – 18-3-2021

The committee scrutinized the syllabus of M. Sc Foods and Nutrition, Food Service Management and Dietetics and Family Resource Management and the following suggestions were recommended.

- **M. Sc Food Service Management and Dietetics**

CORE PAPER
1) Therapeutic Dietetics
Unit IV – To include Bariatric surgery

Unit V- Cancer – Nutritional recommendations for feeding problems like mouth ulcer, dumping syndrome, nausea and vomiting and Impact of cancer therapy on Nutritional status was suggested.

2) Nutritional Care Process and Diet Counselling

Unit V – Survey on Proprietary products for different therapeutic conditions was suggested.

The recommendations were carried out and the syllabi are approved by the Committee

S.no	Name	Designation	Signature
	Dr. C. Kalaivani Ashok	**CHAIRPERSON** Associate Professor and Head Department of Home Science Queen Mary's College, Chennai – 4	
1	Dr. Bavani Pazhani	**UNIVERSITY NOMINEE** Assistant Professor Department of Nutrition, Food Service Management and Dietetics Ethiraj College for Women, Chennai-8	
2	Dr. Nancy Angeline Rani	**SUBJECT EXPERT** Family Resource Management, Associate Professor and Head (UG) Department of Home Science Women's Christian College, Chennai – 6	
3	Dr. A. Mary Pramela	**SUBJECT EXPERT** Food Service Management and Dietetics Associate Professor, Department of Home Science Women's Christian College, Chennai – 6	
4	Dr. Gowri Ramesh	**SUBJECT EXPERT** – Foods and Nutrition, Associate Professor, Department of Home Science Women's Christian College, Chennai - 6	
6	Nisha Solomon		
7	Dr. K. Kasthuri		
8	Dr. Mrs. S. Prema		
9	Dr. Mrs. S. Vijaypriya		

CONTENTS

LIST OF PAPERS WITH CREDITS FOR THE PROPOSED NEW SYLLABI (PG)

S. NO	SEMESTER	C /E	COURSES IN THE NEW SYLLABUS	NO. OF CREDITS	CODE	MARKS	
						EXT.	INT
SEMESTER- I							
1	I	C	SELECTED TOPICS IN FOOD SERVICE MANAGEMENT	4	PC5941	75	25
2	I	C	HUMAN PHYSIOLOGY	4	PC5942	75	25
3	I	C	ADVANCED FOOD SCIENCE	4	PC5943	75	25
4	I	C	RESEARCH METHODOLOGY	4	PC5944	75	25
5	I	C	LIFE SPAN NUTRITION	4	PC5945	75	25
SEMESTER- II							
6	II	C	FRONT OFFICE MANAGEMENT	4	PC5946	75	25
7	II	C	THERAPEUTIC DIETETICS	4	PC5947	75	25
8	II	C	THERAPEUTIC DIETETICS PRACTICAL	4	PC5948	75	25
9	II	DE	ELECTIVE I – HOSPITAL MANAGEMENT	3	PE5917	75	25
10	II	DE	ELECTIVE II – ENTREPRENEURSHIP MANAGEMENT	3	PE5918	75	25
11	II	EDE	EDE I – BASICS OF INTERIOR DECORATION (TO OTHER DEPTS)	3	PD5908	75	25
SEMESTER- III							
12	III	C	QUANTITY FOOD PRODUCTION AND SERVICE	4	PC5949	75	25
13	III	C	PUBLIC HEALTH NUTRITION	4	PC5950	75	25
14	III	C	APPLIED STATISTICS	4	PC5951	75	25
15	III	DE	ELECTIVE III – FOOD PROCESSING AND PRESERVATION	3	PE5919	75	25
16	III	DE	ELECTIVE IV- FOOD SAFETY AND QUALITY CONTROL	3	PE5920	75	25
17	III	EDE	EDE II – HOSPITAL ADMINISTRATION (TO OTHER DEPTS)	3	PD5909	75	25
SEMESTER- IV							
18	IV	C	SPORTS NUTRITION	4	PC5952	75	25
19	IV	C	FINANCIAL AND MARKETING MANAGEMENT	4	PC5953	75	25
20	IV	C	NUTRITION CARE PROCESSING AND DIET COUNSELLING	4	PC5954	75	25
21	IV	C	DISSERTATION	4	PC5955	75	25
22	IV	DE	ELECTIVE V – FOOD MICROBIOLOGY	3	PE5921	75	25

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

SOFT SKILL SUBJECTS

S.NO	SEM	TITLE OF THE PAPERS IN THE NEW SYLLABUS	NO. OF CREDITS	CODE	MARKS	
					EXT	INT
1	I	LANGUAGE LAB Soft skill - I	2	PSS15	75	25
2	II	PERSONAL SKILLS Soft skill - II	2	PSS16	75	25
3	III	SOCIAL SKILLS Soft skill - III	2	PSS17	75	25
4	IV	EMPLOYABILITY SKILLS Soft skill - IV	2	PSS18	75	25
INTERNSHIP						
1	II	INTERNSHIP	2		75	25

CHOICE BASED CREDIT SYSTEM FOR P.G

2021 - 2022

Total number of papers - 27; 91 credits

TYPE OF PAPER	NO. OF PAPERS	CREDITS PER PAPER	CREDITS
CORE	15	4	60
CORE ELECTIVE	5	3	15
OTHER DEPARTMENT ELECTIVE	2	3	6
SOFT SKILL	4	2	8
INTERNSHIP	1	2	2

- Out of 7 elective papers 5 elective papers will be offered by parent department (II, III and IV Semester)
- The remaining 2 elective papers will be offered to all Other PG students in the college (II and III Semester)
- **Week - 6 working day order Semester – 15 such weeks*

S. NO.	CORE/ELECTIVE	HRS/WEEK*	NO. OF WEEKS*	TOTAL HOURS / SEMESTER*
1	Core	06	15	90
2	Elective	04	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 2200*

QUANTIFICATION: END SEMESTER EXAMINATION

QUESTION PAPER PATTERN
(EFFECTIVE FROM THE ACADEMIC YEAR 2021 - 2022)

CORE and ELECTIVE PAPERS **Maximum Marks: 100**

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

Part – A	Part – B	Part - C
5 x 2 = 10 marks	**5 x 4 = 20 marks**	**3 x 15 = 45 marks**
Answer all the questions	**Answer all the questions**	**Answer any 3 questions out of 5**

Question	Unit
1	I
2	II
3	III
4	IV
5	V

Question	Unit
6(a) or 6(b)	I
7(a) or 7(b)	II
8(a) or 8(b)	III
9(a) or 9(b)	IV
10(a) or 10(b)	V

Question	Unit
11	I
12	II
13	III
14	IV
15	V

INTERNAL EVALUATION METHODOLOGY FOR ALL THE PROGRAMS:

- ✓ Quiz programme or e-Quiz
- ✓ Periodical class tests
- ✓ Objective type assignments
- ✓ Problem solving assignments (INDIVIDUAL / GROUP)
- ✓ Individual seminar USING **PO**WER **PO**INT
- ✓ Seminar based on lecture notes available online
- ✓ Group Discussions / Debate / Interactive Sessions
- ✓ Digital computation exercises with spreadsheet or Excel wherever possible
- ✓ Oral presentation on Topics of interest

QUANTIFICATION OF INTERNAL EVALUATION - PG 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	SEMINAR	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**

Model test for 75 marks reduced to 5 marks

RECORD	MODEL	TOTAL
20	5	25

PRACTIAL EXAM – END SEMESTER
75

Passing minimum

University Examination 50%

Aggregate (CIA+UE) 50%

Grade Points and Cumulative Grade Point Average are awarded in the mark sheet

TEACHING METHODOLOGIES ADOPTED FOR THE PG 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, M.Sc. Home Science – Food Service Management 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 through strong 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 M.Sc. Home Science – Food Service Management and Dietetics Programme, the student would be able to

- Understand the scientific principles of food processing, food safety, food production, food service management, dietetics and hospital management. **(PSO1: PO1)**
- Develop comprehensive communication and analytical skills required to serve in food industries, Food Service Units, health sectors and embark on an entrepreneurial career. (**PSO2: PO2**)
- Acquire the skill to effectively utilize ICT tools and excel in the area of personal and public health nutrition, dietetics and Food Service Management. (**PSO3: PO7**)
- Analyze and advocate dietary principles for health and disease conditions based on local and global environment. (**PSO4: PO9**)
- Excel as academicians, dieticians, food service managers and acquire skills to undertake systematic research. (**PSO5: PO10**)

PROGRAM OUTCOME (PO):

The outcome of the PG program in Home Science – Food Service Management 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 (**PO**1), enhance and explore her communication skill set (**PO**2), undergo thorough training in analyzing problems(**PO**3), motivated to learn through questions and updated topics (**PO**4),work in teams (**PO**5) to take initiatives (**PO**6), become digitally efficient (**PO**7), embrace moral values (**PO**8), be aware of the resources available to equip knowledge (**PO**9), earnest to be self-learner (**PO**10) 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 correlationof skills for the program. Any level of skill below 30 % is not correlated and left as blank.

Graduate Attributes for M.Sc. Home Science – Food Service Management and Dietetics Programme:

PO1. Disciplinary knowledge and skills: To develop a M.Sc. Home Science student who has acquired sound knowledge on the relationship between, food nutrition and health; is skillful in demonstrating the knowledge to promote health, prevent and manage disease conditions. Has in depth

knowledge in nutrition, dietetics, food service management, hospital management, entrepreneurship and related disciplines in Home Science **(PSO1)**

PO2. **Skilled communicator:** To inculcate the ability to read texts and research papers analytically and present evidence based nutritional information in layman's language for practical application to significantly improve health and wellbeing of the individual and the community. Well versed in diet counselling and disseminating knowledge to the public **(PSO2).**

PO3. **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 recommendation. To apply critical thinking in new situations**.** To handle problems related to food procurement, production, service, safety and hygiene in food service units. To plan individualized normal and therapeutic diets based on dietary principles.

PO4. **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 develops a healthy eating plan. To promote the use of locally available indigenous foods and popularize traditional eating habits.

PO5. **Team player/worker:** To impart training in order to play a significant role in as a nutritionist or dietician in the health care team. To develop leadership skills required for administration and management of food service units and dietary departments. Collaborate effectively and gain the ability to work both independently and in group.

PO6. **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. To develop managerial skills required for entrepreneurship, food service industry, hospitals and fitness centers.

PO7. **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. To effectively make use of theseskills in the hospital and hospitality industry (**PSO3**).

PO8. **Ethical awareness / reasoning:** Demonstrate professional behaviour such as being objective, unbiased and truthful in all aspects of work andavoiding unethical, irrational behaviour such as fabricating, falsifying or misrepresenting data or committing plagiarism. To commit oneself to ethical regulations and practices as nutritionists, dieticians, food service managers and hospital administrators.

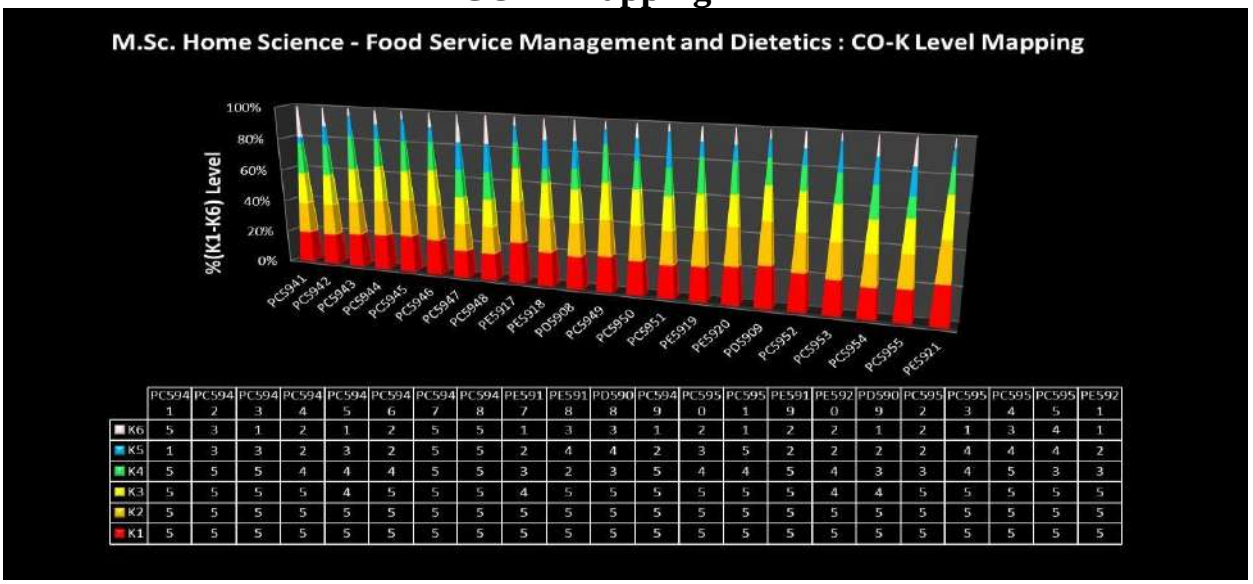
PO9. **National and international perspective:** Recognize and assess societal, environmental, health, safety, and cultural issues related to food within local and global contexts. Use e-learning materials as well execute proposals of National and International importance. (**PSO4**).

PO10. **Lifelong learners:** To build the capacity for independent learning to meet their professional and personal needs in varying environment and changing contexts (**PSO5).**

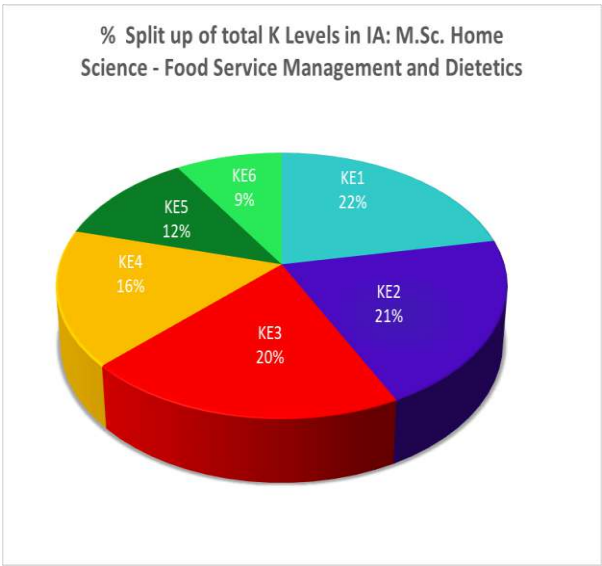
COURSE OUTCOME (CO):

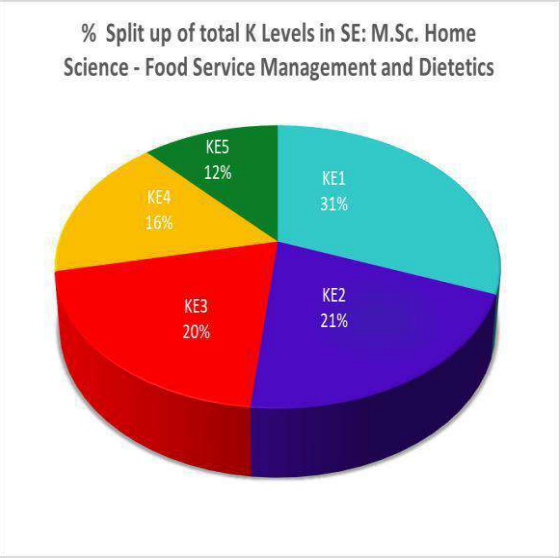
The PG Home Science – Food Service Management and Dietetics curriculum has been designed to fit thoroughly into the ideologies of Bloom's taxonomy with strong knowledge level foundation, catering to remembering and understanding of the advanced concepts in Home Science – Food Service Management and Dietetics. 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.

CO-K Mapping

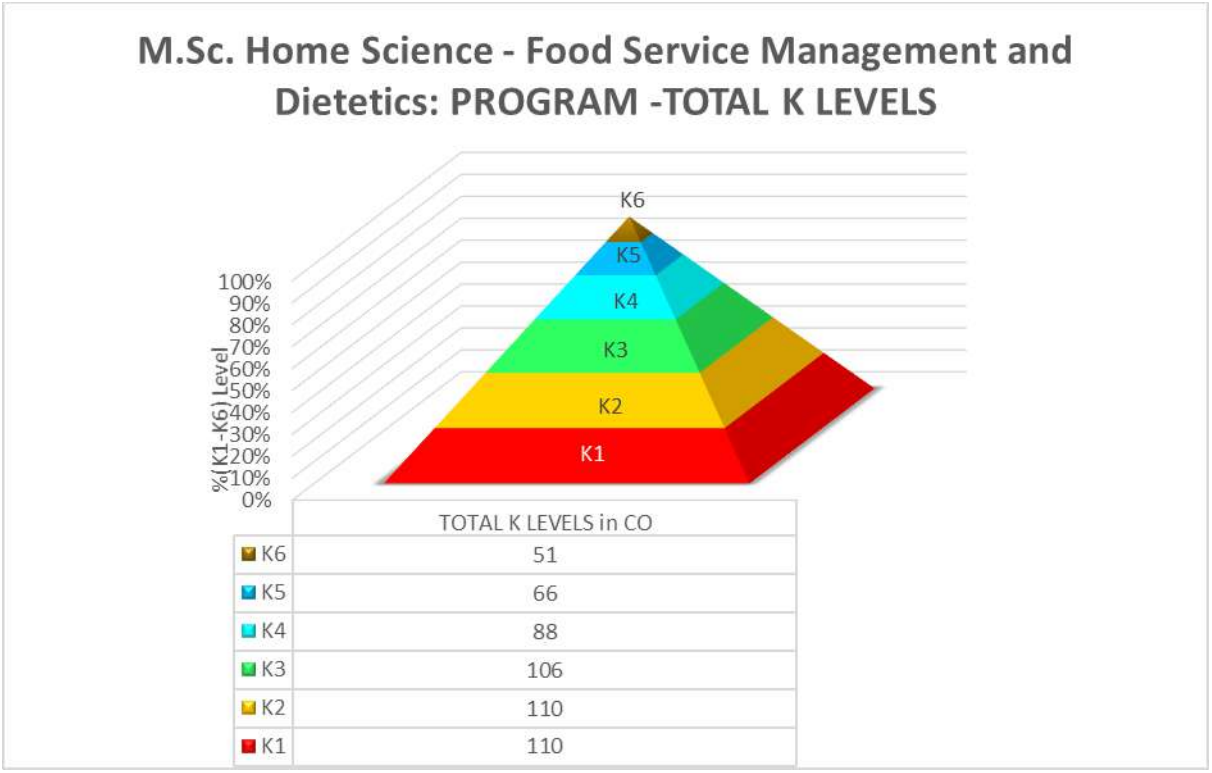


	PC594 1	PC594 2	PC594 3	PC594 4	PC594 5	PC594 6	PC594 7	PC594 8	PE591 7	PE591 8	PD590 8	PC594 9	PC595 0	PC595 1	PE591 9	PE592 0	PD590 9	PC595 2	PC595 3	PC595 4	PC595 5	PE592 1
K6	5	3	1	2	1	2	5	5	1	3	3	1	2	1	2	2	1	2	1	3	4	1
K5	1	3	3	2	3	2	5	5	2	4	4	2	3	5	2	2	2	2	4	4	4	2
K4	5	5	5	4	4	4	5	5	3	2	3	5	4	4	5	4	3	3	4	5	3	3
K3	5	5	5	5	4	5	5	5	4	5	5	5	5	5	5	4	4	5	5	5	5	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

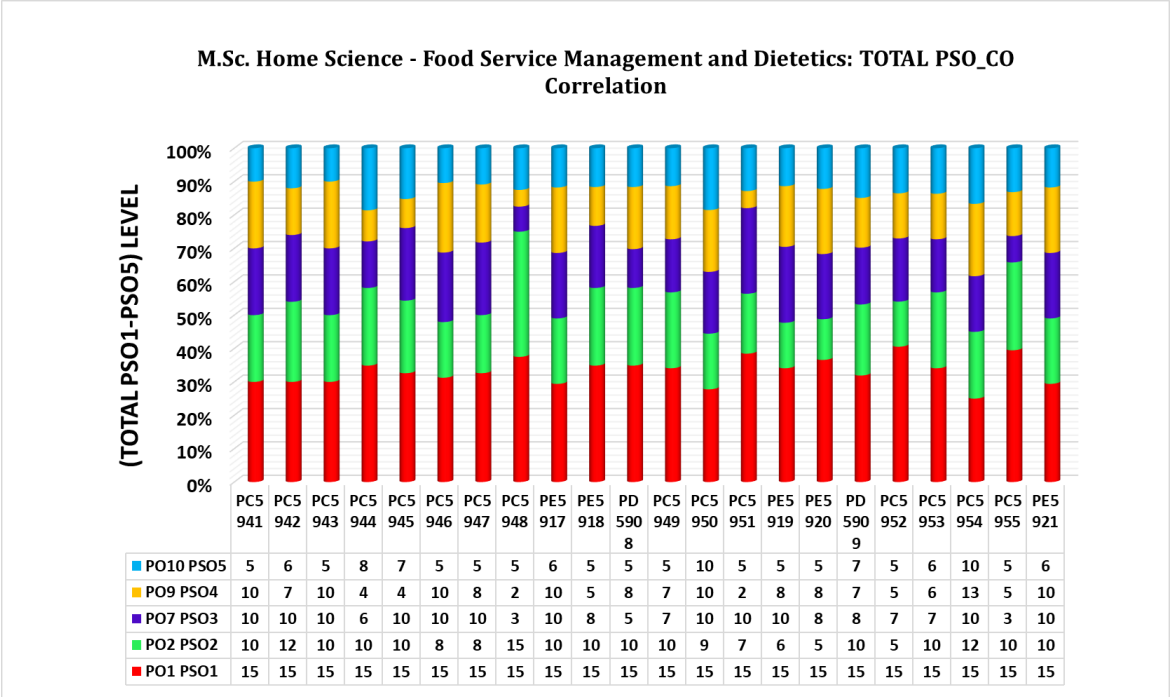


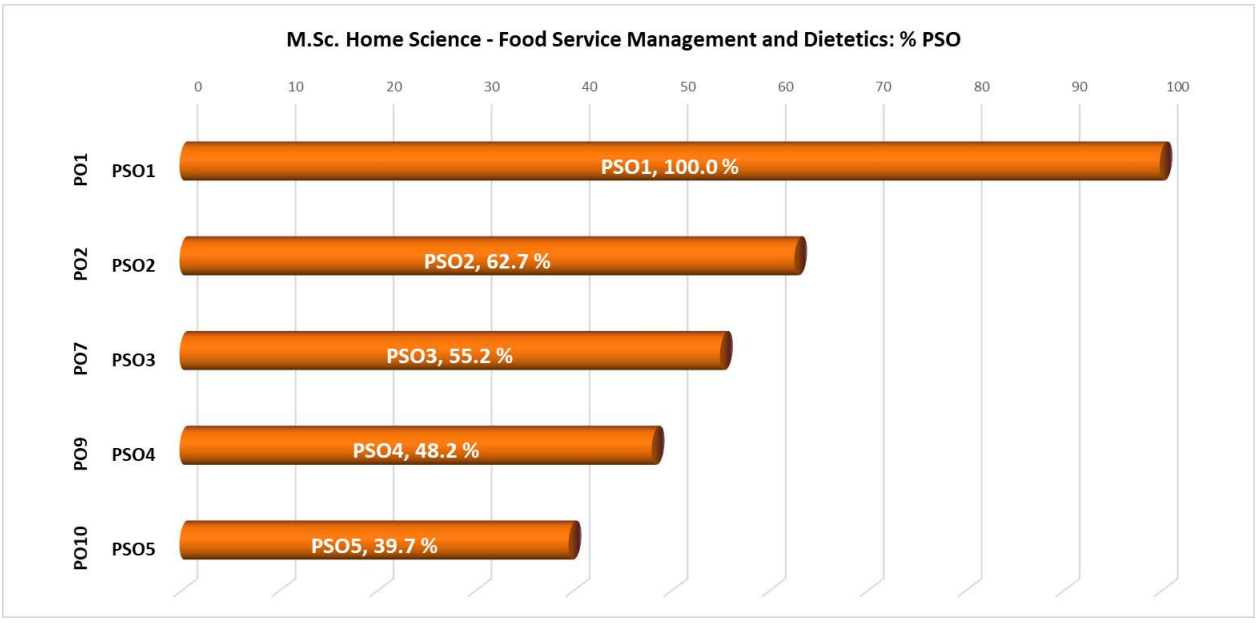


NOTE: Kindly refer Appendix for mapping and correlation details of all courses of the Program.

