

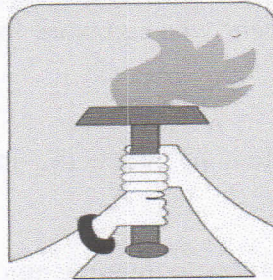
**LEARNING OUTCOMES–BASED CURRICULUM
FRAMEWORK (LOCF)**

in the

**UNDERGRADUATE PROGRAMME BACHELOR OF
SCIENCE IN
FOOD PROCESSING TECHNOLOGY AND MANAGEMENT**

**FOR THE STUDENTS ADMITTED FROM THE
ACADEMIC YEAR 2021 - 2022 AND ONWARDS**

**HINDUSTHAN
EDUCATIONAL AND**



CHARITABLE TRUST

HICAS

HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)

(Affiliated to Bharathiar University and Accredited by NAAC)

**COIMBATORE-641028
TAMILNADU, INDIA.**

Phone: 0422-4440555

Website: www.hindusthan.net/hicas/

PREAMBLE

Food Processing Technology and Management is a science branch that deals with the techniques involved in production, processing, preservation, packaging, labeling, quality management, and distribution of food products. The food processing technology is the set of methods and techniques used to transform raw ingredients into food or to transform food into other forms of food products for consumption by humans or animals either in the home or by the food processing industry. The duration of the course is three years. In the course of the study, candidates are provided a solid scientific foundation in chemistry, microbiology, nutrition, dietetics and the physical sciences together with knowledge of the processing and formulation of agricultural raw materials into safe and nutritious food products. Students have wide scope in obtaining jobs at food processing industries, research laboratories, hotels, soft drink factories, quality control, rice mills, manufacturing industries and distilleries.

VISION

To become a centre of academic excellence with highly qualified, knowledgeable, competent food technologist.

To empower students as responsible citizens who can work for the progress of the society.

MISSION

To incorporate outcome-based curriculum by practicing innovative teaching methodologies both in theory and practical.

To build self-confidence, values and optimistic thinking among the students.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1: To make students knowledgeable about the various basic concepts in a wide-ranging context which involve the use of knowledge and skills of Food Processing Technology and Management.

PEO 2: To prepare graduates who will apply the technical knowledge and know how to solve the problems related to food processing and preservation for the benefit of the society.

PEO 3: To prepare students to equip quickly to new work environments, assimilate new information and problem solving in various areas for rural development in processing and food industries.

PEO 4: To inculcate innovative ideas and project management skills in order to make them capable to grow as an entrepreneur.

PEO 5: To make students competent to pursue careers in the field of food processing, quality control, product development and techno-marketing.

PROGRAMME SPECIFIC OUTCOME (PSO)

PSO 1: Graduates will apply the knowledge of food chemistry, food preservation, food processing and food packaging for the effective utilization of agricultural commodities to develop healthy and nutritious foods.

PSO 2: Students will understand the basic concepts of various unit operations and unit processes in food process technology and management.

PSO 3: Students will be able to devise research strategies for empowering and promoting healthy living in the community.

PSO 4: Graduates will apply the knowledge of food engineering and technology principles from the various aspects of food technology and related disciplines to solve practical and real-world problems.

PSO 5: Graduates will design economically feasible equipment for the modernization of traditional food processing methods

PROGRAMME OUTCOMES (PO's)
FOR LAB ORIENTED SCIENCE COURSES

PO 1: DISCIPLINARY KNOWLEDGE: Students acquire knowledge and understanding of the Food Processing Technology and Management concepts as applicable to diverse areas such as industrial, environment, genetics, agriculture, food and others.

PO 2: PROBLEM SOLVING AND ANALYSING: Identify, formulate, analyze and solve complex problems reaching food industries.

PO 3: ENVIRONMENT SUSTAINABILITY AND ETHICS: Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable Development.

PO 4: MODERN TOOL USAGE: Skill to use important/ emerging techniques/ databases, to retrieve data, and compare the data of the emerging techniques in food development with an interdisciplinary approach.

