

As Per NEP 2020

University of Mumbai



Syllabus for Basket of OE	
Board of Studies in Home Science	
UG First Year Programme	
Semester	II
Title of Paper	Credits
I)Principles of Food Science (Theory)	2
From the Academic Year	2024-2025

Sr. No.	Heading	Particulars
1	Description the course : Including but Not limited to :	Principles of Food Science (Theory) 1. To impart knowledge and facilitate the development of skills and techniques in the basic area of Home Science required for personal, professional and community advancement. 2. To inculcate in students, values and attitudes that enhance personal, life skills and family growth and to sensitize them to various social issues for the development of a humane society. 3. To promote in students a scientific temper and competencies in research to enable contributions to the national and international knowledge base in Home Science and allied fields. 4. In sum, to empower our students such that they can effect positive changes at multiple levels.
2	Vertical :	Major/Minor/ \sqrt Open Elective /Skill Enhancement / Ability Enhancement/Indian Knowledge System/
3	Type :	Theory
4	Credit:	2 credits (1 credit = 15 Hours for Theory)
5	Hours Allotted :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: (List some of the course objectives) <ol style="list-style-type: none"> 1. Acquire knowledge of various fundamental concepts in Food Science, its facts and principles. 2. Study the different methods of heat transfer involved in different cooking methods. 3. Understand nutritional importance of various food groups. 4. Develop the ability to select and apply the principles of Food Science to practical situations. 	

8	<p>Course Outcomes: (List some of the course outcomes)</p> <ol style="list-style-type: none"> 1. Understand fundamental concepts in food science 2. Describe the underlying principles involved in various methods of heat transfer 3. Differentiate between different methods of cooking 4. Analyze the changes occurring in food with storage and basic processing 5. Have the necessary skills to design nutritious recipes 6. Evaluate, select and use the best cooking method suitable to a particular food
9	<p>Modules:- Per credit One module can be created</p> <hr/> <p>Module 1:</p> <hr/> <p>A. Concept of Food Science</p> <p>B. Cooking</p> <ol style="list-style-type: none"> i. Reasons for cooking foods ii. Methods of heat transfer- Conduction, convection and radiation iii. Cooking Methods <p>Moist heat methods, Dry heat methods & Combination methods</p> <p>Brief Introduction to principles of solar cooking, microwave cooking and induction cooking.</p> <p>C. Introduction to various food groups</p> <p>Classification, structure, nutritive value, selection, storage and elementary principles of cooking involved in the following food groups:</p> <p>i. Cereals and millets</p> <ul style="list-style-type: none"> · Difference between cereals and millets · Structure of a cereal grain · Nutritive value of cereals · Gelatinization and dextrinization · Gluten formation in dough <p>ii. Pulses and Legumes</p> <ul style="list-style-type: none"> · Nutritive value of pulses and legumes · Anti-nutritional factors in pulses · Elementary Principles of cooking · Role in pulses in cookery <p>iii. Nuts and Oilseeds</p> <ul style="list-style-type: none"> · Classification · Nutritional significance · Role in cookery <p>iv. Fats and oils</p> <ul style="list-style-type: none"> · Visible and invisible fat in food · Nutritional significance · Smoke point, flash point and fire point of fats and oils · Hydrolytic and oxidative rancidity in fats and oils · Oil extraction- Pressing method and rendering · Hydrogenation process · Role in cookery <p>Emulsions: Temporary and permanent</p>

Module 2:

A. Introduction to various food groups

Classification, structure, nutritive value, selection, storage and elementary principles of cooking involved in the following food groups:

i. Sugar, Jaggery and related products

- Production of sugar and Jaggery
- Properties of sugar
- Role in cookery
- Brief introduction to other sugar based products- Honey, molasses, corn syrup, high fructose corn syrup, maple syrup and low caloric/ non caloric sweeteners.

ii. Vegetables & Fruits

- Classification
- Composition and nutritive value
- Selection and storage
- Ripening of fruits
- Enzymatic browning
- Changes during cooking and Conservation of nutrient loss during cooking
- Pectic substances in fruits and gel formation
- Fruit and vegetable pigments

iii. Milk

- Composition and nutritive value of milk
- Milk cookery- Effect of acid, enzyme and heat on milk
- Milk processing- Clarification, Pasteurization and homogenization.
- Brief introduction to fermented and non-fermented products made from milk.

iv. Meat

- Types/ classes of meat
- Structure of muscle
- Composition and nutritive value
- Post mortem changes in meat
- Tenderization of meat

v. Fish

- Classification
- Nutritive value
- Selection
- Spoilage of fish

vi. Poultry (Chicken and eggs)