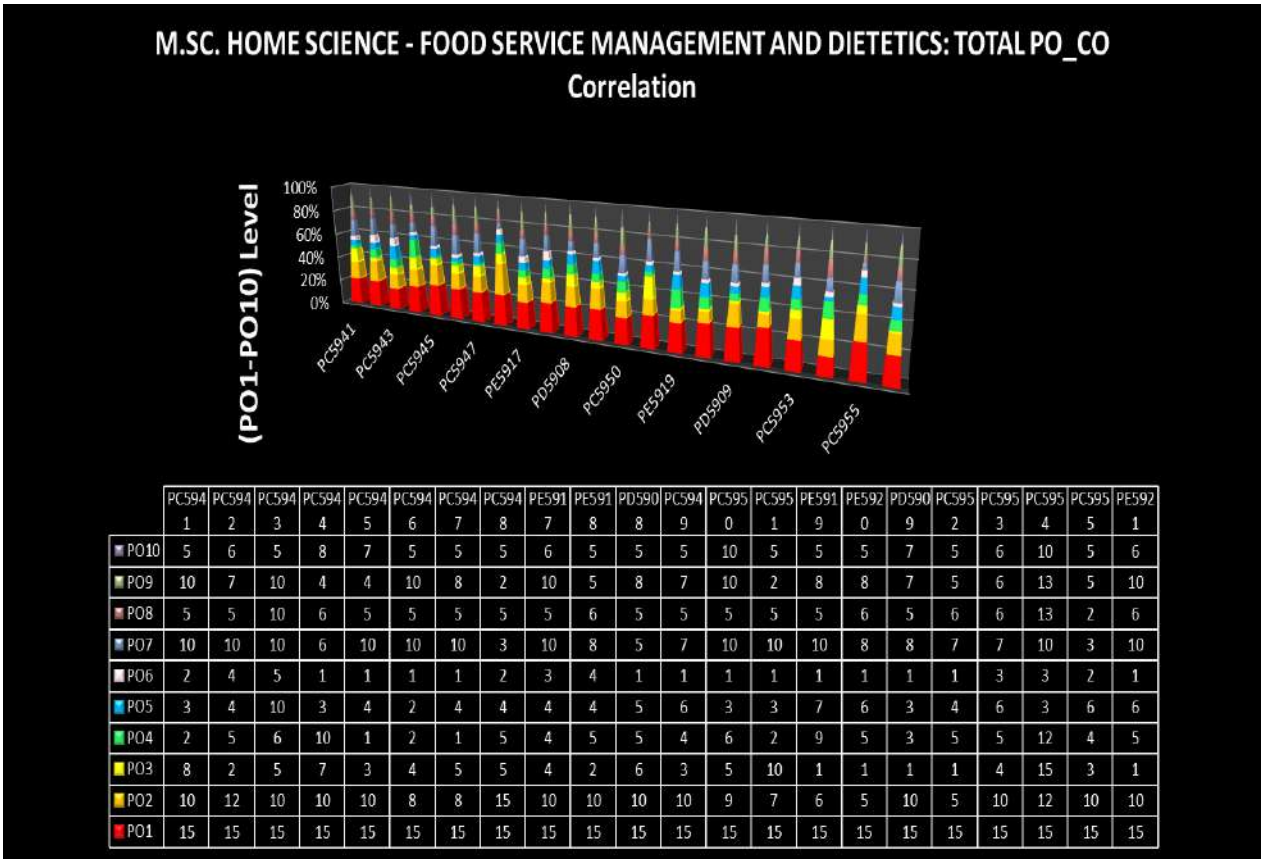


PO-PSO Mapping

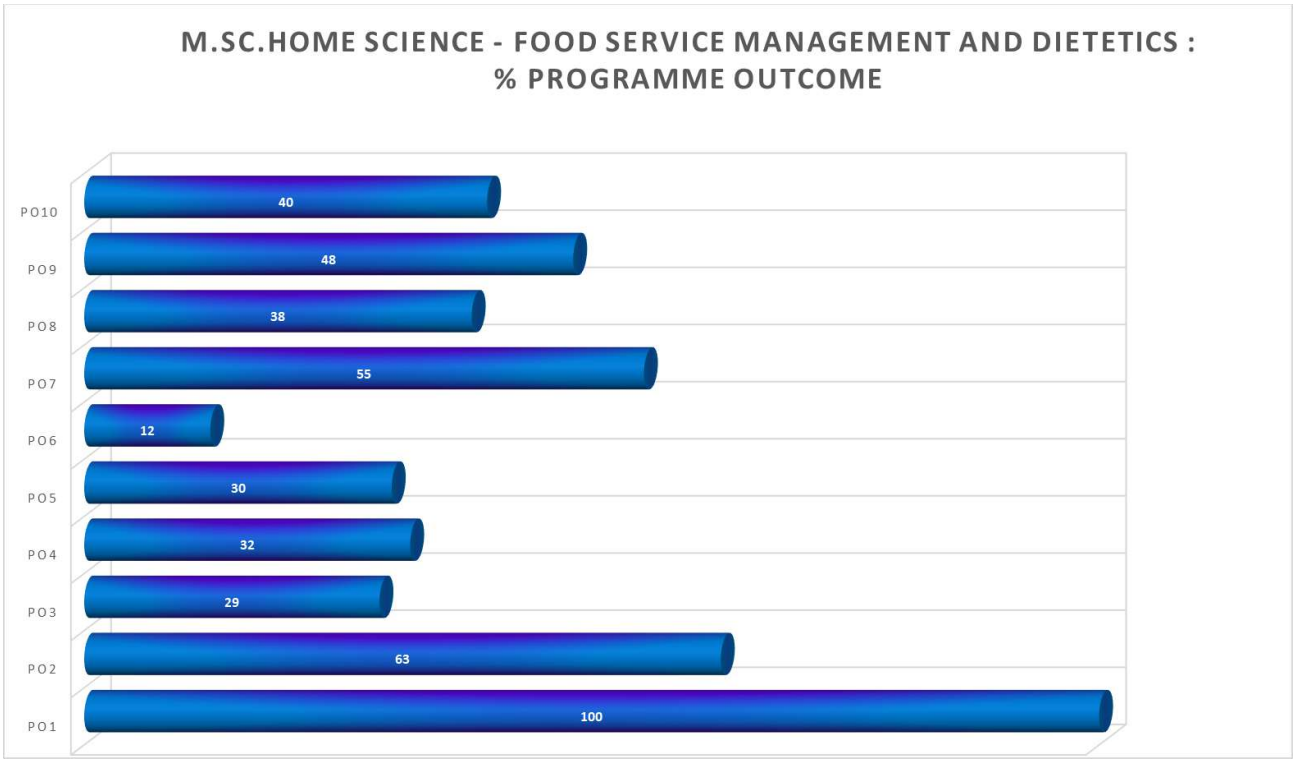




PO-CO Mapping



	PC594 1	PC594 2	PC594 3	PC594 4	PC594 5	PC594 6	PC594 7	PC594 8	PE591 7	PE591 8	PD590 8	PC594 9	PC595 0	PC595 1	PE591 9	PE592 0	PD590 9	PC595 2	PC595 3	PC595 4	PC595 5	PE592 1
PO10	5	6	5	8	7	5	5	5	6	5	5	5	10	5	5	5	7	5	6	10	5	6
PO9	10	7	10	4	4	10	8	2	10	5	8	7	10	2	8	8	7	5	6	13	5	10
PO8	5	5	10	6	5	5	5	5	5	6	5	5	5	5	5	6	5	6	6	13	2	6
PO7	10	10	10	6	10	10	10	3	10	8	5	7	10	10	10	8	8	7	7	10	3	10
PO6	2	4	5	1	1	1	1	2	3	4	1	1	1	1	1	1	1	1	3	3	2	1
PO5	3	4	10	3	4	2	4	4	4	4	5	6	3	3	7	6	3	4	6	3	6	6
PO4	2	5	6	10	1	2	1	5	4	5	5	4	6	2	9	5	3	5	5	12	4	5
PO3	8	2	5	7	3	4	5	5	4	2	6	3	5	10	1	1	1	1	4	15	3	1
PO2	10	12	10	10	10	8	8	15	10	10	10	10	9	7	6	5	10	5	10	12	10	10
PO1	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15


M.SC.HOME SCIENCE - FOOD SERVICE MANAGEMENT AND DIETETICS :
% PROGRAMME OUTCOME
PO10
PO9
PO8
PO7
PO6
PO5
PO4
PO3
PO2
PO1
40
48
38
55
12
30
32
29
63
100

SELECTED TOPICS IN FOOD SERVICE MANAGEMENT

SEMESTER : I **CREDIT 4**
PAPER NO: I **CODE NO** : PC5941

LEARNING OBJECTIVES

To enable students to

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

COURSE OUTCOMES

CO1	Recall the definition of management, Understand the principles of management, and Apply the functions of management in food service operations. Recall tools of management, Apply the tools in the administration of a food service unit. Analyse and apply the laws governing catering establishments. [PO3] Design the tangible tools of management for a food service unit. Compile literature reference for recent trends in management. [PO9] (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827)	K1, K2, K3, K4, K6
CO2	Recall the definition of recruitment and selection, Apply the steps involved in selection Understand the importance of training, Analyse the methods of training. [PO3] Evaluate the different training methods Recognize the need for performance appraisal, Identify the types of promotion and dismissal of employee's grievance and redressal. Group discussion on best method of performance appraisal. [PO5] Recall the leadership qualities, Analyse the types of leadership and describe the characteristics of a good leader. [PO3] Role play to understand the types of leadership. [PO5] Compile literature reference for recent trends in recruitment and selection. [PO9]	K1, K2, K3, K4, K5, K6
CO3	Recall and understand the importance of work simplification, Apply the methods of work improvement and Analyse the best methods of work simplification Understand and Apply the methods for work improvement study. Analyse the methods of work improvement. [PO3] Compile literature reference for recent trends in work improvement. [PO9] Group activity on best methods of work simplification [PO6] (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827)	K1, K2, K3, K4, K6
CO4	Recall the principles of cleaning and sanitation, Understand the factors that influence the cleaning process and Apply the principles of sanitation in food service operations. Analyse the methods of sanitation. [PO3] Understand the aspects of environmental hygiene and sanitation, Discuss the importance of site, structure, equipment, air light, water supply, ventilation, waste disposal, pest control. Analyse and Apply these aspects in the operation of a food service unit. [PO3] Understand the importance of Safetyand Analyse the causes and prevention of accidents. Compile literature reference for recent trends in safety and sanitation. [PO9] Discuss the importance of sanitation and implementation of covid regulation protocols in food service units [PO3]	K1, K2, K3, K4, K6
CO5	Recall the types of natural resources, Understand the methods ofconservation of natural resources- Energy conservation and water conservation. Group discussion and report writing on methods of energy conservation[PO5, PO8] (https://prezi.com/u74c9xprtf1p/water-and-energy- conservation-in-hotels/) Understand the importance of solid waste management, Analyse and Apply the various methods of waste	K1, K2, K3, K4, K6

	management. [PO3] Compile literature reference for recent trends in waste management.[PO9] (https://www.webstaurantstore.com/article/140/how-to-reduce-waste-in-restaurants.html)	

CO/PO (GC/GMEET-PO7)	PO									
	1 Disciplinary Knowledge and skills	2 Skilled Communicator	3 Critical thinker and problem solver	4 Sense of	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		2	1	2	1
CO2	3	2	1	1	2		2	1	2	1
CO3	3	2	1	1	1	1	2	1	2	1
CO4	3	2	2	1	1		2	1	2	1
CO5	3	2	1	1	2		2	2	2	1
CO-PO-Avg	3	2	1	1	2	1	2	1	2	1
CO-PO-Total	15	10	6	5	7	1	10	6	10	5

Course Outline

Unit I	**Organization and administration of food service industry** a. Definition, principles, functions of management b. Tools of management- organization chart, job description, job specification, work schedule, job analysis. c. Laws governing catering establishments	**15**
Unit II:	**Personnel Management** a. Recruitment and selection - Sources of recruitment. steps involved in selection. b. Training – Importance, methods of training. c. Performance appraisal - Promotion and dismissal of employees, grievance and redressal d. Leadership qualities - Types of leadership, characteristics of a good leader.	**20**
Unit III	**Work Improvement** a. Work simplification, motion economy, work improvement programme, Application of work improvement b. Methods for work improvement study, work sampling- pathway chart, process chart, micro motion study, chrono-cyclograph	**20**
Unit IV	**Cleaning sanitation and safety** a. Cleaning and sanitation – principles of cleaning, factors that influence the cleaning process, principles of sanitation in food service operations b. Environmental hygiene and sanitation- site, structure, equipment, air light, water supply, ventilation, waste disposal, pest control c. Safety- causes and prevention of accidents	**20**
Unit V	**Environmental Management** a. Conservation of natural resources- Energy conservation and water conservation b. Solid waste management	**15**

		90

REFERENCES

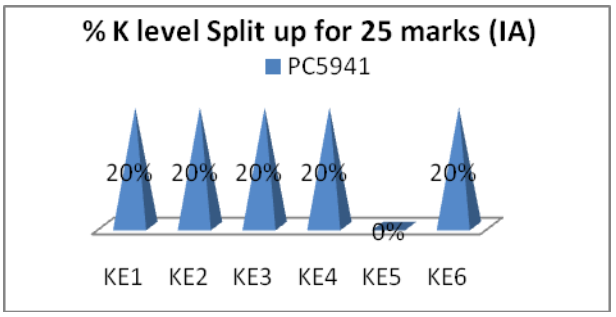
1. Dhawan.V (2005) Food Beverage Service, Noida, Frank Bros.& Company Limited.
2. Gupta .C.B(2017) Management Theory and Practice, Nineteeth Edition, New Delhi, Sultan Chand & sons.
3. Khan .M.A(1990) Concepts of Foodservice Operations and Management John Wiley & Sons, London
4. Kinton and Cessarani (1999), Theory of Catering, John Wiley & Sons, London.
5. Koschewar L. and Terrel M.E. (1961) Food Service Planning layout and Equipment, John Wiley and Sons Ltd.
6. Lewis J. M, Ronald F (1984) Food Service System Management. AVI Publishing Company.
7. Longree. K (1967) Quantity Food Sanitation, John Wiley and Sons, Icn., New York.
8. Magris, M, Canty .Mc. C and Brighton. R (1933), Introduction to catering Oxford Blackwell, Scientific publications, London.
9. Mericks,P and Jones.P (1986) The Management of Catering Operations, Holt, Pinehart and Winston publishers.
10. Sethi.M (2007), Institutional Food service, New Age Publications (p) Ltd, New Delhi.
11. Sethi.M (2007), Catering Management, New Age Publications (p) Ltd, New Delhi
12. Negi.J(2014) Professional Hotel Management, Third Edition, New Delhi, S.Chand& company private limited.
13. Palacio.J.P and Theis.M. (1994) West& Wood's Introduction to Foodservice , Eighth Edition. Merrill Education Products, New Jersey.
14. Paul M., Peter J., (1986) The Management of catering operations, Holt, Pinehart and Winston publishers.
15. West B.B. Wood L. Harger V.P. (1966) Food Service in Institutions, John Willey and Sons, Inc., New York

E-REFERENCES

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

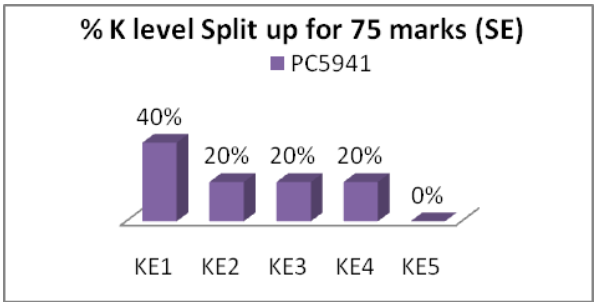
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	32%
Understand	20%
Apply	20%
Analyze	16%
Evaluate	12%



HUMAN PHYSIOLOGY

SEMESTER I **CREDIT 4**

PAPER NO : II **CODE : PC5942**

OBJECTIVES

To enable the students to

1. Learn the anatomy and physiological functioning of the various systems in the body.
2. Understand the integrated functioning of various systems in the body.

COURSE OUTCOMES

CO 1	State the concept of hemostasis, Describe the structure and functions of cardiovascular system, interpret the normal electrocardiogram and identify abnormal ECG, Analyze the factors affecting blood pressure. Explain the concept of the immune system and evaluate the effects of malnourishment on the immune system (Assignment, seminar, submission of question bank – group activity, http://epgp.inflibnet.ac.in/Home/Download) {PO2, PO4, PO5, PO7, PO8, PO9, PO10}	K1, K2, K3, K4, K5
CO 2	Recall the anatomy and functions of Gastro Intestinal system, Recognize the role of each organ in the process of digestion Identify the phases of gastric secretion in the process of digestion, Understand 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 Activity: Assignment, seminar (Individual-ppt), Discussion onAnimated video lecture about digestion of food. (http://epgp.inflibnet.ac.in/Home/Download) **Develop** models of the digestivesystem (chart making/poster/collage and Group report to be submitted by email), (PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO10)	K1, K2, K3, K4, K6
CO 3	List the functions of Excretory system, Describe the structure of excretory organs, Explain the mechanism of urine formation, Explain the role of kidney in maintaining acid base balance Understand the process of gaseous transport in lungs and tissues, Describe the mechanism of respiration and its regulation, discuss skin as an Excretory organ, Examine the role of skin in maintaining body temperature. {Activity: Assignment, seminar, individual power point presentation, (video lecture http://epgp.inflibnet.ac.in/Home/Download)} (PO2, PO7, PO8, PO9)	K1, K2, K3, K4, K6
CO 4	Recall the basic concepts of Nervous system, describe the parts and list the functions of CNS and ANS, Outline the functions of Endocrine glands, Identify the endocrine hormones, categorize the hypo and hyper activity of endocrine glands, compare and explain the effects of stress on different body systems. {Activity: Assignment, seminar (http://epgp.inflibnet.ac.in/Home/Download) (https://youtu.be/8ayBkYOAGBA) (https://youtu.be/KnHeX6fZBW4) Video lecture on the effects of stress on different body systems – Group discussion on journal articles, prepare and submit the review article by email} (PO2, PO3, PO5, PO6, PO7, PO8 PO9, PO10)	K1, K2, K3, K4, K5, K6
CO 5	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, Evaluate the physiological changes during Pregnancy and Lactation. {Activity: Assignment, seminar, Individual PPT, video lecture, http://epgp.inflibnet.ac.in/Home/Download question bank – group activity} (PO2, PO4, PO7, PO8, PO9)	K1, K2, K3, K4, K5

CO/PO (GC/GMEET-PO7)	PO									
	1 Disciplinary Knowledge and skills	2 Skilled Communicator	3 Critical thinker and problem solver	4 Sense of	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	3	1	1	1	2	2	1	1	1
CO3	3	2		1			2	1	1	1
CO4	3	3	1	1	1	2	2	1	3	2
CO5	3	2		1	1		2	1	1	1
CO-PO-Avg	3	2	1	1	1	1	2	1	1	1
CO-PO-Total	15	12	2	5	4	5	10	5	7	7

Course Outline

S. No	Content	No of hours
Unit I	**Cardiovascular and Immune system** a. Hemostasis b. Conduction system, ECG, Cardiac cycle, Action of heart and its regulation, factors influencing blood pressure and regulation of blood pressure c. Immune system: Classification, Cell mediated and humeral immunity- impact of malnourishment.	**20**
Unit II:	**Gastro-Intestinal system** a. Digestion and absorption of carbohydrate, protein and fat, Gastro-intestinal movements and their regulation.	**15**
Unit III	**Excretory System** a. Kidney – Renal functions Micturition, Urine formation,Mechanism of excretion of concentrated and dilute urine, Role of kidney in maintaining acid-base balance b. Skin – Excretory function, Regulation of body temperature c. Lungs – Gaseous transport in lungs and tissues, Regulation of respiration	**20**
Unit IV	**Regulatory systems** a. Nervous system – CNS, ANS-Parts and functions. b. Endocrine system – Regulatory functions and disorders of pituitary, thyroid, parathyroid, adrenal glands and pancreas c. Effect of stress on nervous, endocrine, digestive, cardiovascular and respiratory systems	**25**
Unit V	**Reproductive system** a. Male reproductive system – Spermatogenesis, Male sex hormones b. Female reproductive system – Role of hormones in ovulation, menstruation, pregnancy and lactation	**10**
		90

REFERENCES

1. Ganong, 1995, Review of Medical physiology, Prentice Hall international, London
2. Guyton, 1991, Human physiology and Mechanism of diseases, W.B Saunders and co. London

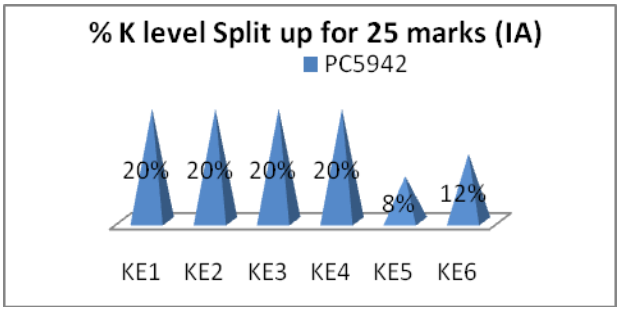
3. Guyton A.C. and Hall J.E., 2001, Pocket companion to Text book of Medical Physiology, 10th edition, W.B Saunders company, Philadelphia
4. Elaine N. Marieb, Anatomy and physiology, The Benjamin/Cummings Publishing company Inc., New York
5. Mcknaught and Callander, Illustrated physiology, W.B Saunder and company, Philadelphia
6. Ross and Williams (2000) Anatomy and physiology, Churchill Livingston, London
7. Tortora J.G and Anagnostakos N.P, 1991, Principles of anatomy and Physiology, Canfield Press, San Francisco

Website

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

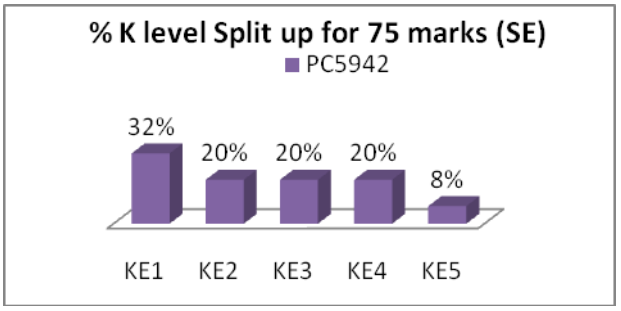
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	32%
Understand	20%
Apply	20%
Analyze	20%
Evaluate	8%



ADVANCED FOOD SCIENCE

SEMESTER: I **CREDIT: 5**
PAPER NO: III **CODE: PC5943**

OBJECTIVES:

To enable the students to

1.Understand the role of ingredients in various food preparation
2. Gain knowledge on various natural food processes
3.Learn different methods of cooking

COURSE OUTCOMES

At the end of each unit in the course, the student will be able to:

CO1	**Explain** and **understand** the process of gelatinization {youtube: DrB0501-Gelatinization (PO9)}, dextrinisation and syneresis. **Analyse** the various factors influencing cooking quality of cereals. Understand the factors affecting gluten formation. **Demonstrate** the role of ingredients in baking. **Apply** techniques in the preparation of bread, cakes, cookies and pastry. {Youtube: https://harvard.link/o2tx4. (PO4, PO9)}. {Seminar topics to be presented (PO2), Discussion & Question session after each seminar (PO3 & PO4)}	**K1, K2, K3, K4, K5**
CO2	**Understand** the composition of meat, poultry and fish. **Analyse** the factors affecting foam formation and coagulation {group video presentation (PO5)}. **Demonstrate** the properties of milk and its role in cookery {review research articles - Pubmed.com and AJCN.com (PO9)} {Seminar presentation (PO2) followed by discussion & question session (PO3 & PO4)}	**K1, K2, K3, K4, K5**
CO3	**Remember** the chemical components of vegetables and fruits (review research articles - Pubmed.com and AJCN.com (PO9). **Explain** the process browning reaction {group video presentation (PO5)} and **Analyse** the effect of cooking vegetables & fruits. {Seminar presentation (PO2), followed by discussion & question session (PO3 &PO4)}	**K1, K2, K3, K4**
CO4	**Demonstrate** an understanding of the role of fat in cookery (group video presentation (PO5) and **Analyse** effect of heating on fats and oils. **Explain** winterization, hydrogenation, rancidity. {review research articles - Pubmed command AJCN.com (PO9). Seminar presentation (PO2), followed by Discussion & Question session (PO3 &PO4)}	**K1, K2, K3, K4**
CO5	**Practical** – **Remember** and **apply** the baking techniques (youtube: Everyday food) - **Understand the** different flours and when to **use** them (PO3) in the preparation of puffs, cakes and cookies. **Demonstrate** egg whipping quality, smoking temperature of different fats and oils and stages of sugar cookery. **Apply** the knowledge of sugar cookery in the preparation of mysore pak and groundnut toffee. **Acquire** the skill to prepare mayonnaise, paneer and custard. (Submit the recipes followed by group discussion & question session) {PO2, PO5, PO3, PO4}.	**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	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	2	2	2	1
CO2	3	2	1	1	2	1	2	2	2	1
CO3	3	2	1	1	2	1	2	2	2	1
CO4	3	2	1	1	2	1	2	2	2	1
CO5	3	2	1	1	2	1	2	2	2	1
CO-PO-Avg	3	2	1	1	2	1	2	2	2	1
CO-PO-Total	15	10	5	6	10	5	10	10	10	5