PO 5: CO-OPERATIVE TEAM WORK & COMMUNICATIVE SKILLS: Students will be able to operate objectively as an individual and as a member in diverse teams and they will be able to communicate effectively on complex science and technological activities with society at large and able to write effective reports and documentation.

PO 6: SELF DIRECTED / LIFE LONG LEARNING: Students will be able to develop a broader perspective of the discipline to enable him/her to identify challenging societal problems and plan his/her professional career to develop innovative solutions for such problems and recognize the need for life-long learning in the broadest context of technological change.

PO 7: ENHANCING RESEARCH CULTURE: Students will be competent enough to use their knowledge and skills to analyse problems, articulate these with peers/team members/ other stake holders, and undertake remedial measures to overcome the issues.

HINDUSTHAN COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), COIMBATORE-641028

SCHEME OF EXAMINATIONS - CBCS & LOCF PATTERN

(For the Students admitted from the Academic year 2021-2022 and Onwards)

UG PROGRAMME

Programme: B.Sc Branch: FOOD PROCESSING TECHNOLOGY AND MANGEMENT

Part	Course Code	Course Type	Course Title	Credit points	Lecture Hours/ Week		Exam Duration (hours)	MAX. MARKS		
					Theory	Practical		I.E.	E.E	Total
Semester – I										
I	21LAT01 21LAH01 21LAM01 21LAF01	MIL	Tamil-I/ Hindi-I/ Malayalam – I/ French-I	4	6	-	3	30	70	100
II	21ENG01	AECC	English – I	4	6	-	3	30	70	100
III	21FPU01	DSC	Core I-Food Science	5	5	-	3	30	70	100
III	21FPU02	DSC	Core II-Practical I – Food Science	3	-	5	3	40	60	100
III	21FPU03	GE	Allied I: Food Chemistry	4	4	-	3	30	70	100
III	21FPU04	GE	Allied II: Practical I – Food Chemistry	2	-	3	3	40	60	100
IV	21GSU01	AECC	<u>Skill Based Subject</u> Environmental Studies	1	2	-	2	50	-	50
IV	21FPUV01	SEC	VAC-I/Life Skills-I @ / Communicative English	1*	2	-	2	50	-	50**
IV	21FPUE01	AEE	Open Elective –I	2	3	-	3	100		100
IV	-	AECC	Extension Activities NSS/NCC/SPORTS/YRC/SIS/SA	Assessment will be in the Fourth Semester						
IV	-	SEC	SDR- Student Development Report	Assessment will be in the Fifth Semester						
Total				25	28	8		350	400	750
Semester - II										
I	21LAT02 21LAH02 21LAM02 21LAF02	MIL	Tamil-II/ Hindi-II/ Malayalam-II/French-II	4	6	-	3	30	70	100
II	21ENG02	AECC	English – II	4	6	-	3	30	70	100
III	21FPU05	DSC	Core III-Food Processing Technology- I	5	5	-	3	30	70	100
III	21FPU06	DSC	Core IV-Bakery and Confectionary	4	4	-	3	30	70	100
III	21FPU07	DSC	Core V-Practical II –Bakery and Confectionary	3	-	5	3	40	60	100
III	21FPU08	GE	Allied III: Food Microbiology	3	3	-	3	30	70	100
III	21FPU09	GE	Allied IV: Practical: II	2	-	3	3	40	60	100

