



JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J.T.LALVANI COLLEGE OF COMMERCE
(AUTONOMOUS)

"A" Road, Churchgate, Mumbai - 400 020, India.

Affiliated to
University of Mumbai

Program: B.Sc

Proposed Course: Microbiology (Applied Component)

Food Production and Processing

Semester V

**Credit Based Semester and Grading System (CBCS) with
effect from the academic year 2020-21**

T.Y.B.Sc.

Food Production & Processing (Applied Component)

Academic year 2020-2021

SEMESTER V

Course Code:	UNIT	TOPICS	Credits	Lec/ Week
SMIC5AC		FOOD PRODUCTION AND PROCESSING (General Principles)	2.5	
	I	Food Science and Nutrition		1
	II	Food Production Technology		1
	III	Principles of Food Processing		1
	IV	Principles and Methods of Food Preservation		1
SMIC5ACPR		Practicals based on theory	2.5	4

Course Code: SMIC5AC	FOOD PRODUCTION AND PROCESSING (General Principles) (Credits : 2.5 Lectures/Week:04)	60 L
Learning Objectives:	<ul style="list-style-type: none"> ➤ Study the nutritional value of food and the nutritional disorders ➤ Understanding the traditional methods of food production ➤ Learning the various techniques of food processing and preservation 	
Outcomes:	<p>On completion of the course, students will -</p> <ul style="list-style-type: none"> ➤ Know the nature, source and functions of nutrients in foods and the disorders due to them ➤ Have knowledge of the traditional methods of food production ➤ Be familiar with the methods of food processing and preservation 	
Unit I	Food Science and Nutrition	15 L
1.1	Chemical Nature , Source and Functions of Nutrients. Examples: Proteins, Carbohydrates, Fats, Minerals, Vitamins, Water, Fibre, Antioxidants and phytochemicals	05
1.2	Food Additives – Intentional/Unintentional, general. Examples: Antioxidants, chelating agents, colouring agents, emulsions, flavours and flavour enhancers, flavour improvers, humectants and anticaking agents, leavening agents, nutrient supplements, non-nutritive sweeteners, pH controlling agents	03
1.3	Energy Value of Foods. Methods of measurement of energy, value of nutrients –direct and indirect, basal metabolic rate–measurement and factors affecting BMR.	02
1.4	Adequate Diet: food guide	02
1.5	Nutritional Disorders due to deficiency and excess of Nutrients. Vitamin deficiency-pernicious anaemia, scurvy, night blindness, rickets. Protein deficiency: Kwashiorkor, Mineral deficiency due to iron, iodine and calcium.	03
Unit II	Food Production Technology	15 L
2.1	Technology of Fruits and vegetables- Preparation of Jams, Jellies, Squash. Ketchup, Pickles and Sauce.	03
2.2	Dairy technology: Production of ghee, flavoured milk, condensed milk and milk powder	04
2.3	Technology of sea food: Aquaculture – General Principles, Prawn and Oyster farming	02

2.4	Foods of Microbial Origin- Mushroom– <i>Agaricus</i> and <i>Pleurotus</i> , SCP–Fungal, algal, bacterial Baker’s yeast: Outline of production, yeast properties, factors important in production-oxygen requirement and aeration, concentration of sugar, pH, temperature, preparation of substrate, fermentation, harvesting of yeast cells, production of compressed and active dry yeast.	04
2.5	Beverages: Tea and Coffee Confectionaries – Chocolate and Energy Bar	02
Unit III	Principles of Processing of Foods	15 L
3.1	Processing of cereal grains- milling, parboiling, flakes, puffs. Malting, starch extraction, gluten extraction, Pasta products.	05
3.2	Processing of Pulses –Soya chunks.	01
3.3	Processing of Oilseeds (extraction of oil)	01
3.4	Processing of spices	02
3.5	Processing of Meat, Eggs- Aging, tenderizing, curing, Egg protein, egg foam.	03
3.6	Processing of Fish	01
3.7	Effect of processing on Nutritive Value of Foods- Newer methods of food processing- Microwave, high pressure, Ohmic heating, radiation sterilization, minimally processed foods	02
Unit IV	Principles and Methods of Food Preservation	15 L
4.1	Physical Methods- Blanching, Pasteurization, Canning. Chilling, Freezing, Irradiation, Dehydration.	04
4.2	Chemical Methods – salt, sugar, Na-benzoate, metabisulfite, citrate, acetate.	04
4.3	Emerging Preservation Technologies- Natural antimicrobials, hydrostatic pressure, electric pulse, light pulse, high magnetic pulse.	05
4.4	Convenience Food	02
Textbooks and Additional References:		
<ol style="list-style-type: none"> 1 Mudambi R. & Rajagopal M. V, Fundamentals of food and nutrition, New Age International Ltd, 4th Ed.,2001. 2 Srilaxmi B., Food Science, New Age International Ltd, 5thEd.,2010. 3 Ramesh V., Food Microbiology, MJP Publishers,2007. 4 Joshi S.A., Nutrition and Dietetics, McGraw Hill, 4thEd.,2015. 5 Adams M.R. & Moss M.O., Food Microbiology, RSC Publishing.2008 6 VanGarde S.J, Food Preservation, Safety principles and practices, Surabhi Publishers, 1999 7 Frazier W.C., Food Microbiology, McGraw Hill, 4thEd.,1988. 8 James J., Modern Food Microbiology, CBS Publishers and distributors, 3rd Ed.,1987. 9 Chandy M., Fishes, National book Trust.1992. 		

Course Code: SMIC5ACPR	Practicals based on theory (2.5 Credits; 60 Lect/ Sem)
Learning Objectives:	<ul style="list-style-type: none"> ➤ Estimate the amount of nutrients in foods ➤ Prepare a diet chart ➤ Preserve foods by using heat and chemical preservatives ➤ Carry out a group research project based on their syllabus
Outcomes:	<p>On completion of the course, students will -</p> <ul style="list-style-type: none"> ➤ Know methods to determine the amount of nutrients in foods ➤ Prepare a diet chart for different individuals ➤ Prepare Tomato ketchup and jam and check the method of preservation
	<p>PRACTICALS:</p> <ol style="list-style-type: none"> 1. Estimation of Carbohydrates from milk. 2. Estimation of proteins from milk. 3. Estimation of Proteins from Gram flour. 4. Estimation of Vitamin C from lemon juice 5. Determination of Iodine number of lipids 6. Preparation of Diet Charts 7. Preparation of Ketchup 8. Preparation of Jam. 9. MIC of preservatives 10. Cultivation of Mushroom 11. RPT of Milk. 12. Project/Survey

Examination		Time Duration	Marks
A. EVALUATION SCHEME FOR THEORY COURSES (1 PAPER)			
I. Continuous Assessment (C.A.)			40
C.A.I Test	MCQ, 1M answers etc	40 mins	20
C.A.II Test	Assignment/Project /Posters/ Presentations etc		20
II. Semester End Examination (SEE)		2 hours	60
Theory Paper			40+60= 100
B. EVALUATION SCHEME FOR PRACTICAL COURSES (1 COURSE)			
Semester End Practical Examination			100
Practical course (1 course)		2 days	100

**Semester End Examination (SEE)- 60 Marks (Paper Pattern to
be discussed Q1/2/3/4 A- 12 Marks Any 3 out of5
Q1/2/3/4 B- 3 Marks- Any 3 out of5)
OR (1 Unit can be done for CA 1 and 3 units for SEE- paper pattern)**