Course Outline

S.NO	CONTENT	NO. OF HOURS
UNIT I	**Cereals and Legumes** a. Cereal cookery - gelatinization, dextrinisation and syneresis, factors affecting cooking quality of cereals. b. Batters and doughs - Types of flours, factors affecting gluten formation. c. Baking - Role of ingredients in baking, preparation of bread, cakes, cookies and pastry d. Legumes - Germination, factors affecting cooking, toxic constituents.	10
UNIT II	**Flesh Foods, Egg and Milk** (a) Meat and poultry - post mortem changes, methods of cooking. (b) Fish - Nutritional significance of fish and fish oil, methods of cooking (c) Egg – Factors affecting of foam formation, coagulation. (d) Milk and milk products – fermented and non fermented. Properties of milk, role of milk in cookery.	15
UNIT III	**Vegetables and Fruits** a. Chemical components of vegetables and fruits b. Changes taking place during ripening of vegetables and fruits c. Types of browning reaction and its prevention d. Effect of cooking on vegetables and fruits	25
UNIT IV	**Fats and Oils, Sugars** (a) Fats and oils - Effect of heating on fats and oil, hydrogenation, winterization and smoking temperature (b) Rancidity - Types and prevention, role of fats in cooking. (c) Sugar cookery – function of sugar, sugar related products-molasses, corn syrup, maple syrup, brown sugar, jaggery and honey (d) Sugar cookery - crystallisation, stages in sugar cookery, crystalline and non crystalline candies.	15
UNIT V	**Practical - Techniques in the preparation of** 1. Puff, cakes and cookies.	25

	2. Egg whipping quality. 3. Stages of sugar cooking – preparation of mysore pak, groundnut toffee. 4. Jams and jellies. 5. Fats and oils – smoking temperature – preparation mayonnaise. 6. Milk – preparation of paneer and custard.	
		90

REFERENCES

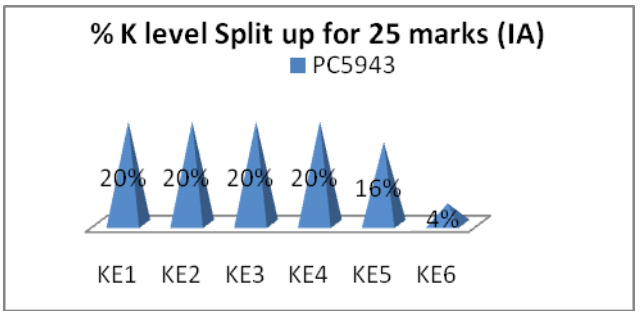
1. Cameron, A., Fox; B.C., 1990, "Food Science, Nutrition and Health", Edward Arnold, London.
2. Grisworld, R.M., 1962, "The Experimental Study of Foods", Houghton Mifflin Company, Boston.
3. Potter, N.M., 2002, "Food Science", The AVI Publishing Company, Connecticut.
4. Paul, C. Palmer, H.H., 1972, "Food Theory and applications", John Wiley and sons Inc. New York.
5. Peckham, G.C., 1975, Foundations of Food Preparation, Macmillan and Company, London
6. Srilakshmi, B., 2019. "Food Science", New Age International Publishers, New Delhi.

E-JOURNALS

1. Journal of Agricultural and Food Chemistry
   www.pubs.acs.org
2. Food Quality and Preference
   www.elsevier.com
3. International Journal of Food Science and Technology

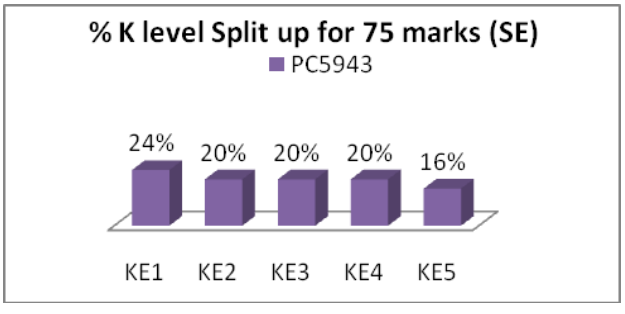
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	24%
Understand	20%
Apply	20%
Analyze	20%
Evaluate	16%



RESEARCH METHODOLOGY

SEMESTER: I **CREDIT: 4**
PAPER 4 **CODE: PC5944**

LEARNING OBJECTIVES

To enable the students to learn

1. The meaning and significance of research in the field of Home Science.
2. Research designs, use of data collection tools and sampling methods.
3. The process of analysing data and documenting research work.

Course Outcome

On completion of each unit the student will be able to :

CO1	**Recall** the concept of research. **Demonstrate an understanding** of the objectives and significance of Research in Home Science. I**dentify** significant research topics**. Remember** the motivating facts for doing research. **Apply** research ethics, while doing research. **Understand** the techniques in selecting a research problem {https:// Brief students about onlinecourses.swayam2.ac.in/ugc19_hs48/ preview (PO9) - Social Research Ethics-critically analyze its importance (PO3)}	**K1, K2, K3, K4, K5**
CO2	**Recall** the need for research design. Critically **analyze** and **apply** suitable research design for a research topic (PO3). **Understand** the merits and demerits of tools used for data collection **Acquire ability** to prepare a questionnaire (PO3, PO9). **Select and use** the appropriate tool for collecting data for a given research topic. **Construct** a questionnaire. {Seminar presentation with the use of PPT, followed by discussions (PO7)} **Comprehend** the scaling techniques; **Understand** the meaning of reliability and validity. **Remember** the types of validity and reliability. **Critically analyze and use** reliability and validity in tool construction and standardization. {https://www.youtube.com/watch?v=CGWX5Mkq77o - Research Methods followed by discussions and question session (P04, PO8, PO9)}	**K1, K2, K3, K4 K6**
CO3	**Understand** the meaning of sampling. Remember the characteristics of sampling. **Comprehend** the types and **analyze** the advantages of probability and nonprobability sampling. **Identify** and **evaluate** the sampling method used in research papers. {Group activity –A small research report- Nutritional status of class - Critically discuss the data followed by question session, Solving competitive exam question papers (PO5, PO6. PO3, PO4)}	**K1, K2, K3, K4, K5**
CO4	**Understand the** process of editing, coding and classifying data. **Tabulate** data appropriate to the analysis chosen. **Demonstrate** familiarity in the procedure of testing hypothesis. **Acquire the ability** to interpret results of the data- (group activity – presentation, analyses and drawing conclusions). **Identify** hypothesis related to a research study from research articles and develop skill to formulate a hypothesis based on the objectives of research. {E-Quiz tools for data collection (PO4, PO5, PO6)}	**K1, K2, K3, K4**
0 CO5	**Understand** the concept and significance of hypotheses. **Remember** the types of hypotheses. **Formulate** hypotheses for any type of research topic followed by **question session**. **Acquire knowledge** about thesis formatting. **Acquire skill use skill –** {Group Activity individual in Preparing a research proposal. Learn the art writing thesis and research reports. (PO4)}	**K1, K2 K3, K6**

CO/PO (GC/GMEET-PO7)	PO									
	1 Disciplinary Knowledge and skills	2 Skilled Communicator	3 Critical thinker and problem solver	4 Sense of	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**
CO2	**3**	**2**	**2**	**2**			**2**	**1**	**1**	**2**
CO3	**3**	**2**	**2**	**2**	**3**	**3**	**1**	**1**		**2**
CO4	**3**	**2**		**2**			**1**	**1**		**1**
CO5	**3**	**2**	**1**	**2**	**3**	3	**1**	**1**	**2**	**1**
CO-PO-Avg	**15**	**10**	**7**	**10**	**6**	**6**	**6**	**6**	**4**	**8**
CO-PO-Total	**3**	**2**	**2**	**2**	**3**	**3**	**1**	**1**	**1**	**1**

Course Outline

S No.	Content	No of Hours
Unit I:	**Research**- a) Meaning and objectives of Research b) Types of research and significance of research c) Research ethics—Definition, ethical reporting of research results, protecting the rights and welfare of research participants, Plagiarism.	15
Unit II	**Research design and Collection of data-** a) Research Design- Meaning, need and types. b) Tools for collection of data- Observation, Questionnaire, interview schedule, c)Scaling techniques. d) Validity- meaning and types of validity e)Reliability- meaning and types of reliability f)Variables -Independent and Dependent variables	25
Unit III	**Sampling concepts** a) Defining target population and sample b) Meaning and Types of sampling –Probability sampling and Non probability sampling- advantages and disadvantages	20
Unit IV	**Data preparation process-** a) **Data**- Editing, coding, classification, tabulation and presentation; level of significance. b) **Hypothesis** – basic concepts- meaning, types of hypothesis c) **Testing of hypothesis**-steps in testing hypothesis	20
Unit V	**Research Proposal and Thesis Writing** a) Research proposal –Preparation of research proposal b) **Thesis writing**- Format, typing, footnotes. appendices and bibliography	10

REFERENCES

1. Best, J.W. and James, V.K., 2000, Research in Education, New Delhi, Prentice Hall of India Pvt. Ltd.
2. Gupta. S.P., 2001, Statistical Methods, New Delhi, Sultan & Co., Publishers
3. Kerlinger, F.M., 1964, Foundations of Behavioural Research, New York, Holt and Winston Inc.
4. Kothari, C.R., 2002 Research methods and techniques, New Delhi, Wiley Eastern Ltd.
5. Krishnaswami, O.R., 1993, Methodology of Research in Social Sciences.
6. Bombay, Himalaya Publishing House.
7. Agarwal, Y.P., 1990, Statistical methods, New Delhi, Sterling Publishers Pvt. Ltd.,

8. Gupta, S.P., 1990, Statistical methods, Madras, Sultan Chand and Son.

9. Kothari C. R (2004), 'Research Methodology Methods and Techniques', Second Edition, New Age International (P) Limited, Publishers, New Delhi.

10. Palanisamy, S and Manoharan, M., 1999., Statistical Methods for Biologists, Palani, Paramount Publications.

11. Rao, K.V., 1996, Bio-statistics, Madras, Jaypee Brothers Medical Publishers

12. **Health research methodology- a guide for training in research methods. WHO 1992**

13. **The Craft of Research Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams, 3rdedition, 226 published by University of Chicago Press.**

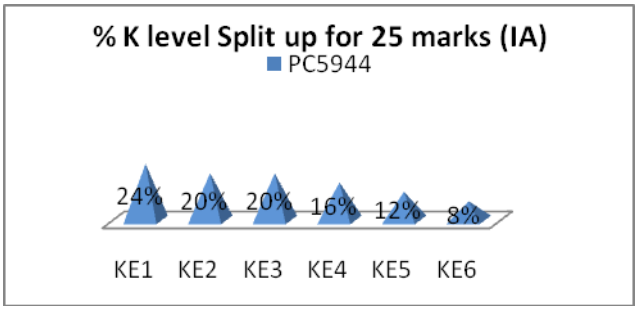
Web Reference

Hooley, Tristram John Marriott and Jane Wellens, *What is Online Research? Using the Internet for Social Science Research* (Bloomsbury Academic, 2012) ISBN 978-1-8496-6554-4 (open access online

http://egyankosh.ac.in/bitstream/123456789/39238/1/Unit-5.pdf

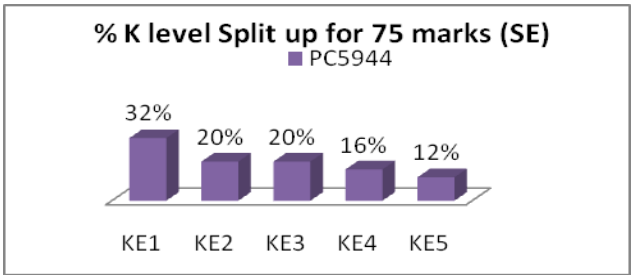
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	28%
Understand	20%
Apply	20%
Analyze	16%
Evaluate	16%



LIFE SPAN NUTRITION

SEMESTER: I **CREDIT:4**

PAPER No : V **CODE : PC5945**

LEARNING OBJECTIVES

To enable the students to

1. Understand the role of nutrition in maintaining good health.
2. Understand the dietary modifications at different stages of family life.
3. Understand the different nutritional problems and physiological complications at various stages of the life cycle.

COURSE OUTCOMES

CO 1	**Remember and recollect** the basic concepts of growth, **interpret** growth chart, **describe** current feeding practices and nutritional concerns, guidelines for feeding normal and low birth weight infants, **(**Lecture video– https://youtu.be/czDYtk2ZFwg followed by group discussion) {PO9,PO10} **acquire the skill to interpret** A, B, C, D methods of nutritional assessment, **define** growth and development of children, **List** their food and nutrient needs, **assess** dietary adequacy of children (prepare and submitlist of energy dense foods and a menu plan based on that for active and growing school children, Present as a team work) {PO2, PO3, PO5, PO9} and **report** complications in infancy and childhood due to nutritional inadequacies (using power point**) {**PO2 & PO7}	K1, K2, K3, K4, K5
CO 2	**Recall how** growth and development takes place during adolescence (using power point) {PO2 & PO7}, **estimate** food and nutrient requirements of adolescents, **understand** adolescent nutritional requirements (Lecture video -**https://youtu.be/W3eXoKmL-M0** followed by group discussion) {PO9,PO10}and present details as team work {PO2, PO5}**Compare and explain** food habits and nutritional concerns with regard to eating disorder (Lecture video **https://youtu.be/bD8KCcipGaY** followed by discussion) {PO9, PO10} prevention and management of eating disorders through literature review, summarize and present as typed report PO7} and do presentation as team work){PO9, PO5, PO2} and **Identify** the complications in adolescence related to nutritional inadequacies	K1, K2, K3, K4, K5
CO3	**Recall** food and nutrient requirements during adulthood (using power point) {PO2&PO7} and **understand** the nutritional concerns in adulthood related to nutritional inadequacies and prepare and submit as a report {PO2}	K1, K2
CO4	**Describe** physiological changes during pregnancy and lactation, **list and recommend** diets and food sources that meet nutrient requirements (using power point) {PO2 & PO7}, **examine** typical food preferences, and **relate** the effect of nutritional status on pregnancy outcome. (Through question- and-answer session) {PO4} **Plan** cost effective recipes using seasonal foods. {PO3} and present {PO2}	K1, K2, K3, K 4, K 5
CO5	**Recall and explain** food and nutritional requirements of elderly (using power point) {PO2 & PO7}, **Create** meal plans and recipes suited for old age people and present as a teamwork {PO3, PO5} **compare** them to their	K1, K2, K3, K4,

	nutritional care, **Identify** nutritional problems of old age and present as team work {PO2}.	K6

CO/PO (GC/GMEET-PO7)	PO									
	1 Disciplinary Knowledge and skills	2 Skilled Communicator	3 Critical thinker and problem solver	4 Sense of	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	2	2
CO2	3	2			2	1	2	1	2	2
CO3	3	2					2	1	-	1
CO4	3	2	1	1			2	1	-	1
CO5	3	2	1		1		2	1	-	1
CO-PO-Avg	3	2	1	1	1	1	2	1	2	1
CO-PO-Total	15	10	3	1	4	1	10	5	4	7

Course Outline

S. No	Content	No of hours
Unit I	**Infant and Child Nutrition** a. Infancy – current feeding practices and nutritional concerns, guidelines for feeding normal and low birth weight infants. b. Growth and nutritional assessment – Growth chart, LBW babies – characteristics and nutritional care. c. Childhood – Growth and development, food and nutrient needs, dietary adequacy. d. Complications in infancy and childhood related to nutritional inadequacies.	**25**
Unit II:	**Adolescent nutrition** a. Growth and development, food and nutrient requirements, b. Food habits, nutritional concerns with regard to eating disorders. c. Complications in adolescence related to nutritional inadequacies.	**15**
Unit III	**Nutrition in Adulthood** a. Food and nutrient requirements during adulthood b. Nutritional concerns in adulthood related to nutritional inadequacies	**15**
Unit IV	**Nutrition in Pregnancy and Lactation** a. Physiological changes, food and nutrient requirements, typical food preferences, effect of nutritional status on pregnancy outcome. b. Complications during pregnancy and lactation	**15**
Unit V	**Geriatric Nutrition** a. Food and Nutritional requirements - Nutritional care of the elderly. b. Nutritional problems of old age	**20**
		90

REFERENCE:

1. Simon Langley–Evans, Nutrition, Health And Disease: A Lifespan Approach, 2015

2. David A. Sinclair, Lifespan: Why We Age – And Why We Don't Have To, 2019

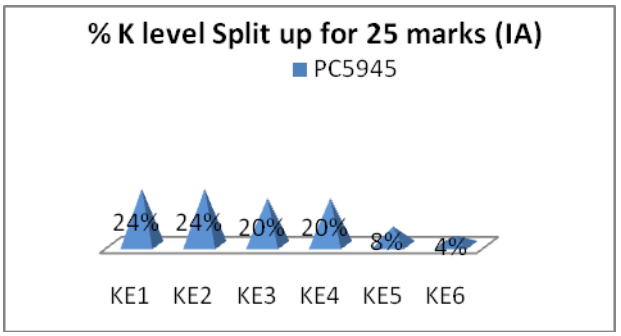
3. Nix .S 2016, Williams' Basic Nutrition & Diet Therapy, Fifteenth Edition, Elsevier.
4. Simon Langley-Evans, 2015 Nutrition, Health and Disease: A Lifespan Approach 2nd Edition, Wiley Blackwell.
5. Jacalyn J. McComb, Reid Norman, et al.,The Active Female: Health IssuesThroughout the Lifespan 2010, Human press.
6. Aleta L. Meyer and Thomas P. Gullotta., Physical Activity Across the Lifespan: Prevention and Treatment for Health and Well-Being (Issues in Children's and Families' Lives), 2012, Springer.
7. Antia, F.P., 1992, Clinical Dietetics and Nutrition Oxford University Press, New Delhi.
8. Corinne, R.H., 1996, Normal and therapeutic nutrition, Mcmallian Co., New York.
9. Davidson, S.R. and Passmore J.F., 1989, Human Nutrition and Dietetics, ELBS London.
10. Mahan, K.L., and Stump, S.E., 1996, Krauses Food, Nutrition and Diet therapy M.B. Saunders Co., USA.
11. Balasubramanian et al., 1998, Dietary guidelines for Indians, ICMR, New Delhi.
12. Passmore, AH and Adams, A.A., 1990, Clinical assessment of nutritional status – A working manual, Will and Wilson Publishing, London.
13. Bamji et al(1996), Textbook of Human Nutrition Oxford and IBH Publishing co. Pvt. Ltd. Delhi.
14. Shils.E.M, Shike .M, Ross. A.C, Cabellero. B and Cousins.R.J (2011) Modern Nutrition
    in Health and Disease, Eleventh Edition, Lippincott Williams and Wilkins, Philadelphia.
15. Mahan, K.L., and Stump, S.E., 1996, Krauses Food, Nutrition and Diet therapy M.B. Saunders Co., USA.

REFERENCES

1. www.four-h.purdue.edu
2. www.ingenta.connect.com
3. nal.usda.gov/fnic/lifecycle
4. www.fda.gov/search.html
5. www.wodsworth.com/nutrition
6. www.golgy.harvard.edu./biopages,html
7. www.whfreeman.com
8. www.harcourtcollege.com
9. www.eatright.org

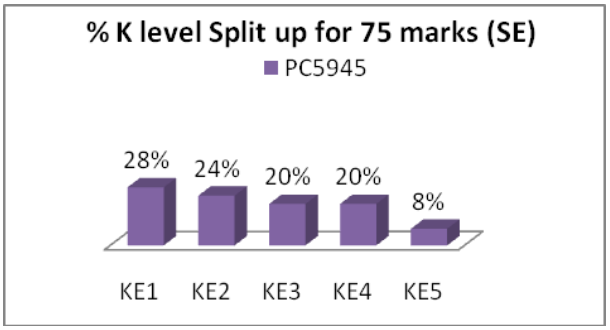
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	28%
Understand	24%
Apply	20%
Analyze	20%
Evaluate	8%



FRONT OFFICE MANAGEMENT

SEMESTER II **CREDIT: 4**
PAPER NO: VI **CODE**: PC5946

OBJECTIVES

To enable the students

1. To understand the varied dimensions of a food service industry with special reference to front office
2. To study the concepts of organization, communication and operational procedures in front office

COURSE OUTCOMES

CO	COURSE OUTCOMES	K Level
CO1	**Recall** and **understand** the classification of hotels based on star category, size, ownership and other categories, **Differentiate** different types of rooms. **Evaluate**the physical facilities in various types of hotels. (Assignment / seminar on classification of hotels and types of rooms. {PO2} https://youtu.be/74OK52gYtm8 https://youtu.be/YKAifiUwdp4)	K1, K2, K3, K4, K5
CO2	**Acquire** insight of Hotel organization pattern in a large, medium & small sized hotel. **Gain** knowledge on the duties and responsibilities of front office staff. (Assignment on Hotel organization pattern {PO2}, group discussion on duties andresponsibilities of front office staff {PO5}).	K1, K2, K3, K4
CO3	**Understand** the concepts and estimate of tariff fixation for various categories. **Apply** the tariff structure of rooms for individual & corporate clients. (https://youtu.be/Sbgta0hSdmU group activity on application of tariff structure of rooms for individual & corporate clients {PO5}).	K1, K2, K3, K5, K6
CO4	**Understand** the guest handling procedure, **Apply** the techniques in the process of handling individual, group and VVIP guests. **Gain** knowledge on the activities of front office desk during guest stay. (https://youtu.be/uXG9JnHnIJc https://youtu.be/VhkpzygGFAg group discussion on common guest complaints and handling procedure {PO6})	K1, K2, K3, K4, K6
CO5	**Understand** the guest accounting procedures, **apply** the knowledge in the guest accounting process. **Gain** knowledge on the duties of Night auditor, preparation ofnight audit report and adopt departure procedure. (https://youtu.be/SJ6fhIwfOR4 https://youtu.be/aX5pP89CnMI group discussion on guest accounting procedures and night auditing) {PO6}	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	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	2	1	2	1
CO2	3	2	2	1	1	1	2	1	2	1
CO3	3	2	2	1	1	1	2	1	2	1
CO4	3	2	1	1	2	1	2	1	2	1
CO5	3	2	2	1	2	1	2	1	2	1
CO-PO-Avg	3	2	2	1	2	1	2	1	2	1
CO-PO-Total	10	10	8	5	8	1	10	6	10	5

Course Outline

S. No	CONTENT	No of hours
Unit I	**Classification of hotels** Classification of hotels based on star category, size, ownership and other categories. Types of rooms	**15**
UnitII	**Hotel organization** Hotel organization – Organization pattern in a large, medium and small sized hotel.Functions of receptionist, job description of front office manager, assistant front office manager, assistant manager, reservation manager, lobby manager, front office assistants, night manager, night clerk, bell captain and bellboy.	**25**
Unit III	**Tariff structure** Tariff structure –tariff, basis of charging, tariff fixation, room tariff card-group rate, volume rate, executive business service rates, tour group whole sale rate, discounted rate, crib rate, extra bed rate, family rate, crew rate corporate rate andstudent faculty programme.	**20**
Unit IV	**Front office and guest handling** Front office and guest handling – stages of guest contact with the hotel-the guest arrival, preparing, receiving, registration procedure-systems of registration, rooming of guest, group arrival, VVIP guest arrival and greeting. Activities of frontdesk during stay- mail and message handling, safe deposit boxes.	**15**
Unit V	**Guest accounting** Guest accounting – basics of keeping accounts, guest ledger, city ledger-accounting entries, front office cashiering, guest accounting process, night auditing- night audit duties, night audit process, night audit report and departureprocedure	**15**
		90