			Food Microbiology							
IV	21FPUV02	SEC	VAC-II/Life Skills-II @ / Language	1*	2	-	2	50	-	50**
III	21FPU10	SEC	Internship / Industrial Visit / Mini Project	1	-	-	-	100	-	100
IV	21FPUJ01	SEC	Aptitude / Placement Training	Grade*	2	-	3	50	-	50**
Total				26	28	8		330	470	800
Semester - III										
III	21FPU11	DSC	Core VI -Food Preservation Technology	5	5	-	3	30	70	100
III	21FPU12	DSC	Core VII-Practical-III Food Preservation Technology	3	-	4	3	40	60	100
III	21FPU13	DSC	Core VIII-Analytical Instrumentation for Foods	4	5	-	3	30	70	100
III	21FPU14	DSC	Core IX -Practical- IV Analytical Instrumentation for Foods	2	-	5	3	40	60	100
III	21FPU15	DSE	ELECTIVE I/ DSE I	5	5	-	3	30	70	100
III	21FPU16	DSE	ELECTIVE II/ DSE II/ Practical	3	-	4		40	60	100
IV	21FPU02	AEE	Open Elective-II	2	3	-	3	100	-	100
IV	21GSU02	AECC	<u>Skill Based Subject</u> Human Rights	1	2	-	2	50		50
IV	21FPUJ02	SEC	Aptitude / Placement Training	Grade*	2	-	2	50		50**
IV	21FPUJ03	SEC	Online Course	-	1	-	-	-	-	-C/NC
Total				25	23	13		360	390	750
Semester - IV										
III	21FPU17	DSC	Core X- Food Processing Technology-II	5	5	-	3	30	70	100
III	21FPU18	DSC	Core XI-Food Fermentation Technology	5	5	-	3	30	70	100
III	21FPU19	DSC	Core XII-Food Safety and Quality Management	4	5	-	3	30	70	100
III	21FPU20	DSC	Core XIII-Practical V- Food Processing Technology-II and Food Fermentation Technology	3	5	-	3	40	60	100
III	21FPU21	GE	Allied V: Principles of Nutrition	4	5	-	3	30	70	100
III	21FPU22	GE	Allied VI: Practical III-Principles of Nutrition	2	-	4	3	40	60	100
III	21FPU23	SEC	Internship / Institutional Training / Mini-Project	1	-	-	-	100	-	100
IV	21GSU03	AECC	<u>Skill Based Subject</u> Internet Security	1	2	-	2	50	-	50
IV	21FPUV03	ACC	VAC-III	1*	2	-	2	50	-	50**
IV	21FPUJ04	SEC	Aptitude / Placement Training	Grade*	2	-	2	50	-	50**

IV	21FPUJ05	SEC	Online Course	-	1	-	-	-	-	-	-C/NC
V	21GSU04	AECC	Extension Activities NSS/NCC/SPORTS/YRC/SIS/SA#	2	-	-	-	-	-	-	C/NC
Total				27	32	4		350	400	750	
Semester – V											
III	21FPU24	DSC	Core XIV-Techniques in Food Evaluation	5	6	-	3	30	70	100	
III	21FPU25	DSC	Core XV-Food Packaging	5	6	-	3	30	70	100	
III	21FPU26	DSC	Core XVI-Practical VI- Techniques in Food Evaluation	3	-	5	3	40	60	100	
III	21FPU27	DSC	Core XVII -Food Product Development	5	5	-	3	30	70	100	
III	21FPU28	DSC	Core XVIII -Food Processing Equipments	5	5	-	3	30	70	100	
IV	21FPU03	AEE	Open Elective-III	2	3	-	3	100	-	100	
IV	21GSU05	AECC	<u>Skill Based Subject</u> General Awareness	1	1		2	50	-	50	
IV	21GSU06	AECC	<u>Skill Based Subject</u> Law of Ethics	1	-	-	2	50	-	50	
IV	21FPUV04	ACC	VAC-IV	1*	2	-	2	50	-	50**	
IV	21FPUJ06	SEC	Aptitude / Placement Training	Grade*	2	-	2	50	-	50**	
IV	21FPUJ07	SEC	Online Course	-	1	-	-	-	-	-	-C/NC
IV	21FPUJ08	SEC	SDR- Student Development Report	2*	-	-	-	-	-	-	-
Total				27	31	5		360	340	700	
Semester – VI											
III	21FPU29	DSE	ELECTIVE III / DSE-III	5	5	-		30	70	100	
III	21FPU30	DSE	Elective IV - /DSE-IV Practical	3	-	5	3	40	60	100	
III	21FPU31	SEC	Project Work /Student Research / Paper	4	-	4	-	40	60	100	
III	21FPU32	SEC	Self-Study Course – HACCP, Marketing Management and Intellectual Property Rights	3	-	-	3	30	70	100	
Total				15	5	9		140	260	400	
Grand Total				145						4150	