- Structure of eggs
- Composition and Nutritive value
- Evaluation of egg quality
- Physical and chemical changes during storage
- Role of eggs in cookery
- Classification of poultry
- Composition and nutritive value
- Processing of poultry

vii. Spices, Condiments and herbs

- i. Active ingredients
- ii. Role in cookery

10	Text Books: 1. 2. 3. 4.																																														
11	Reference Books: 1. Arora K. (2008). Theory of Cookery. New Delhi: Frank Bros. and Co. Ltd. 2. Bennion, M. and Scheule B. (2015). Introductory Foods. Pearson 3. Manay, S. N. and Shadaksharaswamy M. (2020). Food Facts and Principles. New Delhi: New Age International Publishers 4. MacWilliam M. (2013). Food Fundamentals. Pearson Education. 5. Srilakshmi. B. (2023) Food Science. New Delhi: New Age International Publishers. 6. Swaminathan, M. (1991). Food Science & Experimental Foods. Madras: Ganesh & Co.																																														
12	Internal Continuous Assessment: 40%	External, Semester End Examination 60% Individual Passing in Internal and External Examination																																													
13	Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)	<table border="1"> <thead> <tr> <th colspan="2">CONTINUOUS INTERNAL EVALUATION (planned as per the need of the course)</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Class participation/Quiz/Review of literature and guided discussions/Q&A sessions</td> <td></td> <td>20</td> </tr> <tr> <td>Class tests/PPT Presentations and relevant planned assignments</td> <td></td> <td>20</td> </tr> <tr> <td>Total Marks for Internal Assessment</td> <td></td> <td>40</td> </tr> <tr> <th colspan="3">SEMESTER-END THEORY EXAMINATION</th> </tr> <tr> <td colspan="3">All questions are compulsory with internal choice.</td> </tr> <tr> <td>Question 1 – Unit 1</td> <td></td> <td>12</td> </tr> <tr> <td>Question 2 – Unit 2</td> <td></td> <td>12</td> </tr> <tr> <td>Question 3 – Unit 3</td> <td></td> <td>12</td> </tr> <tr> <td>Question 4 – Unit 4</td> <td></td> <td>12</td> </tr> <tr> <td>Question 5 – From Multiple Units</td> <td></td> <td>12</td> </tr> <tr> <td>Total Marks for Semester End Examination</td> <td></td> <td>60</td> </tr> </tbody> </table> Evaluation for Theory (2 Credits for 50 Marks) <table border="1"> <thead> <tr> <th colspan="2">CONTINUOUS INTERNAL EVALUATION (planned as per the need of the course)</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Class participation/Quiz/Review of literature and guided discussions/Q&A sessions</td> <td></td> <td>10</td> </tr> <tr> <td>Class tests/PPT Presentations and relevant planned assignments</td> <td></td> <td>10</td> </tr> </tbody> </table>	CONTINUOUS INTERNAL EVALUATION (planned as per the need of the course)		Marks	Class participation/Quiz/Review of literature and guided discussions/Q&A sessions		20	Class tests/PPT Presentations and relevant planned assignments		20	Total Marks for Internal Assessment		40	SEMESTER-END THEORY EXAMINATION			All questions are compulsory with internal choice.			Question 1 – Unit 1		12	Question 2 – Unit 2		12	Question 3 – Unit 3		12	Question 4 – Unit 4		12	Question 5 – From Multiple Units		12	Total Marks for Semester End Examination		60	CONTINUOUS INTERNAL EVALUATION (planned as per the need of the course)		Marks	Class participation/Quiz/Review of literature and guided discussions/Q&A sessions		10	Class tests/PPT Presentations and relevant planned assignments		10
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Total Marks for Internal Assessment	20
SEMESTER-END THEORY EXAMINATION	
All questions are compulsory with internal choice.	
Question 1 – Unit 1	10
Question 2 – Unit 2	10
Question 3 – From Multiple Units	10
Total Marks for Semester End Examination	30

Evaluation for Practical (2 Credits for 50 Marks)

CONTINUOUS INTERNAL EVALUATION (planned as per the need of the course)	Marks
Class Participation/Internal Assessment during laboratory work/experiments/practical tasks	10
Journal/Portfolio/Presentation/Reports/Case papers/Assignments	10
Total Marks for Internal Assessment	20
SEMESTER-END PRACTICAL EXAMINATION	
All questions are compulsory with internal choice.	
Question 1 - Unit 1	10
Question 2 - Unit 2	10
Journal/Portfolio/Report/Viva-Voce	10
Total Marks for Semester End Examination	30

14 **Format of Question Paper:** for the final examination

THEORY EXAMINATION

Marks: 30	1 Hour
Upto 50% choice to be given within each Question. Questions may be divided into sub questions as a, b, c.... Allocation of marks depends on the weightage of the topics in the units; no sub-question should be of 1 mark or less	
Q1 Unit 1	10 marks
Q2 Unit 2	10 marks
Q3 Mix of Unit 1 and 2	10 marks
TOTAL	30 Marks

Marks: 60	2 Hours
Up to 50% choice to be given within each Question. Questions may be divided into sub questions as a, b, c.... Allocation of marks depends on the weightage of the topics in the units; no sub-question should be of 2 marks or less	
Q1 Unit 1	12 marks
Q2 Unit 2	12 marks
Q3 Unit 3	12 marks
Q4 Unit 4	12 marks
Q5 Mix of all units	12 marks
TOTAL	60 Marks

PRACTICAL EXAMINATION

Marks: 30	2 Hours
Q1 Unit 1	10 Marks
Q2 Unit 2	10 Marks
Journal/Portfolio/Report/Viva-Voce	10 Marks
TOTAL	30 Marks

**Sign of the BOS
Chairman
Name of the Chairman
Name of the BOS**

**Sign of the
Offg. Associate Dean
Name of the Associate Dean
Name of the Faculty**

**Sign of the
Offg. Dean
Name of the Offg. Dean
Name of the Faculty**