REFERENCES:

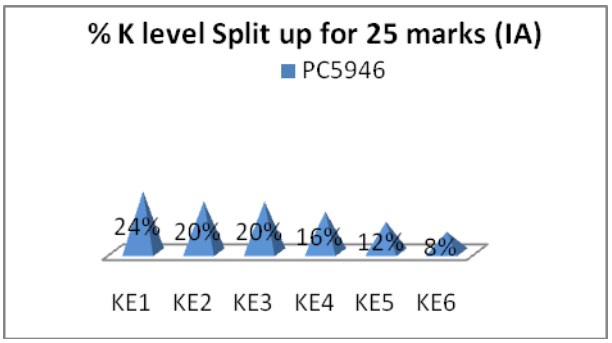
1. Ismail. A (2004) Front Office Operations and Management, Delmar Publications
2. Baker.S , Bradley.P and Huyton .J(1996) Principles of Hotel Front Office Operations , Cassell publications
3. Andrews.S (1982) Hotel Front Office Training Manual , Tata mc Graw Hill Publishing Company Ltd, New Delhi
4. Chankravarti B.K (1999) Hotel Management Theory, APH publishing corporation, New Delhi
5. Chon. K and Sparrow R. T (2001) Welcome to Hospitality- An Introduction, Second Edition, Delamar publication
6. Tewari .J.R(2009) Hotel Front Office: Operations and Management, Oxford University Press
7. Negi. J(2013) Hospitality Reception and Front Office Procedures and Systems, S.Chand&Company Private Limited, New Delhi.
8. Abbott.P&Lewry .S (2007) Front Office Procedures, Social Skills, Yields and Management, Second edition, Butterworth-Heinemann Elsevier, Oxford.
9. Bhatnagar .S. K(2011) Front Office Management ,Frank Brothers, Noida
10. Aggarwal .R (2002) Hotel Front Office System and Procedures, Sublime Publications, Jaipur.
11. White.P.B and Beckley.H(1998) Hotel Reception, Fourth Edition, Hodder and Stoughton, Lincolnshire

E - Reference

http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=1827

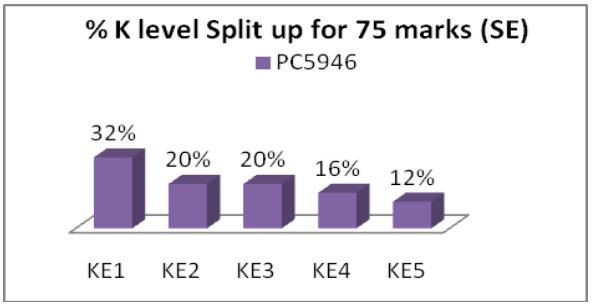
CIE-Continuous Internal Evaluation (25 Marks)

Bloom's Taxonomy	Test	Assignment	Seminar	Model Exam
Total (25)	**5**	**5**	**5**	**10**
Remember (7)	2	0	2	3
Understand (6)	1	0	1	4
Apply (5)	2	2	0	1
Analyse (3)	0	1	1	1
Evaluate (1)	0	0	0	1
Create (3)	0	2	1	0



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	40%
Understand	24%
Apply	20%
Analyze	12%
Evaluate	4%



THERAPEUTIC DIETETICS

SEMESTER: II **CREDIT:4**

PAPER No: VII **CODE: PC5947**

OBJECTIVES

To enable the students to understand

1. The basic principles and significance of therapeutic nutrition
2. Knowledge on diagnosis and dietary treatment for various diseases.

COURSE OUTCOME:

CO1	Recall the causes and symptoms of gastrointestinal diseases (https://www.ypo.education/gastrointestinal/gastritis-t225/video/) understand and differentiate the types of Gastrointestinal diseases, and relate the causes, symptoms andonset of diseases with the nutritional need of the patients (Question and answer session(PO4)), apply the dietary principles and plan a diet suitable for the condition. (Assignment: Submit bland Diet recipes) (PO3)	K1, K2, K3, K4, K5, K6
CO2	Recall the causes and symptoms of liver disease (hepatitis, cirrhosis) gall bladder diseases (https://www.ypo.education/gastrointestinal/gall-stones-t168/video/) (PO9, PO10) cholecystitis, cholelithiasis, cholengitis and pancreatitis. Understand the causesand symptoms of the diseases. Explain the metabolic consequences of alcohol consumption in liver diseases. Relate the effect of diseases on the nutritional status andthe dietary requirement of an individual, apply the dietary principles, plan and modify the diet suitable the condition. (Assignment: Group assignment – Menu planning)(PO3, PO5)	K1, K2, K3, K4, K5, K6
CO3	Recall the causes and symptoms of kidney diseases. Understand a different stages of kidney disease and Kidney stones (https://www.ypo.education/genitourinary/kidney-stones-t157/video/) (PO9, PO10). Gain the knowledge on process of dialysis (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) and explain its effect on thenutritional status of an individual, gain knowledge on sodium and potassium exchange list, use the exchange list and modify the nutrients requirements. recommend a dietary advises and plan a diet suitable for the condition. (Assignment: Submit Assignment on Low Sodium and Potassium foods using Nutritive value book) (PO3)	K1, K2, K3, K4, K5, K6.
CO4	Recall the causes, symptoms, diagnosis of obesity and cardiovascular diseases (https://www.ypo.education/heart/atherosclerosis-t33/video/ https://www.ypo.education/general/diabetes-t503/video/) (PO9, PO10), (https://www.youtube.com/watch?v=X9ivR4y03DE https://www.ypo.education/bariatrics-3/). Gain knowledge regarding prevalence, etiology, diagnosis, diet and life style management and the interrelationships betweenobesity, cardiovascular disease and diabetes mellitus. (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) gain knowledge on glycemic index and exchange list and the nutrient requirement (Question and answersession), plan a diet based on the dietary principles and recommend appropriate nutritional care for prevention or treatment. (Assignment: online Quiz) (PO7)	K1, K2, K3, K4, K5, K6.
CO5	Define Burns, cancer and AIDS. Classify burns and cancer. Understand how the stressis induced and its effect on the nutritional status of an individual. Gain knowledge on nutritional support (oral, enteral and parenteral route). Calculate the nutrient requirements and plan an individualized diet depend upon the condition. (Group Assignment: Submit Market survey report on Enteral feeding formulas) (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	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	2	2
CO2	3	2	1	1			2	1	2	2
CO3	3	2	1	1			2	1	2	2
CO4	3	1	1		2	1	2	1	2	2
CO5	3	2	1	2	1		2	1	2	2
CO-PO-Avg	15	9	5	6	3	1	10	5	10	10
CO-PO-Total	3	2	1	1	1	1	2	1	2	2

Course Outline

Unit	Contents	No. of hours
Unit I	**Nutritional Management in the Diseases of Gastrointestinal system** Causes, symptoms and nutritional management of gastritis, peptic ulcer, flatulence, malabsorption syndrome, inflammatory bowel syndrome.	15
Unit II	**Nutritional Management in the Diseases of Liver, Biliary System and Exocrine Pancreas Disorder** Liver - Causes, symptoms and Nutritional management in Hepatitis, Hepatic coma and cirrhosis of liver - Metabolic consequence of alcohol consumption, Gall bladder -Causes, symptoms and Nutritional management in cholecystitis, cholelithiasis, cholangitis Pancreas -Causes, symptoms and Nutritional management in pancreatitis.	20
Unit III	**Nutritional Management in the Diseases of Kidney and inborn errors of metabolism** Causes, symptoms and nutritional management of nephritis, nephrosis, renal failure, renal stones dialysis - hemodialysis, Sodium and potassium exchange list. Gout and phenylketonuria: Symptoms and treatment.	15
Unit IV	**Nutritional Management in Obesity, Cardiovascular Diseases and Diabetes mellitus** Obesity - Causes, consequences, energy balance, Management of Diet, Life style and Bariatric surgery. Cardiovascular Diseases - Causes and nutritional management of Dyslipidemia, atherosclerosis, hypertension and congestive cardiac failure. Diabetes mellitus - Types, causes, symptoms and nutritional management - meal plan approach, food exchange list, Glycemia index of foods, sweeteners and substitutes.	20
Unit V	**Nutritional management during stress:** Burns - classification, complications, calculation for nutrient requirement, Dietary management Cancer - Development and characteristics of cancer, etiology, cancer therapy - chemotherapy, radiotherapy, surgery. Nutritional recommendations for feeding problems like mouth ulcer, dumping syndrome, nausea and vomiting and Impact of cancer therapy on Nutritional status. Nutritional considerations - Oral nutritional management, enteral and parenteral nutrition.	20

	AIDS - causes and nutritional management.	
		90

REFERENCES

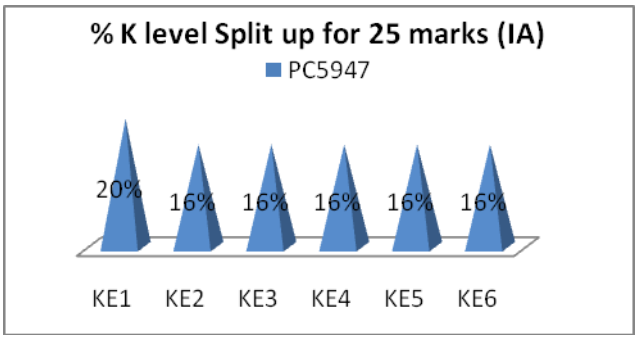
1. Alpers, et al., 1999, Manual of Nutritional Therapeutics, Little Brown, Washington.
2. Antia, F.P., 2000, Clinical Dietetics and Nutrition, Oxford Press, New Delhi.
3. Chatterjee, M.N. and Shinde, R., 1994, Text book of Medical Biochemistry, Jaypee Brothers Pvt. Ltd., New Delhi.
4. Garrow, J.S. James, W.P.T. and Ralpha., 2000, Human Nutrition and Dietetics, Churchill Livingstone, Edinburgh.
5. Gaw et al., 1995, Clinical biochemistry. Churchill Livingston Publications, London
6. Gowenlock, A.H., 1988, Varley's Practical Clinical Biochemistry, CBS publishers and distributors, India.
7. Mahan, K.L. and Syliva, E.S., 2000, Krauses Food, Nutrition and Diet Therapy, W.B. Saunders Company, Philadelphia.
8. Ramakrishnan., 1994, Text book of Clinical Biochemistry, T.R. Publications, Madras.
9. Robinson et al., 1994, Normal and Therapeutic Nutrition, Macmillian Co., New York.
10. Srilakshmi, B., 2005, Dietetics, New Age International (P.) Limited, Publishers, New Delhi
11. Malhan,K.NandAtlin(2002).Krauses Food Nutrition and Diet Therapy, W.B Saunders Company, Philadelphia.
12. Bamji et al(1996), Textbook of Human Nutrition Oxford and IBH Publishing co. Pvt. Ltd. Delhi.
13. Shils.E.M, Shike .M, Ross. A.C, Cabellero. B and Cousins.R.J (2011) Modern Nutrition in Health and Disease, Eleventh Edition, Lippincott Williams and Wilkins, Philadelphia
14. Nix .S(2016) Williams' Basic Nutrition & Diet Therapy, Fifteenth Edition, Elsevier

Web References:

1. https://ignoutv.in/ignou-mfn-05-study-material/
2. http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444

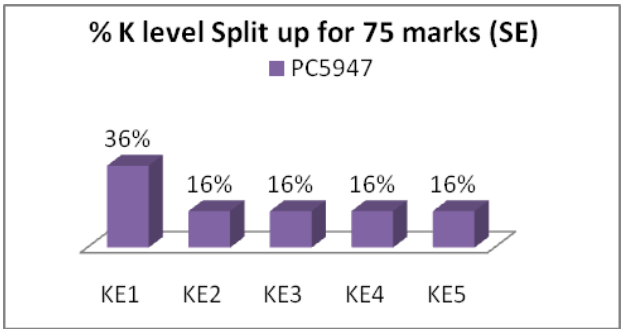
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	28%
Understand	24%
Apply	24%
Analyze	20%
Evaluate	4%



THERAPEUTIC DIETETICS PRACTICAL

SEMESTER: II **CREDIT: 4**
PAPER: VIII **CODE : PC5948**

OBJECTIVES

To enable the students to

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

COURSE OUTCOMES

At the end of each unit in the course, the student will be able to:

CO1	**Recall** the principles of dietary management in the treatment of various disease conditions such **as** peptic ulcer, Hepatitis & Cirrhosis of Liver, Ulcerative colitis, Pancreatitis. **Apply** the knowledge of foods to be included and avoided in planning diets for peptic ulcer, Hepatitis & Cirrhosis of Liver, Ulcerative colitis, Pancreatitis. **Develop** a menu plan andinnovate recipes suitable for peptic ulcer, Hepatitis & Cirrhosis of Liver, Ulcerative colitis, Pancreatitis. **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: upstate medical universities) (PO9)	**K1, K2, K3, K4, K5, K6**
CO2	**Recall** the principles of dietary management in the treatment of various disease conditions such **as** Diabetes mellitus. **Apply** the knowledge of foods to be included and avoided in planning diets for Insulin and non-insulin dependent Diabetes mellitus. **Develop** a menu plan and innovate recipes 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: josline diabetes center – carbohydrate counting) (PO9).	**K1, K2, K3, K4, K5, K6**
CO3	**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** a menu plan 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 - Diets for patients with nephritic syndrome-247naturalhealthtricks.com) (PO9)	**K1, K2, K3, K4, K5, K6**
CO4	**Recall** the principles of dietary management in the treatment of various disease conditions such **as** Atherosclerosis and Hypertension. **Apply** the knowledge of foods to be included and avoided in planning diets for Atherosclerosis and Hypertension. **Develop** a menu plan and innovate recipes suitable for Atherosclerosis and Hypertension. **Acquire** the skill to prepare therapeutic diets, calculate its nutritive value and cost. Discussindividual's menu (PO4), writing menu & present through PPT (PO8 & PO7). Nutritive value calculation (PO3). (youtube: Lee Health-Role of Diet in Cardiovascular Disease). (PO9)	**K1, K2, K3, K4, K5, K6**
CO5	**Recall** the principles of dietary management in the treatment of various	**K1,**

	disease conditions such **as** Colon cancer. **Apply** the knowledge of foods to be included and avoided in planning diets for colon cancer. **Develop** a menu plan and innovate recipes suitable for 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: nptelhrd-Diet in Cancer) (PO9)	**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	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	1	2	2	2	2
CO2	3	2	2	2	2	1	2	2	2	2
CO3	3	2	2	2	2	1	2	2	2	2
CO4	3	2	2	2	2	1	2	2	2	2
CO5	3	2	2	2	2	1	2	2	2	2
CO-PO-Avg	3	2	2	2	2	1	2	2	2	2
CO-PO-Total	**15**	**10**	**10**	**10**	**10**	**5**	**10**	**10**	**10**	**10**

PLANNING AND PREPARATION OF DIETS FOR

UNIT	**CONTENT**	**NO. OF HRS**
UNIT I	Peptic Ulcer	**6**
	Hepatitis	**6**
	Cirrhosis of Liver	**6**
UNIT II	Insulin Dependant Diabetes Mellitus	**6**
	Non -Insulin Dependant Diabetes Mellitus	**6**
	Gout	**6**
UNIT III	Nephritis	**6**
	Nephrosis	**6**
	Cholithiasis	**6**
UNIT IV	Obesity	**6**
	Atherosclerosis	**6**
	Hypertension	**6**
UNIT V	Colon Cancer	**6**
	Ulcerative Colitis	**6**
	Pancreatitis	**6**

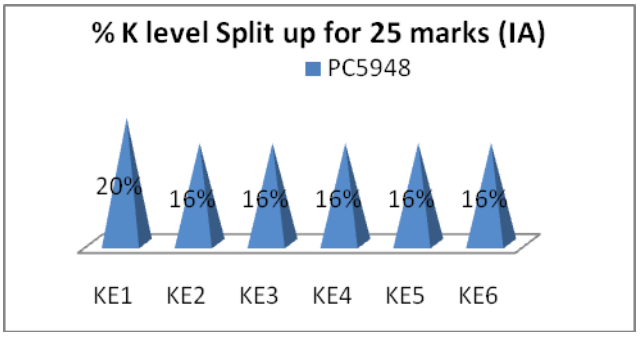
		90

REFERENCES

1. Antia. F.P.. 1989. Clinical Dietetics and Nutrition. Bombay, Oxford University Press.
2. Passmore. P.and Eastwood. M.A. 1986. Human Nutrition and dietetics. London,ELBS.
3. Robinson. C.H. et al. 1994. Normal and Therapeutic Nutrition. New York, Macmillan and Co.
4. Williams. S.R. 1994. Nutrition and Diet Therapy. New York., Mosby Mirror Publishing Co.
5. Sri Lakshmi. B. 2002. Dietetics. New Delhi, New Age International Pub

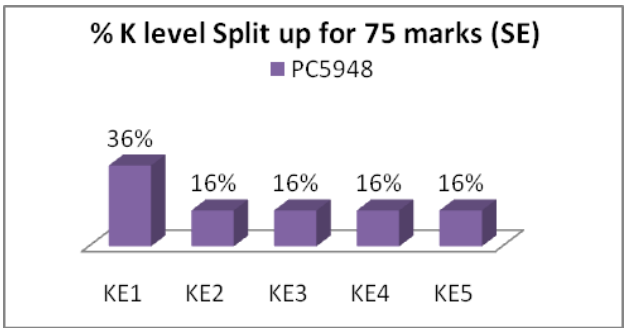
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	32%
Understand	16%
Apply	16%
Analyze	16%
Evaluate	20%



HOSPITAL MANAGEMENT

SEMESTER: II **CREDIT: 3**
PAPER No : IX **CODE : PE5917**

LEARNING OBJECTIVES

To enable the students to

1. Know about the types of hospitals and their administration.
2. Gain knowledge about the legal aspects of hospital administration.
3. Know about National and International organizations financing medical care.

CO1	**Recall and Describe** history of hospitals, **list** types and functions of hospitals, **understand** and **explain** the relationship of hospital to the community. **Identify and analyse** the role of hospital in the community (using literature review) summarize and present {PO9, PO2}	K1, K2, K3, K4, K5
CO 2	**Recall** the basic concepts of organizational chart e**xplain** its advantages and limitation (using power point) {PO2&PO7}, **Identify** duties and responsibilities of hospitaladministrator, doctor, nurses and other employees. **Understand** effective hospital management through principles of management. (Lecture video- (https://youtu.be/TtbImDfUt4c) followed by question-and-answer session {PO4}; **Analyze** skills and characteristics of effective manager. **Develop** a check list (PO3) for skills essential for an efficient hospital administrator and relate the importance of each in hospital administration. Type and present as team work. {PO5, PO7}	K1, K2, K3, K5, K6
CO3	**Remember and outline** general acts legislations applicable to hospitals; **understand** Law of torts, consumer protection act, patient's bill of rights, and law of negligence (using power point) {PO2 & PO7}. **Identify** and **classify** incidences of law of torts and law of negligence from recent newspapers. Group discussion on law of torts, patient's bill of rights and law of negligence. summarize and present {PO2, PO5, PO9} **Submit** the procedure to file a complaint under consumer protection Act as typed report- Team work) {PO3, PO4, PO5, PO 6, PO7, PO 9}	K1, K2, K3, K4
CO4	**Recall and understand** the role of organizations financing medical care-National - ICMR, NIN, CFTRI, and International - WHO, UNICEF, FAO (using power point) {PO2 & PO7} **Activity** E-Quiz	K1, K2
CO5	**Recollect** the concepts of accounting, (Lecture video https://youtu.be/xux-tYP5YrA followed by group discussion) {PO9, PO10} principles of accounting (Lecture video https://youtu.be/gJPBbsFkZG8 followed by group discussion) {PO9, PO10} analysis and interpretation of financial reports preparation (through question-and-answer session) {PO4}. **Analyse** and **explain** use of budgets, and methods of cost computation (using power point) {PO2 & PO7}.	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	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
CO2	3	2	1	1	1		1	1	1	1
CO3	3	2	1	1	1	1	1	1	2	2
CO4	3	2					1	1	-	1
CO5	3	2		1			2	1	2	2
CO-PO-Avg	3	2	1	1	1	1	1	1	2	1
CO-PO-Total	15	10	1	3	2	1	7	5	7	7

Course Outline

S. No	Content	No of hours
Unit I	**Hospital Growth and classification of hospitals in India** a. History, types and functions of Hospitals, b. Relationship of Hospital to the Community	**25**
Unit II:	**Organization and Management** a. Organizational chart, advantages and limitation chart, duties and responsibilities of hospital administrator, doctor, nurses and other employees. **b.** Effective hospital management- principles of management, skills and characteristics of effective manager.	**15**
Unit III	**Legal Aspects of Hospital Management** a. General acts legislations applicable to hospitals. b. Law of torts, consumer protection act, patient's bill of rights, law of negligence	**15**
Unit IV	**Organisations Financing Medical Care** a. National - ICMR, NIN, CFTRI b. International - WHO, UNICEF, FAO	**15**
Unit V	**Accounting and Financial Management in Hospitals.** a. Principles, analysis and interpretation of financial reports. b. Preparation and use of budgets, Methods of cost computation.	**20**
		90

REFERENCE:

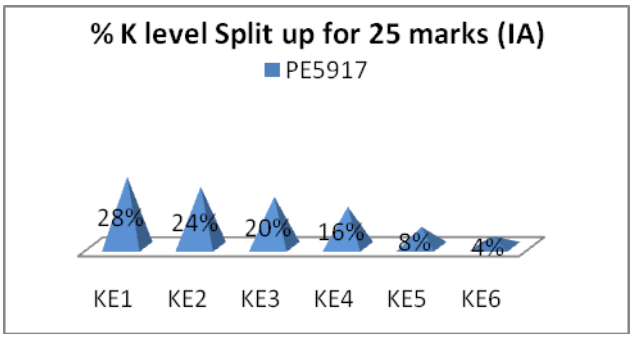
1. G. D Kunders, Hospitals - Facilities Planning And Management 2017
2. Gupta Joydeep Das, H, Hospital Administration And Management: A Comprehensive Guide 2015 Jaypee
3. Saxena M, 2019, Hospital Management Vol 1 (PB 2019) Paperback, CBS publishers
4. G. D Kunders, Hospitals - Facilities Planning And Management 2017
5. Gupta Joydeep Das, H, Hospital Administration And Management:A Comprehensive Guide 2015 Jaypee
6. Davidson S.R. and Passmore J.F., 1975, Human Nutrition and Dietetics. Vol. I II Edition.
7. Francis, C.M and D' Souza, M.C., 2000, Hospital Administration. Jay Brothers.
8. Gillespie S. McNeil G., 1992, Hospital Management Macmillan and Co., New York.
9. Mitchell et. al., 1987, Nutrition in Health & disease, Pitman M. Edu. Publishing Co
10. Robinson et.al., 1986, Normal and Therapeutic Nutrition. Macmillan Co., New York.
11. Ramachandra D L Essentials Of Hospital Management And Administration 2018

WEB REFERENCES:

1. www.ingenta.connect.com - Food and Food ways.
2. www.fda.gov/search.html
3. www.wodsworth.com/nutrition
4. www.elsevier.com - Indian Journal of Nutrition and food microbiology.
5. www.who.int/hospitals/management-and-quality/en/
6. www.onlineprograms.ollusa.edu/mba/resources/what-does-a-hospital-manager-do

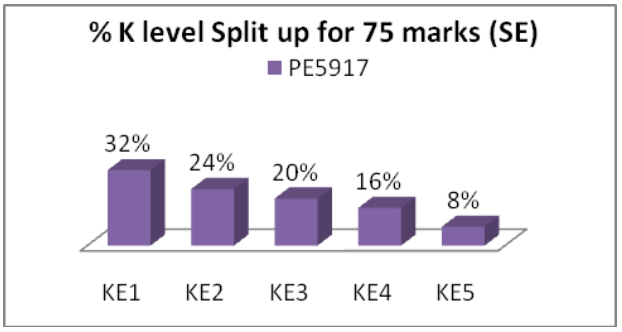
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	28%
Understand	24%
Apply	24%
Analyze	16%
Evaluate	8%



ENTREPRENEURSHIP MANAGEMENT

SEMESTER : II **CREDIT: 3**

PAPER NO :X **CODE: PE5918**

LEARNING OBJECTIVES

To enable the students to learn

1.The concept and significance of entrepreneurship.