- denotes Extra credits which are not added with total credits.
- **denotes Extra marks which are not added with total marks.
- **VAC**-Value Added Course(Extra Credit Courses)
- *Grades depends on the marks obtained
- ≠ C-Completed/ NC- Not Completed

Range of Marks	Equivalent remarks
80 and above	Exemplary
70-79	Very good
60-69	Good
50-59	Fair
40-49	Satisfactory
Below 40	Not Satisfactory=Not completed

- Part IV& V not included in total marks and CGPA calculation.
- **I.E**-Internal Exam
- **E.E**-External Exam
- **J**-Job Oriented Course
- **E**-Open Elective Papers

PASSING MINIMUM

- Passing Minimum for UG 40% and for PG 50 %
- For UG : 35 % (25 marks) in EE and 40 % in Total Marks
- For PG 50 % (30 marks) in EE and 50 % in Total Marks

List of Open Elective Papers

Open Electives	<p>Yoga for Human Excellence Human Health & Hygiene Indian Culture and Heritage Indian Constitution and Political System Consumer Awareness and Protection Professional Ethics and Human Values Human Rights, Women's Rights & Gender Equality Disaster Management Green Farming Corporate Relations start a Business? Research Methodology and IPR General Studies for Competitive Examinations IIT JAM Examination (for Science only) CUCET Examination</p>
VAC Papers	<p>Food Adulteration Nutraceuticals Flesh Food Processing Extrusion of Foods Principles of Foods Processing Space and military Foods Sports Nutrition Keto and Paleo diet Planning Basic Human Nutrition Hygiene and sanitation Advertising methods</p>
Courses offered by the Departments to other Programmes	

ABSTRACT FOR SCHEME OF EXAMINATION

(For the candidates admitted during the academic year 2021 - 2022 and onwards)

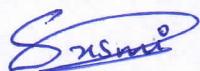
Part	Course	Papers	Credit	Total Credits	Marks	Total Marks
Part I	Languages/ (MIL)	2	4	8	100	200
Part II	English/AECC-I	2	4	8	100	200
Part III	Core /DSC	18	3/4 /5	74	100	1800
	Allied /GE	6	2/3/4	17	100	600
	Electives/DSE	4	3/4/5	16	100	400
	Project SEC	1	4	4	100	100
Part IV	Open Electives /AEE	3	2	6	100	300
	AECC- EVS/ HR/ IS/ GA/ LE	5	1	5	50	250
	Job Oriented Course / Value Added Course	2	1	2*	50	100**
	Skill Based/ Placement/Aptitude SEC	4	Grade	Grade	50	200**
	Online courses / SEC	3	C/ NC	C/ NC	-	-
	Life Skills / SEC	2	1	2*	50	100**
	Self-Study Course /SEC	1	3	3*	100	100**
	Internship/Institutional Training/Mini-Project (Summer Courses #)	2	1	2*	100	200**
SDR- Student Development Report	1	2	2*	-	-	
Part V	Extension Activities NSS / NCC/Sports/YRC / SIS / SA - AECC	1	C/ NC	2	-	-
	Total			140 + (11 Extra Credits)		3750 + (700**)

ELECTIVES

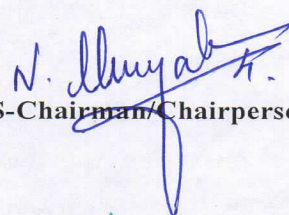
List of Elective Papers/ DSE
(Can choose any one of the paper as electives)

	Course Code	Semester	Group A	Group B	Group C
Electives/ DSE-I		III	Emerging Technology in Food Preservation	Processing of Extruded and value added foods	Emerging Technology in Food Processing
Electives/ DSE-II		III	Elective Practical's Technology of Beverages	Waste Management	Fruit Preservation
Electives/ DSE-III		VI	Dairy and Food Process and Products Technology	Entrepreneurial Skills	Sensory Evaluation of Foods
Electives/ DSE-IV		VI	Technology of Fermented cheese, ice cream and By-products	Elective Practical's Processing of Extruded and value added foods	Elective Practical's (Fruit Preservation)

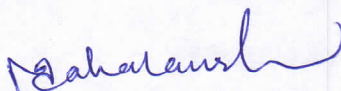
ONLINE COURSES (DSE-III & DSE-IV/ Fast track)



Syllabus Coordinator



BOS-Chairman/Chairperson



Academic Council – Member Secretary
Co-ordinator

Academic Audit Cell

Hindusthan College of Arts & Science,
Coimbatore-641 028.