2.The process of starting an enterprise.

3. Formulation of a Project Report

4. Labour laws and procedures to avail financial assistance and incentives.

COURSE OUTCOME

At the end of each unit, the student will be able to:

CO1	**Understand** the definition of entrepreneur and entrepreneurship. **Remember and recall** the intrinsic and extrinsic factors that motivate an individual to become an entrepreneur and **analyse** the factors. **Explain** the qualities to be possessed or acquired by successful. Relate and develop qualities - Read stories of entrepreneur and submit summarising qualities followed by discussion {PO3, PO5} (http://epgp.inflibnet.acneu entrepreneurs https://www.youtube.com/watch?v=Hgj_kRrvbhQ- Introduction to Entrepreneurship)	K1, K2 K3, K5, K6
CO2	**Distinguish** the types of organization - sole proprietorship, partnership and stock company. **Analyse** the merits and demerits of each type of organization and evaluate its suitability {PO3}. **Apply** the knowledge to start business or become an entrepreneur. (https://epgp.inflibnet.ac.in/) **Understand** marketing and the steps in conducting market survey. **Conduct** a market survey. **Analyze and Evaluate** products to be selected for production and/or services to be rendered to become a successful entrepreneur. **Activity**-PPT seminar presentation, followed by discussion and question and answer {PO5, PO7}.	K1, K2 K3, K4, K5, K6
CO3	**Understand** the meaning and significance of Project Report. **Comprehend** the planning commission guideline lines for project formulation and preparation of project report. **Analyze** and compare project reports. **Create** a Project Report - Individual and group activity report {PO6} assignment Ability to apply learnt concept to prepare a project report and critically analyze {PO3, PO9} **Evaluate** prepared project reports to judge value of project reports based on profits (https://www.youtube.com/watch?v=IOn-erkINAo-PROJECT) {PO9} **Uploaded- nptelhrd** appraisal-Followed by discussion **Understand** the meaning and need for provisional and permanent registrations. **Remember** the importance of licensing and gain familiarity about licensing authorities.	K1, K2 K3, K5, K6
CO4	**List** the incentives available for entrepreneurs and incentives for starting business in backward areas. **Understand to analyze** breakeven point {PO3} **Identify** the point above which profit exists in business. **Classify** the cost concept - labor, material expense and overhead cost. **Understand** and use the cost based and competition-based pricing methods. Explain sales tax and income tax (http://epgp.inflibnet.ac) {PO9}	K1, K2 K3, K4
CO5	**Understand** the labour laws -Factories act, Industrial dispute act and workman's compensation act. Acquire the ability to **apply** these laws in new situation. **Remember** the problems that women entrepreneurs might face. Submit report a group report on problems of women entrepreneur (PO5) **Demonstrate** skill in applying remedial measures, as and when required.	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	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		
CO2	2		1			2	1	1	1	3
CO3	2	2	1	2	2	2	1	1	1	3
CO4	2	2	1	2	2	1	1	1	1	3
CO5	2		1			1	2	1	1	3
CO-PO-Avg	**3**	**2**	**2**	**1**	**2**	**2**	**2**	**1**	**1**	**1**
CO-PO-Total	**15**	**10**	**2**	**5**	**4**	**4**	**8**	**5**	**5**	**5**

Course Outline

S. No	Content	No of Hours
Unit I	**Entrepreneur and Entrepreneurship** a. Definition of entrepreneur and entrepreneurship, need for entrepreneurship. b. Qualities of an entrepreneur c. Factors motivating entrepreneur	10
Unit II	**Enterprise** a) Steps for starting an enterprise b) Types of organization – sole proprietorship, partnership and stock company – public limited and private limited company c)Product selection – principles of product selection and development d)Sales promotion	15
Unit III	**Project Report** Meaning and significance of project report, Elements of project formulation Planning commission guidelines for project formulation/preparation, legislation – licensing, registration. Preparation of Project Report	15
Unit IV	**Management of Business Enterprise** a) Financial management – working capital, Break even analysis, pricing of product, cost concept b) Interface with Government – definition Incentives for entrepreneurs, sales tax,	10
Unit V	**Human Resource Management** Managing employees in an enterprise, labour law application – Factories Act Workman Compensation Act and Industries Dispute Act. Problem faced by women entrepreneurs. And remedial measures	10
	Total	60

REFERENCES

1. Gupta and Srinivasan, N.P., 1985, Entrepreneural 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.,

4. ParamjeetKaur Dillon., 1993, Women Entrepreneurs, Problem and prospectus, New Delhi, Blaze Publishers Co., Ltd
5. Yadav, C.P., 2000, Encyclopaedia of Entrepreneurship development, Volume I, Lucknow, Anmol Publication Ltd.
6. Yadav, C.P., 2000, Encyclopaedia of Entrepreneurship development, Volume II, Lucknow, Anmol Publications Ltd.
7. Yadav, C.P., 2000, Encyclopaedia of Entrepreneurship development, Volume III, Lucknow, Anmol Publications Ltd.
8. Yadav, C.P., 2000, Encyclopaedia of Entrepreneurship development, Volume IV, Lucknow, Anmol Publications Ltd.

9. Patrice .J McGinnis 2016 ,The 10 % Entrepreneur .Penguin Publishers .United Kingdom

JOURNALS

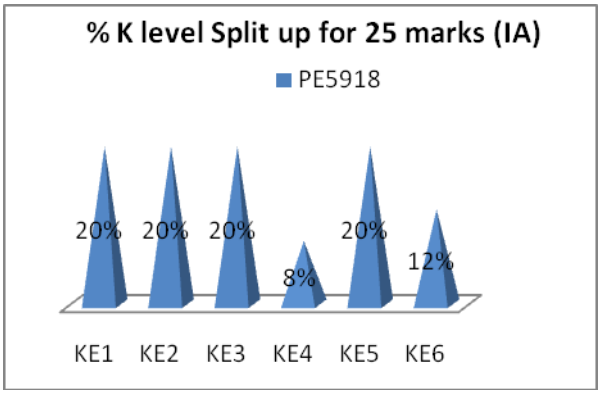
Journal of Entrepreneurship, Sage Publications Pvt. Ltd. New Delhi.

WEBSITES

1. www.ibusinessdevelopment.
2. www.enterweb.org/entrship.htm
3. www.entrepreneuriadevelopment.com
4. www.entrepreneurialdevelopmentcenter
5. www.entrepreneurship.mit.edu

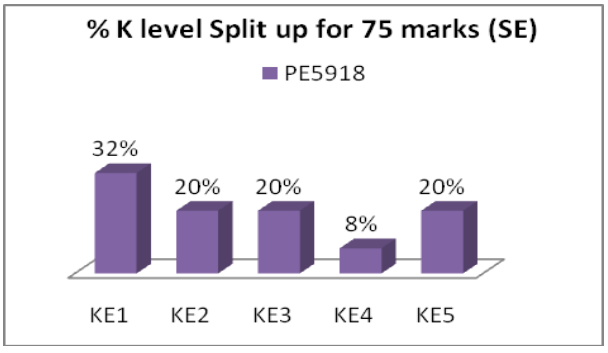
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**32%**
Understand	20%
Apply	20%
Analyze	8%
Evaluate	20%



BASICS OF INTERIOR DECORATION

EXTRADISCIPLINARY ELECTIVE FOR OTHER MAJOR STUDENTS'

SEMESTER: II **CREDIT:3**

PAPERNO: XI **CODE NO: PD5908**

OBJECTIVES :

To enable the students to

1. Gain knowledge and understand the basic art principles.
2. Learn the dimensions of colour and application of art principles in interior.

COURSE OUTCOMES

CO1	Recall the concept of interior design by organizing the space of a house into a pleasant home and understand the objectives of interior design-to utilize the idea, potential use of human space for all human beings. List the importance of interior design Exhibit Creativity in enhancing the aesthetic quality in achieving the elements of design. Activity: individual/group activity on elements of design. Poster presentation. (PO3, PO5, PO7)	K1, K2, K3, K5, K6
CO2	Remember the art principles of interior design, Understand and Apply and analyze - the principles of design in harmony, proportion, balance, rhythm and emphasis to bring aesthetic both in interiors as well as in exteriors. (https://youtu.be/xb9gDa_wjo0) (PO9) (question session with group activity on principles of design) (PO4, PO5)	K1, K2, K3, K4
CO3	Recall and Classify the colour theories in all art forms. Apply and choose the colour theories and formulate the theories which help the students to make correct choices and the relationship between different colours and to make intelligent decisions by (Group assignment, Seminar, Web resources and Quiz. (PO3, PO4, PO5, PO7, PO9). exhibit creativity in theme based colour harmonies in arranging the interiors. (www.designwizard.com) (Video: http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827)	K1, K2, K3, K4, K5, K6
CO4	Define the flower arrangement and understand the Importance of flower arrangement and the harmony of colour form and texture in interior design (using the history of review through survey and question session. (P04, PO7, PO9). Choose and illustrate three main styles in flower arrangement. Create the three main styles in flower arrangements. Activity: Individual activity on flower arrangement. (PO3) {http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827 http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827} (PO9)	K1, K2, K3, K5, K6
CO5	Select the furniture for a family and understand the construction of the furniture and plan the art principles and choose and Develop the arrangement of furniture for different rooms. (Group assignment and learning the	K1, K2, K3,

	traditional furniture arrangement through literature survey) (PO5, PO7) (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827) (PO9)	K4, K5.

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

Course Outline

S.NO	CONTENT	No of hours
Unit I	**Interior Design** a. Concept, objectives and importance of Interior Design b. Elements of Design	20
Unit II	**Concept and Application of Art Principles'** a. Interior Design- Harmony, Proportion, Balance, Rhythm and Emphasis	**25**
Unit III	**Colour** a. Colour Theory-Prang Colour Theory and Psychologist Colour Chart b. Colour Harmonies-Related and Contrasting Colour Harmonies.	**20**
Unit IV	**Flower Arrangement** a. Definition and importance styles in Flower Arrangement	**15**
Unit V	**Furniture Arrangement** a, Selection of Furniture for a Family b. Art Principles in the Arrangement of Furniture for Different Rooms	**20**
	Total	**90**

REFERENCES

1. The Smaller Home : Smart Designs for Your Home, Sater, Dan, HarperCollins Publisher, 2008
2. Interior Design 01 Edition, Chaudhari, S N, Aavishkar Publishers, 2011
3. Sketching for Architecture and Interior Design, Laurence King Publishers, 2011
4. Alexander, M.J., 1972, Design Interior Environment, Hariyana, Harcourt- Brace Pvt. Ltd.

5. Brian, W. and Tom, W., 1977 Indoor Plants, London, Macdonald Guidelines Pvt. Ltd.
6. Craig, H.T. and Rush, O.D., 1962 Homes with character, Boston, Health Co., Pvt. Ltd.
7. Coe Stella., 1984, Ikebana. A practical and philosophical guide to Japanese flower arrangement, London, Century Publishing Co. Ltd.,
8. Faulkner, S. and Faulkner, S., 1960 Inside Todays Home, Newyork, Rimettard and WinstemPvt. Ltd.
9. Goldstain, V. and Goldstein, V., 1960, Art in everyday life, New York, Macmillan Co. Pvt. Ltd.
10. Jean, T., 1980, Flower arranging, London, Macdonald Guidelines Pvt. Ltd.,
11. John Lester and Steven Violet., 1975, The world of houseplants and flower arranging, New York, Galahod Book Co.
12. Rutt, H., 1973, Home furnishing, New York, John Wiley and Sons Pvt. Ltd.

E - JOURNAL

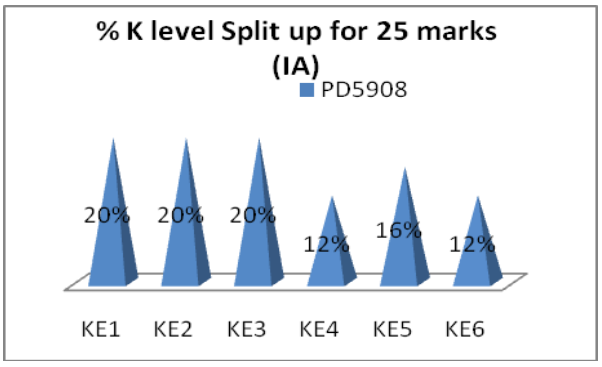
1. Architecture Design, Journal of Indian Architecture.
2. Inside outside, Business India Group, Mumbai.
3. Indian Design and Interior, Media Transasia India Ltd.,

E- REFERENCES

1. www.interiordesign.net

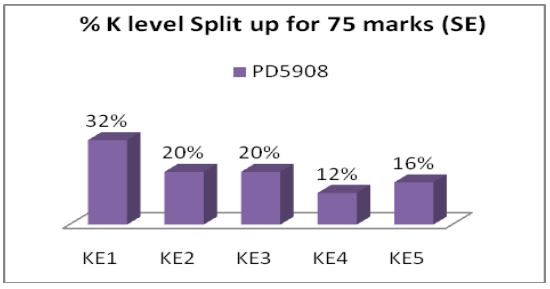
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**32%**
Understand	20%
Apply	20%
Analyze	12%
Evaluate	16%



QUANTITY FOOD PRODUCTION AND SERVICE

SEMESTER: III **CREDIT 4**
PAPER NO: XII **CODE NO**: PC5949

LEARNING OBJECTIVES

To enable students to

1. Develop skills in planning the layout for a food service unit
2. Acquire skills in quantity food preparation and table setting.
3. Understand the importance of food safety hygiene

COURSE OUTCOMES

CO1	**Recall** the size and types of kitchens- Square, rectangular, parallel, straight, U-shape **Understand** the factors to be considered in designing food facilities. **Develop** kitchen plans based on the type of food service. [PO3] **Analyse** the various types of architectural features- wall, floor, lighting, ventilation, drainage,acoustic measures, plumbing, waste disposal. **Apply** the knowledge to **develop** and **modify** the kitchen areas [PO3]. **Discuss** the architectural features for theme restaurants. [PO5] (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=1827)	K1, K2, K3, K4, K5
CO2	**Recall** the classification and selection of equipment, **Classify** according to weight / size, order of use, mode of operation, custom built equipment, **Analyse** the factors influencing selection of equipment. **Understand** purchasing decision, **Identify** supply sources, **Discuss** purchase procedures and methods. [PO5] **Understand** the general schedule for installation, care maintenance of equipment- refrigerator, cooking range, food processor, coffee maker, purchase, microwave oven. (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=1827)	K1, K2, K3, K4
CO3	**Understand** the methods of purchasing, purchase procedures, **Analyse** the specifications for different foods. **Describe** the receiving process and facilities, **Classify** the different types of storage, dry storage refrigerated and freezer storage, **Understand** the types of inventory records and control, **Apply** knowledge in maintenance of store rooms and records. **Discuss** the best purchasing method in relation to the size and type of food service unit. [PO5]	K1, K2, K3, K4
CO4	**Recall** menu planning, Understand functions of menu, **Analyse** the factors affecting menu planning. **Develop** menu format and constructions **Classify** types of menu - A la Carte and Table d' hote menu, combination occasional, cyclic, single use French classical menu. **Create** various types of menus. [PO3] **Recall** the definition of standardized recipes, **Understand** the methods of standardization, **Identify** the methods of portion control. **Develop** and **Create** standardized recipes [PO5]. Group activity: Preparation and service of selected recipes with one student as leader for each group [PO6] **Classify** the types of foodservice systems, Identify equipment needs, **Describe** the styles of service- self service, tray service, waiter – waitress service, **Demonstrate** table setting and serving procedures, **Analyse** the types of dinner ware, table ware, glassware and **Discuss** the factors influencing selection table covers. [PO5] **Describe** the methods and procedures of dishwashing (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=1827 http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=1827)	K1, K2, K3, K4, K5, K6
CO5	**Understand** the importance of hygiene in food handling. **Discuss** the need for employee health and personal hygiene, **Apply** skills in food production. [PO5]. **Implement** the principles of HACCP in Food Service. [PO3]. **Analyse** and **Apply** the food safety regulations and standards (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444)	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	5 Team player/worker	6 Skilled project manager	7 Digitally Efficient	8 Ethical awareness / reasoning	9 National and international perspective	10 Lifelong learners
CO1	2	2	2	1	2		2	1	2	1
CO2	2	2	1	1	2		2	1	2	1
CO3	2	2	1	1	2		2	1	1	1
CO4	2	2	2	1	3	1	2	2	2	1
CO5	2	2	2	1	2		2	1	2	1
CO-PO-Avg	2	2	2	1	2	1	2	1	2	1
CO-PO-Total	10	10	8	5	11	1	10	6	9	5

S. No	Content	No of hours
Unit I	**Facilities planning and design** a. Size and Types of kitchens- Square, rectangular, parallel, straight, U-shape b. Designing food facilities – Layout of kitchen spaces, developing kitchen plan, planning of layout- determining work areas, workers area of reach. c. Architectural features- wall, floor, lighting, ventilation, drainage, acoustic measures, plumbing, waste disposal	**20**
Unit II:	**Equipment** a. Classification and selection - According to weight / size, order of use, mode of operation, custom built equipment, Factors influencing selection of equipment, b. Purchasing equipment- Purchasing decision, identifying supply sources, purchase procedures and methods, c. General schedule for installation, care maintenance of equipment- refrigerator, cooking range, food processor, coffee maker, purchase, microwave oven	**15**
Unit III	**Quantity food purchase, receiving storage** a. Methods of purchasing, purchase procedures- Specifications for different foods b. Receiving and storage- receiving process and facilities, dry storage refrigerated and freezer storage, inventory records and control.	**15**
Unit IV	**Menu planning, food production and service** a. Menu planning - Functions of menu, factors affecting menu planning. Menu format and constructions, Types of menu - A la Carte and Table d' hote menu, combination occasional, cyclic, single use French classical menu, b. Food production- standardized recipes, recipe adjustment, recipe files, production control- ingredients assembly and portion control c. Service- Methods of assembly, delivery and service, factors affecting choice of distribution systems- types of food service systems, equipment needs, Styles of service- self-service, tray service, waiter – waitress service, table setting and serving procedures, portable meals, Dinner ware, table ware, glassware – types and factors influencing selection table covers	**20**

	d. Dishwashing –methods and procedures	
Unit V	**Food safety** a. Hygiene in food handling - Receiving, storage, preparation, cooking,holding , serving , clearing , disposal, time temperature relationships b. Employee health and personal hygiene - - proper attire, hand washing, personal habits, cuts abrasions and illness c. Implementation of HACCP in Food Service. d. Food safety regulations and standards	**20**
		90

REFERENCES

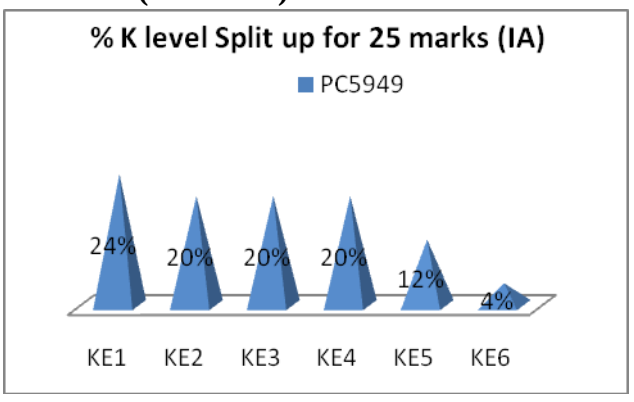
1. Brown.A.2015.Understanding Food Principles and Preparation, fifth edition, Cengage Learning, Singapore.
2. Negi.J. Ritusha.G.M.J and Suniti. 2013. Food and Beverage Service skills and techniques. S.Chand and company private limited, Chennai.
3. Andrew. S. 2009. Food and beverage services a training manual. Second edition. Tata McGraw- hill publishing company limited, New Delhi.
4. Katsigiris . C. and Thomas. C. 2009. Design and Equipment for Restaurants and Food Service, Third edition. John wiley and sons.
5. George .B. 2008. Catering management. Third edition. New age international private limited, New Delhi.
6. Sethi. M. 2008. Catering Management. Third edition. New age international private limited, New Delhi.
7. Sethi. M. 2008. Institutional Food Management. Third edition. New age international private limited, New Delhi.

E-REFERENCES

1. www.fda.gov
2. www.wadsworth.com/nutrition
3. www.ific.org
4. www vrg. Org
5. http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=1827

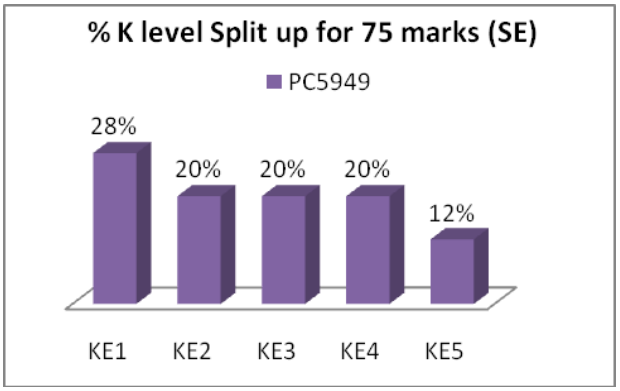
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**36%**
Understand	20%
Apply	20%
Analyze	12%
Evaluate	12%



PUBLIC HEALTH NUTRITION

SEMESTER III **CREDIT: 4**
PAPER : XIII **CODE NO : PC5950**

LEARNING OBJECTIVES

To enable students to :

1. Learn epidemiology, causes and prevention of communicable and non-communicable diseases
2. Know the various methods of assessing nutritional status and obtaining vital statistics.
3. Gain awareness on the existing State and National programmes in nutrition surveillance
4. Plan and implement nutrition education programmes using audio-visual aids

Course Outcome

At the end of each unit the student will be able to:

CO	Course Outcome	K level
CO1	Recall the concepts of Nutrition and Health. Understand the underlying relationship between health and nutrition. Analyze the significance of nutrition in determining health and Explain the role of nutrition in National Development How nutrition is important for National Development: Teaching through PPT (https://www.researchgate.net/deref/) e-reference on Nutrition and Development: The View of the Planner –Apply learnt knowledge for self in individual family and extending knowledge to community Discussion and question and answer session (PO1, PO2)	**K1, K2, K3, K5, K4,**
CO2	Define and Describe communicable and non-communicable diseases. Analyse and think critically about the epidemiology of communicable and non-communicable diseases (PO3) (http://epgp.inflibnet.ac.in) (PO9) Acquire the ability to adopt methods to prevent communicable and non- communicable diseases\life style diseases(PO9) Activity- seminar (write – create - prepare assignment and group presentation (PO5) with the use of PPT (PO7), followed by discussion and question and answer, (https://www.youtube.com/watch?v=8PH4JYfF4Ns –Social Determine of health) (PO9, PO8, PO1, PO2)	**K1, K2, K3, K4, K6**
CO3	Understand the use of direct and indirect methods to assess nutritional status. List the assessment methods. Recall and use assessment methods such as Clinical examination, Nutritional anthropometry (Group activity –assess nutritional status (PO5). Describe biochemical tests, functional Indices and Biophysical methods. Evaluate and Select an appropriate method or a combination of methods for diet survey. (Analyse the dietary pattern of the class students based on the RDA (PO3, PO5, PO6) followed by Question-and-answer session. Understand vital statistics its classification and refer and use vital statistics data to prepare a report Explain the significance of nutritional surveillance (PO9, PO1, PO2)	**K1, K2, K3, K4, K5**
CO4	Demonstrate knowledge of the existing nutrition programmes such as ICDS. (https://www.researchgate.net/publication/333866257_National_Nutrition_Programmes_in_India) Analyse benefits of beneficiaries in a nearby anganwadi center (P03), Enumerate the objectives and functions of National Goitre control programme, TNIP and organisations such as FAO, WHO, UNICEF ,CARE, ICMR, ICAR, NIN and CFTRI. Make Use of information about these programmes and agencies appropriately to support nutritional research. (PO9) Activity quiz - Role and objective of selective Nutrition Programmes (PO1, PO2)	**K1, K2, K3, K4**
CO5	Understand the significance of audio-visual aids in imparting nutritional education to the community. Tell the types of Audio-visual aids available for nutrition	**K1, K2,**

	education. Acquire the skill to choose and use appropriate audio-visual aids suited to the target audience. (Role of Communicator video lecture epathasala- https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=827 and youtube https://www.youtube.com/watch?v=kJlWRH9LkU8&feature=embtle MHRD-National Mission on education through ICT Create, evaluate and use innovative Audio-visual aids in educating the community). Group Activity - planning and implementing nutrition education- Extending nutritional knowledge to the community (PO5) Preparation of video-on prevention of Anaemia (group activity) (PO7), question session (PO1, PO2)	**K3, 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	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	2	1	2	1	2	2	1	2
CO3	3	2	1	1	2	1	1	1	2	1
CO4	3	2	1	1			1	1	1	1
CO5	3	2		1	2	1	2	1	1	1
CO-PO-Avg	3	2	1	1	2	1	1	1	1	1
CO-PO-Total	15	10	4	5	6	3	7	6	6	6

Course outline

Unit	Content	No of hours
Unit I	**Public health nutrition** – a) Concept and definition of public health nutrition, b) Relationship between health and nutrition. c) Role of Nutrition in National Development	**10**
Unit II	**Communicable and Non-Communicable diseases** a) Communicable diseases- Epidemiology, mode of transmission prevention and control of AIDS, STD, Typhoid, Tuberculosis, Malaria, Hepatitis and Leptospirosis, SARS, COVID, Ebola and Swine flu. Prevention and Management b) Nutritional deficiency\–Causes and prevention of Protein Energy Malnutrition, Nutritional Anaemia, Vitamin A deficiency and Iodine Prevention and Management c) Non-Communicable Diseases\Life style diseases- Causes, prevention and management of Obesity, Cardio vascular disease and Diabetes.	**20**
Unit III	**Assessment of Nutritional status** a) Direct and indirect methods- Need and importance, Clinical examination, Nutritional anthropometric assessment, functional indices, biophysical methods and biochemical methods. b) Vital statistics –meaning, importance and methods c)Nutrition surveillance -definition and importance	**20**
Unit IV	**Programmes and Organisations for Nutrition surveillance** a) National nutrition policy and programmes- ICDS, National Goitre control programme b) State level programmes –TINP and school lunch programme c) Organisations –FAO, WHO, UNICEF, CARE, World bank, CFTRI, ICMR, ICAR and NIN	**20**

Unit V	**Nutrition Education and Audio-visual aids** a) Meaning and purpose of nutrition education b) Audio-Visual aids –definition, types and uses of audio-visual aids	**20**
		90

REFERENCE

1. Bamji et al., 1996, Textbook of Human Nutrition Oxford and IBH Publishing co. Pvt.Bamji et al., 1996, Textbook of Human Nutrition Oxford and IBH Publishing co. Pvt. Ltd. Delhi.
2. Park, K., 1995, Textbook of Preventive and Social Medicine, Banarasidas Bharat Publication, Jabalpur.
3. WHO, 2003, Diet, Nutrition and Prevention of Chronic Diseases, WHO Technical Report series, Geneva
4. Mahajan, B.K., and Gupta M.C., 2002, Textbook of Preventive and Social Medicine, Jaypee brothers, New Delhi.
5. James.T, Noor Sylvan and Asay, 2012, Family Resource Management, Sage publication, California,
6. Seetharaman. P, Btra. S and Mehra. P, 2005, introduction to Family Resource Management, CBS Publication, New Delhi.