PRINCIPAL

PRINCIPAL
Hindusthan College of Arts and Science
Hindusthan Gardens, Behind N. S. Road,
Coimbatore - 641 028.

Regulations

1. Internship / Institutional Training / **Mini-Project** is related to the discipline can be permitted to complete during the end of I and III semesters for minimum seven days each and permitted to submit a report.

Internship / Institutional Training	Not more than seven days
Mini project	Depends on the departments

2. Project work is considered as a special course involving application of knowledge in problem solving / analyzing /exploring a real-life situation. A Project work may be given in lieu of a discipline specific elective paper.
3. **Two core courses DSE- III & DSE- IV are the subjects which are to be related with NPTEL courses.**
4. **If the students who are all completed the NPTEL courses before semester -V, they can avail exemption from appearing exams of DSE- III & DSE- IV in Fast track scheme.**
5. NSS / NCC/Sports/YRC / SIS / SA is mandatory for all students as per New Education Policy and the students must attend the allocated hours within two years and complete the programme. They will be evaluated during the end of second year (Fourth Semester) and also a certificate will be issued.
6. SDR – Student Development Report to be received by the department from the students till end of the fifth semester. (Evidences of Curriculum activities and Co-curriculum activities)
7. For online courses minimum of 2 certificates in any of the online platform is mandatory.

Extension Activities

NSS – National Service Scheme, as enrolled member with the College Unit.

NCC – National Credit Corps, as enrolled member with the College Unit.

SPORTS – Sports & Games Participation with College Team

YRC/RRC–Youth Red Cross / Red Ribbon Club, as enrolled member with the College Unit.

Rotaract Club - Rotaract Club, as enrolled member with the College Unit.

SIS – Special Interest Subjects, as approved by the Academic Council

SA – Social Activity for not less than 50 hours with NGGO like Aram Foundation / Shanthi Social Service / Siruthuli / KulangalPathukappuAmaipu /Old age Home / Nature Foundation / etc.

SEC-Skill Enhancement Course (Life Skills/ Aptitude/Placement Training/online course/Internship/SDR)

ECC- Ability Enhancement Compulsory Course (Environmental Studies/ Human Rights/Internet Security/ General Awareness/ Law of Ethics/Extension Activities)

UG Courses- Scheme of Evaluation (Internal & External Components)

(For the students admitted during the academic year 2021-2022 and onwards)

1. Internal Marks for all UG

Components	Marks
Test I	5
Test II	5
Model Exam	10
Assignment	5
Attendance*	5
TOTAL	30

*Split-up of Attendance Marks

- * 75-79 - 1 marks
- * 80-84 - 2 marks
- * 85-89 - 3 marks
- * 90-94 - 4 marks
- * 95-100 - 5 marks

2. a) Components for Practical I.E.

Components	Marks
Test -I	20
Test - II	20
Total	40

b) Components for Practical E.E.

Components	Marks
Experiments	50
Record	5
Viva	5
Total	60

3. Institutional/ Industrial Training, Mini Project and Major Project Work

Institutional / Industrial Training (I.E)		Mini Project (I.E)	Major Project Work		
Component	Marks	Marks	Component	Marks	Total Marks
Work diary	25	-	I.E		
Report	50	50	a)Attendance	10	
Viva-voce	25	50	b)Review/Work diary*	30	40
Total	100	100	E.E** a) Final report	40	
			b)Viva-voce	20	60
			Total		100

*Review is for Individual Project and Work Diary is for Group Projects
(group consisting of minimum 3 and maximum 5)