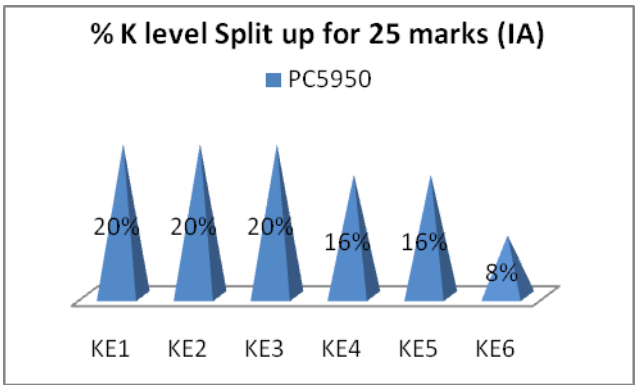
7.Nix .S(2016) Williams' Basic Nutrition & Diet Therapy, Fifteenth Edition, Elsevier

E-REFERENCES

www.sciencedaily.com
www.cdc.gov / nchs
www.whoindia.org
www.nutrition.org.uk
www.fda.gov/search.html
bookman.com.au/vitamins
www.thriveonline.com/eats/vitamins/guide.index.html
www.nlm.nih.gov
www.wadsworth.com/nutrition

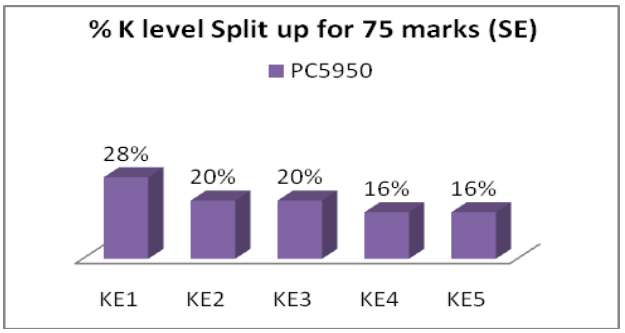
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**28%**
Understand	20%
Apply	20%
Analyze	16%
Evaluate	16%



APPLIED STATISTICS

SEMESTER III **CREDIT : 4**
PAPER NO : XIV **CODE NO: PC5951**

OBJECTIVES

To enable students to learn

1. Analysis of data for measures of central tendency, dispersion, relationship, regression and tests of significance
2. The appropriate use of these statistical techniques in research work.

COURSE OUTCOME

On completion of the course the student can

CO1	**Recall** the concept of central tendency with an understanding of the merits and demerits of measures such as mean, median and mode (present summary of merits and demerits of measures of central tendency using ppt) (PO2, PO7). **Apply** formulae and calculate mean, median and mode of a given set of data. (solve problems). **Acquire the skill to analyse, evaluate and choose** the most suitable measure of tendency to solve the problem at hand. (Group activity- identify the use of different measures of central tendency in real life situations) (PO5, PO3)	K1, K2, K3, K4, K5
CO2	**Understand** the concept of dispersion and the merits and demerits of measures such as range, quartile deviation, mean deviation and standard deviation (present summary using ppt) (PO2, PO7). **Apply** formulae and calculate the given measure of dispersion (solve problems) {PO3}. **Acquire the skill to select** the most suitable measure of dispersion for the problem at hand. **Understand** the concept of skewness. **Acquire the skill to calculate** skewness and interpret the nature of the distribution (e quiz). (PO4, PO7)	K1, K2, K3, K4, K5
CO3	**Understand** the concept of Correlation, (Group activity, presenting research problems employing the different types of correlation {PO5, PO7, PO9} (NPTEL video lecture https://www.youtube.com/watch?v=fNLeogEjMmM) interpret and evaluate the relationship between variables. **Remember and Apply** formulae to calculate correlation for a given set of data. **Apply** formulae to calculate rank correlation for the given set of data and interpret data (solve problems).	K1, K2, K3, K4, K5
CO4	**Understand** the concept of regression using (Lecture video https://nptel.ac.in/courses/111/105/111105042/) followed by group discussion (PO5, PO9). **Acquire the ability to calculate** regression using formula. **Evaluate** the influence of one variable on the other using regression equation.	K1, K2, K3, K5
CO5	**Understand** the concept of null and alternate hypothesis, types of errors, one and two tailed tests (summarize and present using ppt) {PO2}. **Critically analyse** the suitability of statistical methods used for the given hypothesis laid down in research articles, dissertations. {PO3, PO9} (Group Assignment – Prepare research proposal stating hypothesis with justification of the proposed statistical analysis) {PO3, PO4} Acquire the ability to **compute** tests of significance using appropriate formula. **Explain** (summarize and present) {PO2, PO7} the definition, uses and limitations of chi square and compute problems to find attributes of association, homogeneity and good ness of fit. **Understand** the concept and applications of ANOVA (e streaming of lecture video) Develop the skill to **compute and interpret** ANOVA of the given data. (Group quiz- preparation of question bank for the unit) {PO4, 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	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		2	1		1
CO2	3	1	2	1			2	1		1
CO3	3	2	2		1		2	1		1
CO4	3	1	2				2	1	1	1
CO5	3	2	2	1	2	1	2	1	1	1
CO-PO-Avg	**3**	**1**	**2**	**1**	**1**		**2**	**1**	**1**	**1**
CO-PO-Total	**15**	**7**	**10**	**2**	**3**		**10**	**5**	**2**	**5**

Course Outline

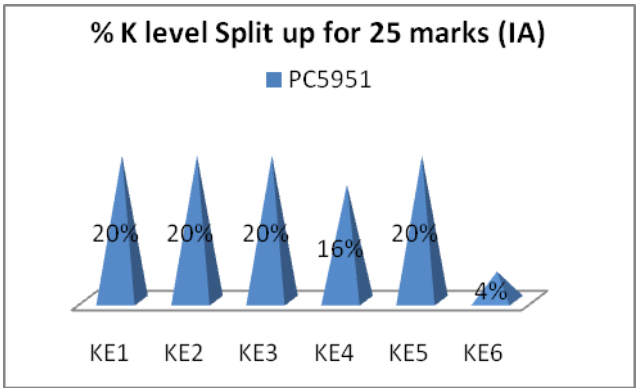
S. No	Content	No of Hours
Unit I:	a. Measures of central tendency- Calculation of arithmetic mean, median and mode of individual observations, discrete series and continuous series. Merits and demerits of mean, median and mode.	**15**
Unit II:	a. Measures of dispersion-range, Quartile deviation, mean deviation and standard deviation b. Measures of skewness-positive and negative skewness, Karl pearson's coefficient of skewness and Bowley's coefficient of skewness	**20**
Unit III:	a. Measures of relationship – Correlation analysis – Types of correlation, Calculation of Karl Pearson's Coefficient of Correlation and Spearman's rank Correlation Coefficient.	**15**
Unit IV:	a. Regression analysis- regression lines-difference between correlation and regression analysis, uses of regression analysis, Simple regression analysis using regression equations of Yon X and X on Y.	**15**
Unit V:	a. Tests of Hypotheses- Procedure of testing hypothesis, two types of errors in testing hypotheses, two- tailed and one tailed tests of hypotheses. Tests of significance of large samples, tests of significance for small samples- student's t test. b. Chi- square test – definition, uses and limitations, F-test- definition, applications, ANOVA- assumptions, one way and two-way ANOVA.	**25**

REFERENCES

1. Gupta. S.P., 2014, Statistical Methods, Forty Fourth Revised Edition, New Delhi, Sultan Chand & Co., Publishers
2. Palanisamy**,** S and Manoharan, M., 1999., Statistical Methods for Biologists, Palani, Paramount Publications.
3. Rao, K.V., 1996, Bio-statistics, Madras, Jaypee Brothers Medical Publishers

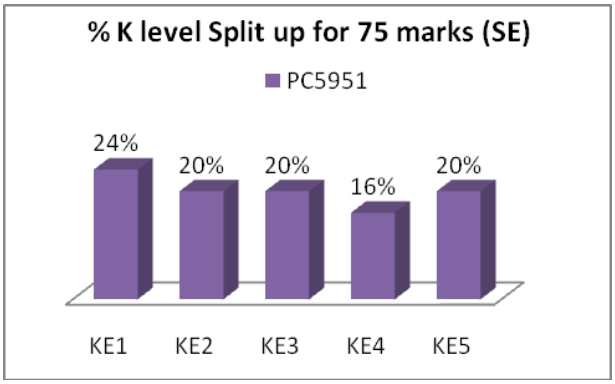
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**24%**
Understand	20%
Apply	20%
Analyze	16%
Evaluate	20%



FOOD PROCESSING AND PRESERVATION

SEMESTER : III **CREDIT : 3**
PAPER NO: XV **CODE : PE5919**

OBJECTIVES

To enable the students to

1. Understand the principles of different techniques used in processing and preservation of foods.
2. Study the applications of different processing methods in the food industry.

COURSE OUTCOMES

On completion of each unit in the course, the student can:

CO1	**Understand** the importance of food preservation and processing **Identifying** the causes of food spoilage. **Recall** the various factors influencing shelf life of foods (An activity on examining the shelf life of common foods and reporting the factors influencing it as PPT) (PO5, PO7). (https://www.youtube.com/watch?v=dIwzvuZHffE) **Explain** the basic concepts of food processing and its impact on food product quality. **Compare** shelf life of different foods at different storage conditions (Group activity and submit a typed report). (PO2, PO5, PO7) (Lecture video: http://epgp.inflibnet.ac.in/Home/Download followed by group discussion) **Evaluate** the scope and benefits of industrial food preservation and adopt selected methods of food preservation at household level followed by question-and-answer session (PO4)	K1, K2, K3, K4, K5
CO2	**Understand** the concept of thermal destruction of microorganisms. **Remember and Interpret** D, Z, F values. **Distinguish** the various processes done for preservation of food using high temperature. **Discuss** the effectiveness of Retort processing of Ready to Eat (RTE) products (for latest reference - https://www.researchgate.net/) (PO9, PO7). (Lecture video: http://epgp.inflibnet.ac.in/Home/Download followed by group discussion) (PO4, PO9, PO10). **Explain** the various methods of dehydration for dehydrating Fruits, Vegetables, milk and animal products (PPT) (PO2, PO7) and **Make use of** dehydration method of preservation at house hold level**. Describe** the chemical, physical and nutritional changes that occur during drying -video presentation (PO7). **List** the different types of driers used for foods and the types of foods dried in each (PO2, PO5, PO6, PO7, PO8). (Individual Activity- A brief report)	K1, K2, K3, K4
CO3	**Understand and Explain** the benefits of chilling and refrigerated storage foods. **Identify** the optimal storage temperature for different foods- PPT (PO7). **Describe** the chilling rate on product quality (for latest reference - https://www.researchgate.net/) (PO9, PO7). (Assignment) (PO2). **Explain** physical, chemical, biochemical, microbial, Nutritional changes that take places during refrigerated storage of foods (Lecture Video http://epgp.inflibnet.ac.in/Home/Download (PO9, PO10) followed by E-quiz) (PO4). **Compares** and **contrast** different freezing technologies used for freezing foods (for latest reference - https://www.researchgate.net/) (PO7). **Compile a literature review** in freezing of foods (PO5, PO9, PO10) followed by group discussion (PO4). **Understand** the basic principles of CAP and MAP. **List** the various gases utilized for preserving foods and **analyses** merits and demerits of CAP and MAP processing. Group activity – report on usage of CAP and MAP	K1, K2, K3, K4, K6

	and its impact on health (PO5, PO2).	
CO4	**State** the forms of Radiant Energy. **Explain** the principles of electromagnetic radiations in food processing -PPT (PO7). **Differentiate** radiations and **compare** the advantages and disadvantages of the usage of irradiation on food {For latest reference – https://www.mdpi.com (PO9, PO7) followed by Question-and-Answer session- (PO4)}. **Understand** the quality effects (Sensory, nutritional and chemicals) on foods when exposed to various radiations and - (Lecture Video http://epgp.inflibnet.ac.in/Home/Download) (PO9, PO10) (Group discussion- PO4) submit an assignment using E resources).	K1, K2, K3, K4
CO5	**Recall** and **Describe** the role of food packaging in preserving food products. **Understand** the needs for packaging of food. **Discuss** how changes in packaging materials have affected food storage, distribution and occasional uses –submit a detailed report as a group (PO2, PO5, PO7). **Describe** the different types of packaging materials and its uses-video presentation (PO2, PO7) - (Lecture Video http://epgp.inflibnet.ac.in/Home/Download) (PO9, PO10, PO7) **Analyze** the merits and demerits of modern packaging system (For latest reference – https://www.mdpi.com) (PO9, PO7) followed by Question and Answer session- PO4). **Explain** on types of Intelligent Packaging through audio visual aids. (PO7, PO5, PO10) (Group activity). **Identify** the most suitable packaging for different food products- E- quiz (PO4).	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	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	2		2	1	1	1
CO2	3	2		1			2	1	2	1
CO3	3	1	1	2	2	1	2	1	2	1
CO4	3	1		2	1		2	1	2	1
CO5	3	1		2	1		2	1	2	1
CO-PO-Avg	**3**	**1**	**1**	**2**	**1**	**1**	**2**	**1**	**2**	**1**
CO-PO-Total	**15**	**6**	**1**	**8**	**6**	**1**	**10**	**5**	**9**	**5**

Course Outline

S. No	Content	No of Hours
Unit I	**INTRODUCTION:** Sources of food, Perishable, Non-Perishable food, Causes of food Spoilage, Scope and benefits of Industrial Food Preservation	**5**
Unit II	**PROCESSING AND PRESERVATION BY HIGH TEMPERATURE** a. Basic concepts in Thermal Destruction of Microorganisms – D, Z, F Values. b. Methods- Blanching, Pasteurization, Sterilization, UHT Processing, Canning, Dielectric heating, Microwave heating, Baking, Roasting and Frying. c. Retort processing of Ready to Eat (RTE) products. d. Dehydration of Fruits, Vegetable, Milk and Animal Products	**15**
Unit III	**PROCESSING AND PRESERVATION BY LOW TEMPERATURE**	

	a. Refrigeration b. Freezing. c. Controlled Atmosphere Processing (CAP) d. Modified Atmosphere Processing (MAP) e. Dehydro Freezing	**15**
Unit IV	**PROCESSING AND PRESERVATION BY IRRADIATION** a. Forms of Radiant Energy b. Principles of using electromagnetic radiations in food processing, ionizing, radiations and non-ionizing radiation, advantages and disadvantages. c. Controlling undesirable changes in food during irradiation.	**15**
Unit V	**PACKAGING** a. Principles, functions and Types of Packaging. b. Modern Packing System: **Active Packing**: Oxygen Scavenger, Carbon dioxide Scavengers, Ethylene Scavengers, Ethanol emitters, Preservative releasers, moisture absorbers, Flavor absorbers **Intelligent Packing**: Time Temperature Indicator (TTI), Freshness Indicator, Pathogen Indicator.	**10**
	TOTAL	**60**

REFERENCES

1. Chakraverty, A., Majumdar, A.S., Raghavan. G.S. V. & Ramawamy, H.S. (Eds.) (2003). Handbook of Postharvest Technology Cereals, Fruits, Vegetables, Tea, and Spices. USA: Marcel Dekker Inc.
2. Brennan, J.G. (Ed.) (2006). Food Processing Handbook. Weinheim, Germany: Wiley-VCH Verlag GmbH &Co.KGaA.
3. Fellows, P.J. (2000). Food Processing Technology- Principles and practice. (2nd Ed.). Florida, USA: CRC Press LLC.
4. Karel, M. and Lund, D.B. (2003) Physical Principles of Food Preservation (2 ed) NTY, USA: Marcel Dekker.
5. Rahman, M.S. (Ed.). (2007). Handbook of Food Preservation. (2nd Ed.). Florida, USA: CRC Press.
6. Smith, J.S., &Hui, Y.H. (Eds.) (2004). Food Processing: Principles and Applications. Oxford, UK: Blackwell Publishing.
7. S.M Reddy (2015), "Basic Food Science and Technology", New Age International Publishers.
8. Sun, Da-Wen (Ed.) (2005). Emerging technologies for Food Processing. California, USA: Elsevier Academic Press.
9. "Food packaging technology Handbook (2^{nd} revised edition)" by NIIR Board, Published by NIIR project consultancy service, ISBN: 978981039090, Code: N193 2012.
10. Fellows, P.J, "Food processing technology: Principles and Practice", Second edition, Woodhead Publishing limited, Cambridge, 2005.
11. Sahay, K.M and K.K Singh, "UNIT operations in Agricultural Processing", vikas publishing House Pvt ltd, New Delhi, 2003.
12. Sahin, S and Summu, S.G (2006), Physical Properties of Foods, NY, USA: Springer Science
13. Farnworth, E.R (ed) (2008), "Handbook of Fermented Functional foods (2^{nd}ed)", Florida, USA: CRC Press.

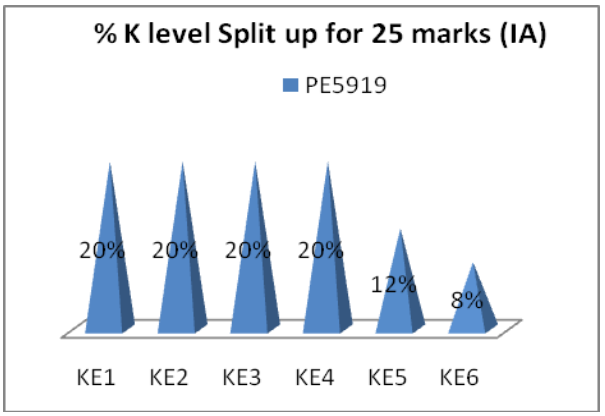
14. Hui, Y.H et al., (2004), "Handbook of food and beverage fermentation technology", New York, USA: Marcel Dekker Inc.,
15. Chen, X.D and Mujumdar, A.S (2008), Drying technologies in food processing, Sussex, U: Blackwell publishing.
16. Frazer, W.C and Dennis C Westhoff (4rd edition) (2008), Food microbiology, McGraw Hill Companies,

E-REFERENCES

1. Novel packaging technologies - www.foodprotection.org
2. Regulations and Types of packaging -www.worldpackaging.org
3. Canning - http://www.metal-pack.org
4. Vacuum packaging - http://www.culinaryinnovations.co.uk/
5. Techniques of food processing - mofpi.nic.in
6. Novel Food processing techniques - www.ift.org
7. Modified atmosphere packaging - www.adph.org

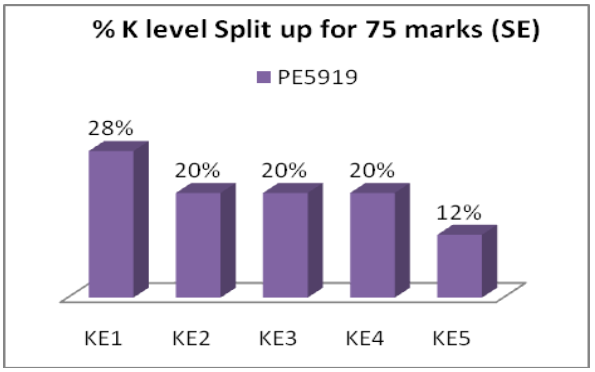
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**28%**
Understand	20%
Apply	20%
Analyze	20%
Evaluate	12%



FOOD SAFETY AND QUALITY CONTROL

SEMESTER -III **CREDIT: 3**
PAPER NO : XVI **CODE : PE5920**

LEARNING OBJECTIVES

To enable the students

1. To learn the importance of food safety, quality control, food laws and regulations in food industry
2. To gain knowledge on the existing food quality management systems
3. To acquire a basic understanding of quality concepts and practice in food companies
4. To gain familiarity with the standards and specifications

COURSE OUTCOMES

CO1	**Recall** the knowledge about the concepts such as food quality, food safety. Understand the basic requirements of food quality management. **Extend** the importance and functions of quality control. (Lecture Video: https://www.youtube.com/watch?v=WYosZ4zru5Y followed by discussion) {PO7, PO10}. (Lecture video: https://www.youtube.com/watch?v=34U7bU13Z-0 followed by discussion) {PO7, PO10}. (Lecture video: https://www.youtube.com/watch?v=ipvH-zGqYBU followed by discussion) {PO7, PO10}. (Prepare PPT with definition of international agencies) {PO7}	**K1** **K2**
CO2	**What** are the procedure to identify some of the common food adulterants and **Relate** the knowledge and skill to detect adulterants commonly used (Lecture Video: https://www.youtube.com/watch?v=pkDP1aU6HnU followed by discussion) {PO7, PO10} **Examine and determine** the current global challenges in food adulteration (Lecture Video: https://www.youtube.com/watch?v=gYRxpk0hSIE followed by discussion) {PO7, PO10}.	**K1** **K2** **K3** **K4**
CO3	**Recall and Explain** the knowledge on food quality parameters and control systems. **Identify** the workplace existence of occupational safety and health hazards. **Interpret the** relevant regulatory and national consensus standards along with best practices that are applicable. **Analyse and discuss** the factors responsible for the various types of contamination. **(Prepare PPT regulatory and national consensus standards along with best practices)** {PO7, PO10}.	**K1** **K2** **K3** **K4** **K6**
CO4	**Recall and Demonstrate** familiarity with Quality Control concepts in the food industry, (Lecture Video: https://www.youtube.com/watch?v=oSM5scOtahE followed by discussion). {PO7, PO 10). **Criteria to identify and** understand the quality control aspects in the purchase of raw materials, manufacturing process and quality assurance of finished products (Choose industry and prepare the quality concepts for raw materials and discuss) {PO3}.	**K1** **K2** **K3** **K4** **K5**
C05	**Outline** knowledge about regulations of food laws and standards. **Criteria** to understanding of safety and quality control. (Lecture Video: https://www.youtube.com/watch?v=Ajf6vqvG2q4 followed by discussion) {PO7, PO9}. **Demonstrate** an understanding of the regulations and auditing protocol of different international standards. **Compose** the recent standards of FSSC (Lecture Video: https://www.youtube.com/watch?v=S72fiHOWD2Y followed by discussion) {PO7, PO9}. **Group Discussion: Updating in Food safety standards**	**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	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	2		2	1	2	1
CO3	3	2		1	2		2	1	2	1
CO4	3	2	1	1			1	2	2	1
CO5	3	2		1	2	1	2	1	1	1
CO-PO-Avg	3	2	1	1	2	1	1	1	1	1
CO-PO-Total	**15**	**10**	**1**	**5**	**6**	**1**	**8**	**6**	**8**	**5**

S. No	Content	No of hours
Unit I	**Introduction to food safety and quality** a. Introduction to concepts of food quality, food safety, food quality assurance and food quality management. b. Importance and functions of quality control.	**5**
Unit II	**Food adulteration** a. Food adulteration, Common adulterants, Simple tests for detection of adulteration and toxic constituents. b. Functional role and safety issues - Recent trends and challenges in food adulteration.	**10**
Unit III	**Safety Vs Hazards** d. Food sanitation and safety: Factors contributing to physical, chemical and biological contamination in food chain, prevention and control of food borne hazards. Personal hygiene of food handlers, cleaning compounds, sanitation methods, waste disposal strategy (solid and liquid waste) and pest control a. Evaluation of food safety – GMP, GHP and applications of HACCP in food safety.	**15**
Unit IV	**Quality control in food industry** a. Quality control concepts as applicable to the food industry, Methods of evaluation and control of the various aspects of quality of raw materials. b. Manufacturing process and testing of finished products.	**15**
Unit V	**Role of National and International regulatory agencies in food safety** a. Bureau of Indian Standards (BIS), AGMARK, Food Safety and Standards Authority of India (FSSAI), Codex alimentarious commission, USFDA. b. International organization for standards (ISO) and its standards for food quality and safety (ISO 9000 series, ISO 22000, ISO 15161, ISO 14000), FSSC	**15**
		60

REFERENCES

1. Bhatia,R. and Ichhpujan,R.L (2004), Quality assurance in Microbiology, CBS Publishers and Distributors, New Delhi. 2004.

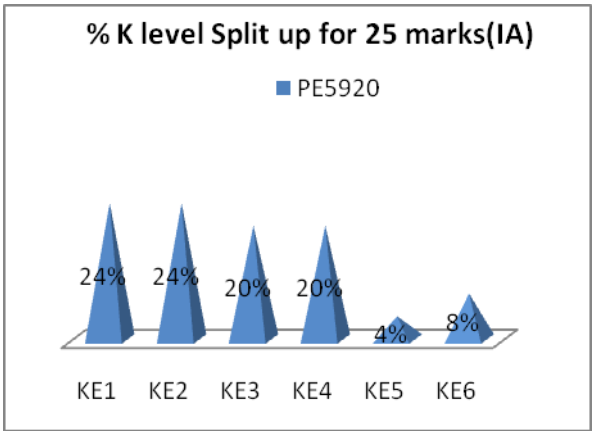
2. Bryan, F.L. (2007) Hazard Analysis Critical Control Point Evaluations A Guide to Identifying Hazards and Assessing Risks Associated with Food Preparation and Storage. World Health Organization, Geneva.
3. Early, R. (2006) Guide to Quality Management Systems for the Food Industry, Blackie, Academic and professional, London.
4. FAO (2006) Manuals of Food Quality Control. 2-Additives Contaminants Techniques, Rome.
5. Food and Agricultural Organization (1980): Manuals of Food Quality Control. 2 Additives Contaminants Techniques, Rome
6. Furia, T.E. Ed. 1980. Regulatory Status of Direct Food Additives. CRC Press, Florida
7. Gould, W.A and Gould, R.W. (2005), Total Quality Assurance for the Food Industries, CTI Publications Inc. Baltimore.
8. Hubbard, Merton R. (2003), Statistical Quality Control for the Food Industry, 3rd Edition, Springer
9. Kher, C.P, Quality control for the food industry. ITC Publishers, Geneva. 2000.
10. Kirk, R.S and Sawyer, R. (2005), Pearson's Composition and Analysis of Foods, Longman Scientific and Technical. 9th Edition, England.
11. Krammer, A. and Twigg, B.A. (1970), Quality Control for the Food Industry. 3rd Edn. AVI, Westport.
12. Naomi Rees. David Watson. 2000, International standards for food safety, An Aspen Publications
13. Neal D. Fortin(2009). Food regulation, WileypPublishers
14. O'Rourke. 2005. European Food law, 3rd edition, Thomson, Sweet and Maxwell
15. Philip,A.C. Reconceptualizing quality. New Age International Publishers,Banglore. 2001.
16. Pomeraz, Y. and MeLoari, C.E. (2008) Food Analysis: Theory and Practice, CBS publishers and Distributor, New Delhi.
17. Rekha S. Singhal ,Pushpa R. Kulkarni, Dananesh V. Rege, (1997). Hand Book of Indices of food Quality and Authenticity, wood head Publishing Ltd.
18. The training manual for Food Safety Regulators. Vol.II- Food Safety regulations and food safety management. (2011) Food safety and Standards Authority of India. New Delhi.
19. AOAC International. (2005) Official methods of analysis of AOAC International. 17th Ed., current through 1st revision. Gaithersburg, MD, USA, Association ofAnalytical Communities

E-REFERENCES

1. http://www.fssai.gov.in/
2. http://www.medindia.net
3. http://www.foodsafety.unl.edu/

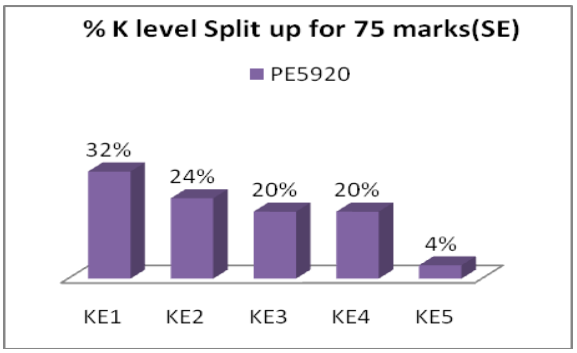
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**32%**
Understand	24%
Apply	20%
Analyze	20%
Evaluate	4%



HOSPITAL ADMINISTRATION

(EXTRADISCIPLINARY ELECTIVE FOR OTHER MAJOR STUDENTS)

SEMESTER: III **CREDIT : 3**

PAPER No : XVII **CODE : PD5909**

LEARNING OBJECTIVES

To enable the students to

1. Know about the types of hospitals and their administration.
2. Gain knowledge about the legal aspects of hospital administration.
3. Know about National and International organizations financing medical care.

CO1	**Recall and Describe** history of hospitals, **list** types and functions of hospitals, **understand** and **explain** the relationship of hospital to the community. **Identify and analyse** the role of hospital in the community (using literature review) summarize and present {PO9, PO2}	K1, K2, K3, K4, K5
CO 2	**Recall** the basic concepts of organizational chart e**xplain** its advantages and limitation (using power point) {PO2&PO7}, **Identify** duties and responsibilities of hospital administrator, doctor, nurses and other employees. **Understand** effective hospitalmanagement through principles of management. [(Lecture video- https://youtu.be/TtbImDfUt4c) followed by question-and-answer session] {PO4}; **Analyze** skills and characteristics of effective manager. **Develop** a check list (PO3) for skills essential for an efficient hospital administrator and relate the importance of each in hospital administration. Type and present as team work. {PO5, PO7}	K1, K2, K3, K5, K6
CO3	**Remember and outline** general acts legislations applicable to hospitals; **understand** Law of torts, consumer protection act, patient's bill of rights, and law of negligence (using power point) {PO2 & PO7}. **Identify** and **classify** incidences of law of torts and law of negligence from recent newspapers. Group discussion on law of torts, patient's bill of rights and law of negligence. summarize and present {PO2, PO5, PO9} **Submit** the procedure to file a complaint under consumer protection Act as typed report- Team work) {PO3, PO4, PO5, PO6, PO7, PO9}	K1, K2, K3, K4
CO4	**Recall and understand** the role of organizations financing medical care-National - ICMR, NIN, CFTRI, and International - WHO, UNICEF, FAO (using power point) {PO2 & PO7}. **Activity** E.Quiz	K1, K2
CO5	**Recollect** the concepts of accounting, (Lecture video https://youtu.be/xux-tYP5YrA followed by group discussion) {PO9, PO10} principles of accounting (Lecture video https://youtu.be/gJPBbsFkZG8 followed by group discussion) {PO9, PO10} analysis and interpretation of financial reports preparation (through question-and-answer session) {PO4}. **Analyse** and **explain** use of budgets, and methods of cost computation (using power point) {PO2&PO7}.	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	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
CO2	3	2	1	1	1		2	1	1	1
CO3	3	2	1	1	2	1	2	1	2	2
CO4	3	2					1	1	-	1
CO5	3	2		1			2	1	2	2
CO-PO-Avg	3	2	1	1	1		1	1	2	1
CO-PO-Total	15	10	1	3	3	1	8	5	7	7

Course outline

S. No	Content	No of hours
Unit I	**Hospital Growth and classification of hospitals in India** a. History, types and functions of Hospitals, b. Relationship of Hospital to the Community	**10**
Unit II:	**Organization and Management** a. Organizational chart, advantages and limitation chart, duties and responsibilities of hospital administrator, doctor, nurses and other employees. b. Effective hospital management- principles of management, skills and characteristics of effective manger	**15**
Unit III	**Legal Aspects of Hospital Management** a. General acts legislations applicable to hospitals, law of torts, consumer protection act, patient's bill of rights, law of negligence	**10**
Unit IV	**Organisations Financing Medical Care** National - ICMR, NIN, CFTRI International - WHO, UNICEF, FAO	**10**
Unit V	**Accounting and Financial Management in Hospitals.** Principles, analysis and interpretation of financial reports, Preparation and use of budgets, Methods of cost computation.	**15**

BOOKS FOR STUDY:

1. G. D Kunders, Hospitals - Facilities Planning And Management 2017
2. Gupta Joydeep Das, H, Hospital Administration And Management:A Comprehensive Guide 2015 Jaypee
3. Dr. S.M. Jha, Hospital Management 2011, Himalaya Publishing House
4. G.R Kulkarni, Financial Management Hospital Administration 2009, Jaypee

BOOKS FOR REFERENCE

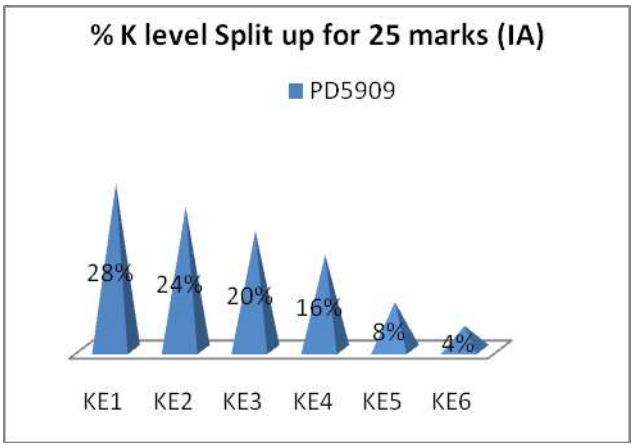
1. Ramachandra D LEssentials Of Hospital Management And Administration 2018
2. Davidson S.R. and Passmore J.F., 1975, Human Nutrition and Dietetics. Vol. I II Edition.
3. Francis, C.M and D' Souza, M.C., 2000, Hospital Administration. Jay Brothers.
4. Gillespie S. McNeil G., 1992, Hospital Management Macmillan and Co., New York.
5. Mitchell et. al., 1987, Nutrition in Health & disease, Pitman M. Edu. Publishing Co.,
6. Robinson et.al., 1986, Normal and Therapeutic Nutrition. Macmillan Co., New york.
7. Saxena M, 2019, Hospital Management Vol 1 (PB 2019) Paperback, CBS publishers

WEB REFERENCES

1. www.ingenta.connect.com - Food and Food ways.
2. www.fda.gov/search.html
3. www.wodsworth.com/nutrition
4. www.elsevier.com - Indian Journal of Nutrition and food microbiology.
5. www.healthcarebusinesstech.com/
6. www.mhaonline.com/faq/what-does-a-hospital-administrator-do

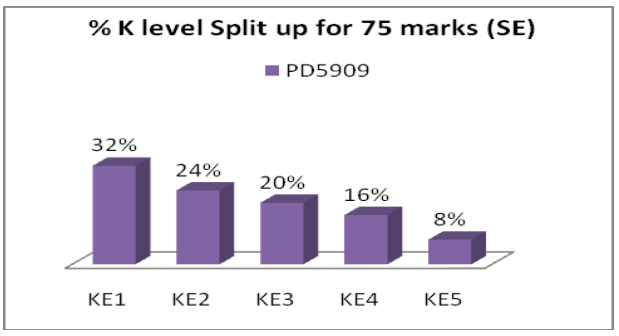
CIE-Continuous Internal Evaluation (25 Marks)

Bloom's Taxonomy	Test	Assignment	Seminar	Model Exam
Total (25)	**5**	**5**	**5**	**10**
Remember (7)	1	1	2	3
Understand (6)	1	0	1	4
Apply (5)	2	2	0	1
Analyse (4)	0	1	1	2
Evaluate (2)	1	0	1	0
Create (2)	0	1	0	0



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**32%**
Understand	24%
Apply	20%
Analyze	16%
Evaluate	8%



SPORTS NUTRITION

SEMESTER : IV **CREDIT 4**
PAPER NO: XVIII **CODE** : PC5952

OBJECTIVES

To enable the students

1. To learn the fundamentals in exercise physiology and energy systems.
2. To understand the utilization of nutrients during exercise and sports activities and the principles involved in nutrient recommendation for athletes.

COURSE OUTCOME

CO	**COURSE OUTCOME**	K Level
CO1	**Recall** the types and benefits of exercise. **Understand** the physiological adaptations that take place with exercise training (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) **Explain** the interaction of exercise physiology associated with muscles and cardiopulmonary system (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) (Assignment and discussion). **Differentiate** the relationship between type of physical activity and the energy systems utilized through literature review, summarize and present (https://www.youtube.com/watch?v=PIrhiSJcapc). {PO2, PO9, PO10}	K1, K2, K3, K4
CO2	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 training or competition. (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) {PO9, PO10} (group assignment and discussion based on the menu planned for the athletes before, during and after competition and present it, question and answer session) {PO4, PO5, PO6}	K1, K2, K3, K4
CO3	Define ergogenic aids. Explain the use of ergogenic aids. Determine the nutritional needs of athletes with special needs. (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444) (Submit list of ergogenic aids which are used by the athletes, followed by group discussion) {PO3, PO5}	K1, K2, K3
CO4	Find and Explain the sources of vitamins and minerals (using power point {PO7}). Describe the importance of vitamins and minerals in an athlete's diet. Identify the requirements of vitamins and minerals and suggest meal plan that ensure micronutrient adequacy in an athlete's diet. Explain the female athlete triad and plan a diet to avert the occurrence of female athlete triad (group assignment and discussion {PO3, PO5, PO6} (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. (https://youtu.be/tcAfouHY9i) {PO9, PO10}) Recommend fluid intake for athletes before, during and after training or competitions (using power point) {PO2, PO7} Discuss the conditions of fluid and electrolyte imbalance Report the available sports drinks in the market. (group assignment and discussion) {PO3, PO5, PO6}	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	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
CO2	3	2		1	2		1		1	1
CO3	3	2	1		1			1	1	1
CO4	3	2	1	1	1	1	1		1	1
CO5	3	2	1	1	2	1	1	1	1	1
CO-PO-Avg	15	10	3	4	6	2	3	2	5	5
CO-PO-Total	3	2	1	1	1	1	1	1	1	1

Course Outline

Unit	Content	No of hours
Unit I	**Introduction to Exercise Physiology and Energy systems** a. Definition of physical activity, exercise and sport. Classification of exercise. Benefits of physical activity. b. Exercise physiology –definition. Muscle physiology – muscle fiber types, muscular contraction and muscular adaptation to exercise training, principles of exercise to enhance muscular adaptation. Cardiopulmonary response and adaptations to exercise. c. Overview of energy systems- ATP- CP system, Lactic acid system, Aerobic System- Oxidative phosphorylation	**15**
Unit II	**Macro Nutrient Guidelines for Sports Activities** a. Carbohydrates – as a source of energy for exercise, recommendations of carbohydrates for athletes, recommended intake of carbohydrate before, during and after training or competition. Use of carbohydrate loading, application of glycemic index and glycemic load in sports nutrition. b. Fats – as a source of energy for exercise, effects of training on fat usage, recommendations for athletes, effect of inadequate fat intake on training, performance and health. Recommended intake of fat before, during and after training or competition. c. Proteins – role of protein for athletes, protein recommendations for athletes, recommended intake of protein before during and after training or competition, effects of inadequate protein intake in athletes, effects of excessive protein intake on training, performance and health. Use of protein and amino acid supplements. Considerations of protein intake of vegetarian athletes.	**25**
Unit III	**Nutritional Ergogenic aids and special needs** a. Definition of ergogenic aid and dietary supplement, types of dietary supplements and nutritional ergogenic aids commonly used by endurance, strength and team sport athlete. b. Nutritional needs of athletes with special needs - Diabetic athlete, young and elderly, travelling athlete	**20**
Unit IV	**Micro Nutrient Guidelines for Sports Activities** a. Vitamins- The influence of exercise on vitamin requirements, recommended daily vitamin intake, vitamins and energy metabolism,	

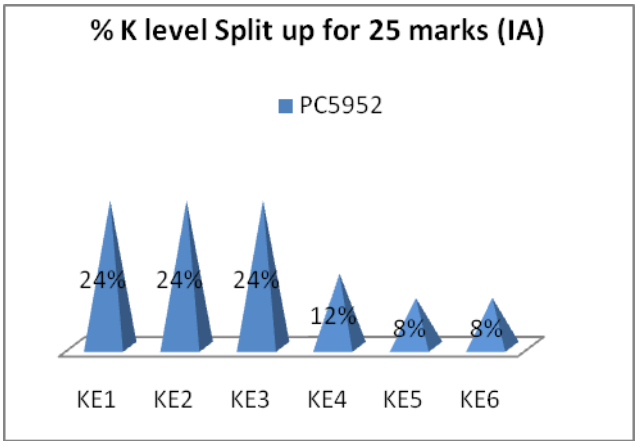
	vitamins and antioxidant protection. b. Minerals – Role of minerals in bone formation, blood formation and immune system. Impact of inadequate mineral intake on health and performance, female athletic triad.	**15**
Unit V	**Fluid intake during exercise and sports** a. Effect of exercise on fluid balance – effect of hypohydration and loss of electrolytes during exercise. Type, Timing and amount of fluid and electrolyte intake, application of fluid and electrolyte guidelines. Hyponatremia; hyperhydration; Use of sports drinks.	**15**
		90

REFERENCE

1. Asker E, Jeukendrup and Michael Gleeson (2004) 'Sports Nutrition: An introduction to energy production and performance' Human Kinetics
2. Bean A (2000) 'The complex guide to sports nutrition' A&C Black Publishers, London
3. Benardot (2006) "Advanced Sports Nutrition", Human Kinetics Ltd., U.S.A.
4. Brouns F and Cargill C (2002) "Essentials of sports nutrition" John Wiley & Sons Ltd., England
5. Clark N (2003) 'Sports Nutrition Guidebook', Human Kinetics, U.S.A.
6. Dunford M and Doyle AJ, Nutrition for Sport and Exercise, Thomson Wadsworth, Australia.
7. Fink H H, Mikesky A E, Burgoon LA (2012) Practical Applications in Sports Nutrition, Jones and Barlett Learning , U.S. A.
8. Kleiner S and Robinson M.G (2001) 'Power Eating', Human Kinetics, U.S.A.
9. Maughan R J and Burke LM (2002) 'Sports Nutrition', Blackwell Science Ltd.
10. Dunford .M & Doyle .J.A (2008),'Nutrition for Sport and Exercise', Thomson Wadsworth, USA.
11. Driskell J.A &Wolinsky. I (2002), 'Nutritional Assessment Of Athelets', CRC Press LLC, USA.
12. Antonio, J., & Stout, J. R. (2002). Supplements for endurance athletes. Human Kinetics.
13. Greenwood, M., Cooke, M. B., Ziegenfuss, T., Kalman, D. S., & Antonio, J. (Eds.). (2015). Nutritional supplements in sports and exercise. Humana Press.
14. Cooper, C. E. (2008). Drugs and ergogenic aids to improve sport performance. Essays in biochemistry, 44, 1-10.
15. Sen ray. K, Subbulakshmi.G and Subhadra.M.(2011).Methodologies for fitness assessment,Ane Books Pvt.Ltd,New Delhi.
16. Yobu.A (2010). Test Measurement and evaluation in physical education and sports, Friends Publications,New Delhi

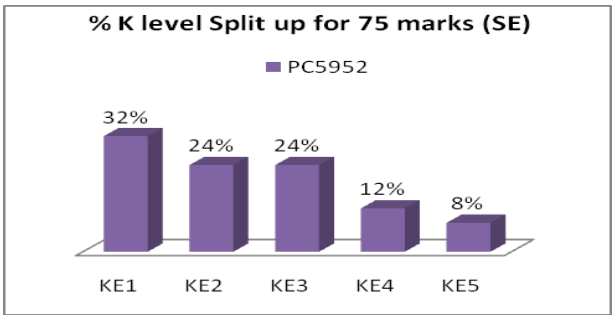
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**32%**
Understand	20%
Apply	20%
Analyze	12%
Evaluate	16%



FINANCIAL AND MARKETING MANAGEMENT

SEMESTER: IV **CREDIT:4**

PAPER No : XIX **CODE : PC5953**

OBJECTIVES:

To enable the students to

1. To create awareness about cost components and cost control strategies.
2. To prepare effective budgets.
3. To understand pricing policies and marketing strategies.

COURSE OUTCOMES

CO1	**Recall and understand** the objectives of finance management. **Explain** the functions of finance management and their cost components. **Classify** the cost control**, Plan** the food cost, labour cost and overhead cost, (PO3, PO4) **Analyze** the records for control, **Compare** the purchasing and receiving records, storage and store room records, food production records, service records and cash transaction records. **Estimate** the operating, maintenance records and personnel records. (Group discussion, Debate and Question session) (PO2, PO4, PO5) (https://youtu.be/qrs3taWpuD8) **(PO9)**	K1, K2, K3, K4, K5, K6.
CO2	**Define** budget, **Outline** the types of budget. **Apply** the steps in budget preparation. **Analyze** the factors to be considered while planning budget deviation. Debate. quiz and team discussion (PO4, PO5) (https://www.youtube.com/watch?v=mkWQVJzbyRs https://youtu.be/nS58YW1NFbE) **(PO9)**	K1, K2, K3, K4
CO3	**Recall and understand** the factors affecting pricing in a food service establishment, **Determine** the methods of pricing-formal and informal **Discuss** the types of taxes. (Group seminar, video presentation) (PO5, PO7) (https://www.youtube.com/watch?v=w0Y7H76kzjo) (PO9)	K1, K2, K3, K5
CO4	**Recall** and **Understand** the conventional accounting techniques. **Classify** the single entry, double entry (PPT)(PO7). **Apply** the advantages of double entry techniques. **Explain** the types of accounts-personal, real, nominal. **Define** and **Understand** –ledger, cash book, purchase book, sales book, purchase return book, sales return book, **Define** Journal, **Classify**-single, double and triple column journals. **Explain** trial balance. **Compare** profit and loss account. **Define** balance sheet, **Evalute** the measures of profitability (PO3). (Question session and group activity on types of accounts and E-resources infinibet) **(https://www.youtube.com/watch?v=pDJUJ6x2fk8) (PO4, PO5, PO7, PO9)**	K1, K2, K3, K4, K5
CO5	**Define** marketing, **Understand** the marketing cycle. **Identify** marketing mix, **Apply** marketing as a managerial function **Distinguish** merchandising and sales promotion. **Importance** of branding (Assignment and seminar on marketing, E-Resource and Group activity) (**https://youtu.be/VTM1QHJ3SOMactivity**) (PO2, PO5, PO7, PO9)	K1, K2, K3, K4, K5

CO/PO (GC/GMEET - PO7)	PO									
	1 Disciplinary Knowledge and skills	2 Skilled Communicator	3 Critical thinker and problem solver	4 Sense of	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		1	1	1	1
CO2	3	2	1	1	1		1	1	2	1
CO3	3	2	1	2	1		1	1	1	1
CO4	3	2	2	2	1		1	1	1	1
CO5	3	2	1	1	2	1	1	1	1	1
CO-PO-Avg	3	2	1	2	1	1	1	1	1	1
CO-PO-Total	15	10	7	8	6	1	5	5	6	5

Course Outline

S.NO	CONTENT	NO OF HOURS
UNIT 1	**Financial management** a. Objectives and functions of finance management. b. Costing – cost components, cost control – food cost, labor cost, overhead cost. c. Records for control – purchasing and receiving records, storage and store room records, food production records, service records, cash transaction records, operating and maintenance records, personnel records.	**20**
UNIT 2	**Budgeting** a. Definition and types of budgets. b. Steps in budget preparation. c. Factors to be considered while planning budget deviations.	**15**
UNIT 3	**Pricing** a. Factors affecting pricing, food service establishment, environment. b. Methods of pricing – formal and informal. c. Types of taxes.	**15**
UNIT 4	**Accounting** a. Conventional accounting techniques – single entry, double entry, advantages of double entry techniques. b. Types of accounts – personal, real, nominal. c. Books of accounts – ledger, cash book, purchase book, sales book, purchase return book, sales return book, journal – single, double and triple column journals. Trial balance, profit and loss account, Balance sheet. Measures of profitability.	**25**
UNIT 5	**Marketing in food service organizations** a. Definitions, marketing cycle, marketing mix. b. Marketing as a managerial function. c. Merchandising and sales promotion d. Branding.	**15**

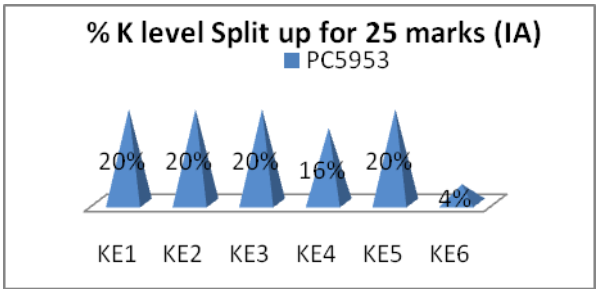
REFERENCES:

1. Reid, R.D: (1983) Food Service and restaurant marketing. New York: Van NostranReinhold Company.
2. Sagowitz,S.:(1985) Anticipating customer demands, Food Management.

3. Sneed,J., and Kreese, K.H(1989) Understanding food service financial management Rockville, Md.Aspen System Corporation.
4. Balu. V and Murugan, S (2000), Financial Management, Chennai Sri Venkateshwara publications.
5. Lokhoitea.R,N(1999), How to save tax, New vision publishers, New Delhi.

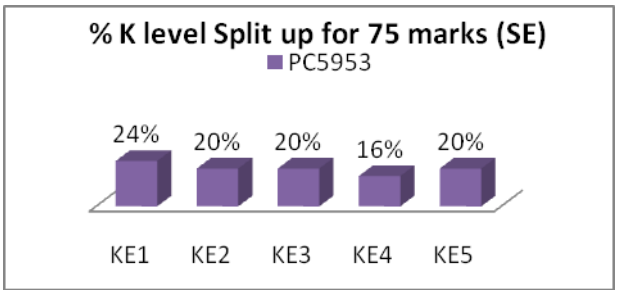
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination
(75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**28%**
Understand	20%
Apply	20%
Analyze	16%
Evaluate	16%



NUTRITIONAL CARE PROCESS AND DIET COUNSELLING

SEMESTER: IV **CREDIT: 4**
PAPER NO: XX **CODE NO: PD5954**

OBJECTIVES

To enable the students to understand

1. The basic principles and significance of nutritional care
2. Knowledge on assessment of nutritional status of a patient
3. Plan, implement and evaluate of nutritional care through diet counseling.

COURSE OUTCOMES

CO	COURSE OUTCOMES	K LEVEL
CO1	**Nutrition**al **care process** **Recall** the definition of nutritional care process. **Understand** the steps in nutritional care process. **Apply** the knowledge in diet counselling. **Analyse** the importance of Nutrition assessment, Nutritional diagnosis, Nutrition Intervention and Nutrition Monitoring and evaluation. **Create** the steps in nutrition care process for a case study [PO3]. **Discuss** the case study of a patient. [PO5] (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444 https://www.youtube.com/watch?v=yD6UF3ogn_U)	**K1, K2, K3, K4, K6**
CO2	**Adaption of Therapeutic diets.** **Recall** the definition of therapeutic diets. **Understand** the types of dietary adaption. **Define** diet prescription and **analyse** the factors influencing diet prescription. **Apply** the knowledge in constructing therapeutic diets. **Classify** the Hospital diets. **Compare** and **contrast** the Clear liquid, Full liquid, soft diet, Regular normal diet. [PO3] **Understand** the principles of weight loss diets. **Analyse** and **evaluate** the Keto diet, Mediterranean diet, intermittent fasting, paleo diet, Atkins diet and vegan diet. **Plan** and **Develop** suitable hospital and weight reduction diets. [PO3] (http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444)	**K1, K2, K3, K4, K5, K6**
CO3	**Tube Feeding or Enteral feeding** **Recall** the definition of enteral feeding. **Understand** the types and techniques of enteral feeding. **Identify** the Indications and contraindications for enteral feeding. **Analyse** the complications of enteral feeding. **Assess** the advantages of enteral feeding. (**https://www.youtube.com/watch?v=z5PZXA1zqA4 https://www.youtube.com/watch?v=Oa-9tOwY2IQ http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444 https://youtu.be/lZY8Tg5Nnn0**)	**K1, K2, K3, K4, K5**
CO4	**Parenteral Feeding or Intravenous Feeding** **Recall** the definition of parental feeding. **Understand** the types, and techniques of parental feeding. **Identify** the Indications and contraindications for parenteral feeding. **Analyse** the complications of parenteral feeding. **Assess** the advantages of parenteral feeding. **Discuss** the TPN formulae for children, and adults. [PO5] (**https://www.youtube.com/watch?v=IGnwzdRe7KQ https://www.youtube.com/watch?v=palZrQb02pE**)	**K1, K2, K3, K4, K5, K6**
CO5	**Patient care and Diet counselling** **Understand** the phases of Patient care. **Recall** the definition of diet counseling. **Analyse** the factors influencing counselling. **Compare** and	**K1, K2, K3, K4, K5**

	contrast the different methods of counselling [PO3]. **Recall** the definition of dietitian. **Classify** the types of dietitian. **Evaluate** the roles and responsibilities of a dietitian. **Analyse** the code of ethics. Role play of a diet counselling session [PO5, PO6] (**http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444**)	

CO/PO (GC/GMEET - PO7)	**PO**									
	1 Disciplinary Knowledge and skills	2 Skilled Communicator	3 Critical thinker and problem solver	4 Sense of	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	1
CO2	3	2	2	1	1		2	1	2	1
CO3	3	2	1	1	1		2	1	2	1
CO4	3	2	1	1	2		2	1	2	1
CO5	3	2	2	1	2	1	2	2	2	1
CO-PO-Avg	3	2	2	1	2	1	2	1	2	1
CO-PO-Total	15	10	8	5	8	1	10	6	10	5

Course Outline

S.NO	CONTENT	NO. OF HRS
UNIT I	**Nutritional care process** a. Definition, Steps in nutritional care process-Nutrition assessment, Nutritional diagnosis, b. Nutrition Intervention and Nutrition Monitoring and evaluation.	16
UNIT II	**Adaption of Therapeutic diets.** a. Purpose of therapeutic adaption, Types of dietary adaption, Diet prescription and factors influencing diet prescription, Constructing therapeutic diets b. Hospital diets- Clear liquid, Full liquid, soft diet, Regular normal diet. Weight loss diets - Principles, Pros and cons of Keto diet, Mediterranean diet, intermittent fasting, paleo diet, Atkins diet and vegan diet.	18
UNIT III	**Tube Feeding or Enteral feeding** a. Definition, Types, Techniques, Indications and contraindications for enteral feeding, b. Complications of enteral feeding and advantages of enteral feeding.	20
UNIT IV	**Parenteral Feeding or Intravenous Feeding** a. Definition, Types, Techniques, Indications and contraindications for parenteral feeding, b. Complications of parenteral feeding and advantages of parenteral feeding, TPN formulae for children, and adults.	18
UNIT V	**Patient care and Diet counselling** a. Patient care- phases, Diet counseling - Definition, Factors influencing counseling, **b.** Dietitian- Definition, Classification, Role and responsibilities of dietitian, code of ethics.	18
		90

REFERENCES

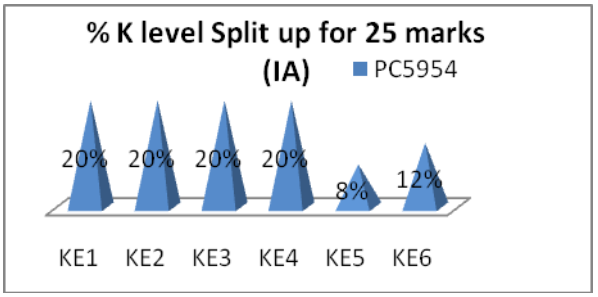
1. Bamji et al(1996), Textbook of Human Nutrition Oxford and IBH Publishing co. Pvt. Ltd. Delhi.
2. WHO (2003)Diet, Nutrition and Prevention of Chronic Diseases, WHO Technical Report series, Geneva
3. Anitia F.P,(2008) Clinical Dietetics and Nutrition, Oxford University Press, New York.
4. Shils.E.M, Shike .M, Ross. A.C, Cabellero. B and Cousins.R.J (2011) Modern Nutrition in Health and Disease, Eleventh Edition, Lippincott Williams and Wilkins, Philadelphia
5. Mahan, K.L., and Stump, S.E., 1996, Krauses Food, Nutrition and Diet therapy M.B. Saunders Co., USA.
6. Nix .S(2016) Williams' Basic Nutrition & Diet Therapy, Fifteenth Edition, Elsevier
7. Zaloga .G.P(1994) Nutrition in Critical Care, Mosby, St Louis
8. Mario.S (2014)Nutrition in Critical Care, Cambridge University Press
9. Skipper.A (2012) Dietitian's Handbook of Enteral and Paraenteral Nutrition Second Edition, ASPEN publications, Maryland
10. Nelson.J.K, Moxness. K.E, Jensen.M.D and Gastineau.C.F(1994)Mayo Clinic Diet Manual A Handbook of Nutrition Practices, Seventh Edition,Mosby, St Louis

E-REFERENCES

1. www.sciencedaily.com
2. www.cdc.gov / nchs
3. www.whoindia.org
4. **http://epgp.inflibnet.ac.in/Home/ViewSubject?catid=444**

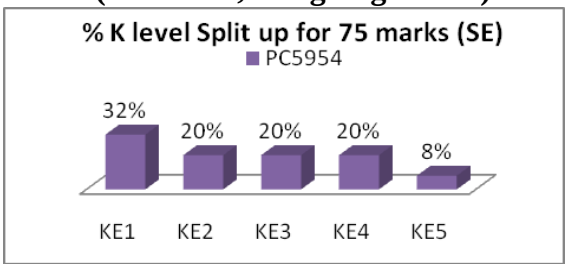
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**28%**
Understand	20%
Apply	20%
Analyze	16%
Evaluate	16%



DISSERTATION

SEMESTER: IV **CREDIT 4**
PAPER NO: XXI **CODE NO**: PC5955

Learning Objectives:

To enable the student to

1. Develop deeper knowledge in the subject and a clear understanding of the research process.
2. To gain practical experience in research and develop skills and capabilities required to carry out supervised research work.

COURSE OUTCOME:

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

CO1	**Define** the objectives of the study and specific terminology used. **Identify** and report literature related to the background of the study area. {PO2, PO8, PO9} **Understand** and **justify** the need for the study. {PO3} **Evaluate** the scope of the findings of the study {PO4}. **Predict** the expected outcome of the proposed study.	K1, K2, K3, K5, K6
CO2	**Identify** the various topics of importance that give direction to the study. **Critically analyse** and **compile** the literature related to the study {PO3, PO2, PO7, PO8, PO9, PO10}. Provide due acknowledgement to citations without plagiarism {PO8} **Find** gaps in the literature and **report** limitation of previous studies. **Use** evidence from literature to define protocol and methodology of the present study. {PO3, PO4}	K1, K2, K3, K4, K6
CO3	**Define** the problem under question. **Formulate** the hypothesis of the study. **Choose** the most suitable research design. **Adopt** standard, evidence based, scientific methods for data collection {PO3}. **Quote** the reliability and validity of the tools used in the study. {PO7, PO9} **Elaborate** in logical sequence the methods adopted for the conduct of the study {PO3, PO4}. **Justify** the analysis (statistical or others) chosen in the light of the hypothesis framed for the study {PO3}.	K1, K2, K3, K4, K5, K6
CO4	**Present** the findings of the study in a logical and sequential manner {PO3, PO4}. **Construct** tables, graphs in a coherent manner to convey the findings of the study instantly {PO2, PO7}. **Decipher** the statistical analysis and **interpret** the findings of the study. **Defend** the findings obtained with suitable evidence from literature. **Analyse** the findings to draw conclusions. {PO2, PO3, PO4, PO8, PO9, PO10}	K1, K2, K3, K4, K5, K6
CO5	**Summarize** the background, related literature and the methodology of the study. {PO2, PO7, PO8}. **Spel**l out the findings of the study. **Deduce** the implications of the study. **State** the limitations of the study. **Interpret** the scope of the study, in other words the extent to which the findings of the study can be extrapolated. **Suggest recommendations** for further/ future research. {PO2, PO3, PO4, PO7, PO8, PO9, PO10} **Present** references in accordance to the standard reference formats {PO2, PO8}.	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	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			2	3	3	2
CO2	3	2	3	2			2	3	3	2
CO3	3	3	3	3	3	3	2	3	2	2
CO4	3	3	3	3			2	2	3	2
CO5	3	2	3	2			2	2	2	2
CO-PO-Avg	3	2	3	2	3	3	2	2	2	2
CO-PO-Total	15	12	15	12	3	3	10	13	13	10

COURSE OUTLINE:
The structure of the dissertation includes

Co1: Introduction

Co2: Review of Literature

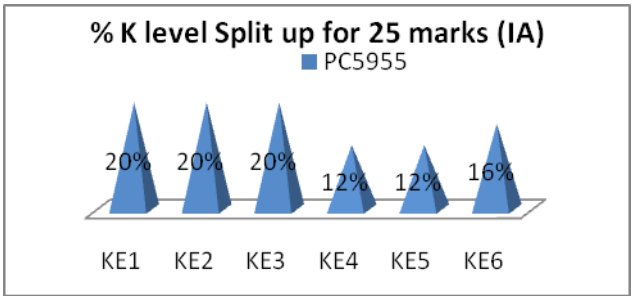
CO 3: Methodology

CO 4: Results and Discussion

CO5: Summary and Conclusion, Bibliography

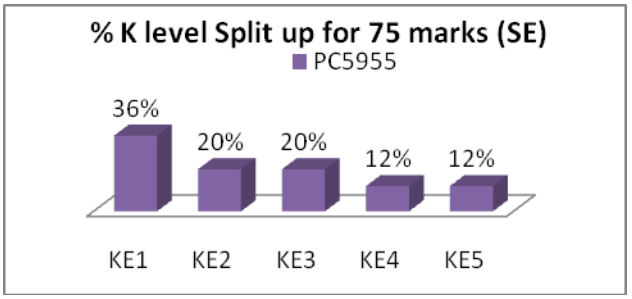
CIE-Continuous Internal Evaluation (25 Marks)

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



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**36%**
Understand	20%
Apply	20%
Analyze	12%
Evaluate	12%



FOOD MICROBIOLOGY

SEMESTER-IV **CREDIT:3**
PAPER NO: XXII **CODE**: PE5921

LEARNING OBJECTIVES

To enable the students to

1. Know the role of micro organisms in food spoilage and food borne illness
2. Understand the therapeutic value of fermented foods in maintaining good health.
3. Learn the importance of personal hygiene and safe handling of food.

COURSE OUTCOMES

CO1	**Recall** the classification of microorganisms and the types of microorganism found in air, water, soil and plants. **Identify** the significance of microorganism in food industry. **Summarize** the role of intrinsic and extrinsic factors on growth of microorganism (submit assignment through Email) and present in PPT followed by question answer session (PO2, PO7). (**https://www.youtube.com/watch?v=duO-M8vFa-M**) **Explain** the economic importance of yeasts, moulds and bacteria followed by group discussion. (**https://www.youtube.com/watch/I9fRIw5CncE**)	K1, K2, K3, K5
CO2	**Remember** the definition, causes and sources of food spoilage and food contamination. **Categorize** food as perishable, semi perishable and non-perishable based on its ease of spoilage. (Power Point presentation) **Summarize** the role of microorganisms in contamination and spoilage of various foods followed by Group discussion – (Group Activity) (Email the typed report after group discussion) (Lecture Video: https://www.youtube.com/watch?v=shWayTlt4hk) **Utilize** the knowledge to prevent food contamination in everyday life. (Lecture Video: **https://www.youtube.com/watch?v=vc9cJjn4ukk) (PO9)**	K1, K2, K3, K4
CO3	**Define** food intoxication and food infection. **Categorize and List** the different type of food borne illness and upload the assignment in Google classroom. (PO2) (**https://www.youtube.com/watch?v=pNnWgs9zxxk**) **Identify** various control measures by which food borne illnesses can be prevented and treated and present as ppt followed by question-and-answer session (**https://www.youtube.com/watch?v=u_vCoF07w9Q**)	K1, K2, K3, K4
CO4	**Define** fermentation and remember the benefits of fermentation. **Understand** the microbiology of different types of fermented food products and S**ummarize** the beneficial role of microorganisms in fermented foods and present using any one audio visual aid and upload it in GC (PO2, PO7) – (Group Activity. **https://www.youtube.com/watch?v=eajOGD9vdkk) Analyse** the therapeutic values of fermented foods and u**tilize** this knowledge in consuming fermented foods for maintaining good health. (**https://www.youtube.com/watch?v=wLLA7WJemfk**)	K1, K2, K3, K4

CO5	**Recall** the basic principles of HACCP. (Lecture video: https://www.youtube.com/watch?v=d1vwBHM8Bkk followed by question answer session) **Explain** the importance of food safety (submit a typed report and Email. **Recommend** the practice of HACCP in food service establishments (Group Activity). **Apply** the methods for personal hygiene and safe handling of food. (https://www.youtube.com/watch?v=kk1Tg2UghrY) **Create** an audio-visual aid to advocate hygienic practices to food service establishment workers to ensure food safety of the customers (Group Activity) (PO2, PO7, PO8).	K1, K2, K3, 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	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	2	1
CO2	3	2		1	1		2	1	2	1
CO3	3	2		1			2	1	2	1
CO4	3	2		1	1		2	1	2	1
CO5	3	2	1	1	2	1	2	2	2	2
CO-PO-Avg	3	2	1	1	1	1	2	1	2	1
CO-PO-Total	15	10	1	5	5	1	10	7	10	6

Course Outline

S. No	Contents	No of hours
Unit I	**Micro-organisms importance in Food Industry** a. Classification of Microorganisms. Micro -organisms in air, water, soil andplants. Factors affecting growth of micro -organisms – Intrinsic and extrinsic factors b. Importance of micro -organisms in food industry - Economic importance ofyeasts, moulds and bacteria.	**10**
Unit II:	**Food Contamination and Spoilage** a. Definition, Classification of foods by ease of spoilage, Causes of spoilage and Sources of contamination of foods. b. Contamination and spoilage of cereals and cereal products, pulses, vegetables, fruits, egg, fish, meat, poultry, milk and milk products.	**15**
Unit III	**Food Borne illness and prevention** a. Food intoxication and infection - Bacillus cereus, Campylobacter, Clostridium botulinum, Escherichia Coli, Salmonella, Shigella, Staphylococcus aureus, Vibrio, Clostridium Welchi, Entamoeba Histolytica, Polio Virus, Hepatitis Virus, Tubercle bacilli.	**15**
Unit IV	**Fermented Foods** a. Definition of fermentation, Benefits of fermentation, Role of microbes in fermentation of milk products, cereals, oriental foods, alcoholic beverages and other processed foods. b. Therapeutic importance of fermented foods.	**10**

Unit V	**Safety and Hygiene** a. Safe handling of food, food packaging, personal hygiene of food handlers, Cleaning of equipment and sanitizing agent. b. Principles and benefits of HACCP	**10**
	Total Hours	**60**

REFERENCES

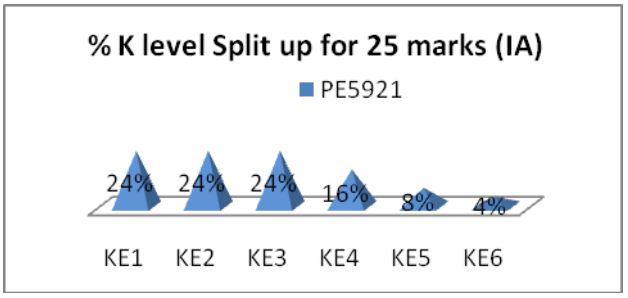
1. Ananthanarayan and Paniker's Textbook of Microbiology Tenth edition with booklet, 2017, Mittal Books
2. Food Microbiology: An Introduction by T. Montville, K. Matthews, K.Kniel. 4th edition. ASM press. 2017.
3. Parija, 2016, Textbook of Microbiology and Immunology, 3rd Ed, Mosby.
4. Harvey , 2012.Lippincott's Illustrated Reviews Microbiology with the Point AccessScratch Code, Third edition, Wolters Kluwer
5. Food Microbiology by M. R. Adams, M. O. Moss, P. McClure. 4th edition. Royal Society of Chemistry. 2015.
6. Food Microbiology: Fundamentals and Frontiers by M. P. Doyle, L. R. Beuchat. 3rd edition. ASM press. 2007.
7. Moss M.O., 2005, Food Microbiology, New Age International Publishers. Bangalore.
8. Frazier, W.C and West Hoff., 1995, Food Microbiology, Tata McGraw - Hill Publishing Company Ltd., New Delhi.
9. Pelzer M.J and Raid R.D., 1972, Microbiology, Tata McGraw Hill. New york.
10. Bamforth .C.W (2005), 'Food, Fermentation and Micro-organisms', First Edition, Blackwell Publishing Ltd, United Kingdom.
11. Modern Food Microbiology by J.M. Jay, M.J. Loessner, D.A. Golden.7th edition.Springer. 2006.
12. Adams .M.R & Moss .M.O (2008), 'Food Microbiology',Third Edition, Royal Society Of Chemistry', UK.

E-REFERENCES

1. International Journal of Food Microbiology IUMS and ICFMH www.elsevier.com
2. Food microbe.com Food Microbiology and Food Hygiene Research Publication.
3. Food Safety HACCP, Food Quality, Food Microbiology and Hygiene www.Food quality news.com
4. https://www.researchgate.net/publication/288208448_Food_Microbiology
5. https://old.fssai.gov.in/Portals/0/Pdf/15Manuals/MICROBIOLOGY%20MANUAL.pdf
6. **https://epdf.pub/fundamental-food-microbiology-fourth-edition.html**

CIE-Continuous Internal Evaluation (25 Marks)

Bloom's Taxonomy	Test	Assignment	Seminar	Model Exam
Total (25)	**5**	**5**	**5**	**10**
Remember (7)	1	1	2	3
Understand (6)	1	0	1	4
Apply (5)	2	2	0	1
Analyse (4)	0	1	1	2
Evaluate (2)	1	0	1	0
Create (1)	0	1	0	0



ESE- End Semester Examination (75 Marks; Weightage 75 %)

Bloom's Taxonomy	Weightage %
Remember	**32%**
Understand	24%
Apply	20%
Analyze	16%
Evaluate	8%