**Evaluation of report and conduct of viva voce will be done jointly by Internal and External Examiners

4. Guidelines for Internet Security/Human Rights/Law of Ethics/Environmental studies (Part IV)

Components	Marks
Two Tests (each 2 hours) of 20 marks each [4 out of 7 descriptive type questions 4 x 5 = 20 Marks]	40
Two assignments (2 x 5)	10
Total	50

5. Guidelines for General Awareness (Part IV)

Components	Marks
Two Tests (each 2 hours) of 25 marks each [50 objective type questions $50 \times 1/2 = 25$ Marks]	50

6. Guidelines for Open Elective (Part IV)

No of Activities	Marks
Two Tests (each 3 hours) of 50 marks each [5 out of 8 descriptive type questions $5 \times 10 = 50$ Marks]	100

7. Value Added Courses / Aptitude/Placement courses:

Components	Marks
Two Test (each 1 hour) of 25 marks each QP is objective pattern ($25 \times 1 = 25$)	50
Total	50

Guidelines:

1. The passing minimum for these items should be 40%
2. If the candidate fails to secure 40% passing minimum, he / she may have to reappear for the same in the subsequent Semesters
3. Item No's:4,5,6 and 7 are to be treated as 100% Internal papers.
4. For item No.07, Tests conducted through online modules (Google Form/any other)

UG PATTERN

QUESTION PAPER PATTERN FOR CIA I and CIA II EXAM

Reg.No:-----

Q.P.CODE:

HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)

----- **DEGREE CIA-I/CIA-II EXAMINATIONS** -----20-----

(----- SEMESTER)

BRANCH: -----

SUBJECT NAME: -----

Time: Two Hours

Maximum:50 Marks

SECTION - A (6 x 1 = 6 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(Q.No: 1 to 6: Multiple choice/Fill up the blanks /True or False questions)

SECTION - B (4x 5 = 20 marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(Q.No: 7 to 10 Either Or type)

SECTION - C (2x12 = 24 marks)

Answer any TWO Questions out of THREE Questions

ALL Questions Carry EQUAL Marks

(Q.No: 11 to 13)

QUESTION PAPER PATTERN FOR MODEL/END SEMESTER EXAMINATION

Reg.No:-----

Q.P.CODE:

HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)

----- **DEGREE MODEL EXAMINATIONS** -----20-----

(-----SEMESTER)

BRANCH : -----

SUBJECT NAME:-----

Duration: Three Hours

Maximum: 70 Marks

SECTION - A (10x1=10 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(Q.No 1 to 10 Multiple choice/Fill up the blanks /True or False questions)

(Two questions from each unit)

SECTION - B (5x6=30 Marks)

Answer ALL Question

ALL Questions Carry EQUAL Marks

(Q.No 11 to 15 Either or type)

(One question from each Unit)

SECTION- C (3x10=30 Marks)

Answer any THREE Questions out of FIVE Questions

ALL Questions carry EQUAL Marks

(Q.No 16 to 20) (One question from each Unit)

For UG (Question paper pattern) (Max. 70 marks)

Sec-A (10x1=10marks)	All Questions will be in K1 Level
Sec-B (5x6=30marks) Either or type	4 Questions will be in K1 Level, 3 Questions will be in K2, K3 each
Sec-C (3x10=30marks) Any 3 out of 5 questions	2 Questions will be in K2, 3 Questions will be in K3 & K4 level

Course Code:	21FPU01	Course Title					Batch:	2021-2022 & onwards
		FOOD SCIENCE					Semester:	I
Hrs/Week:	5	L	5	T		P	Credits:	5

COURSE OBJECTIVE:

To enable the students to:

- learn the basic concepts of food science.
- understand the different methods of cooking.
- understand the classification, composition and nutritive values of various foods.
- gain knowledge on the cooking of cereals, pulses, meat, fish and poultry.
- familiarize the types of spices and beverages

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Describing the types of food groups and discussing the function of food groups. Illustrating the different cooking methods.	K1,K2,K3,K4
CO2	Describing the names of cereals, pulses, millets, nuts and oil seeds and illustrating its composition and its types. Explaining its processing.	K1,K2,K3,K4
CO3	Identifying the classification, function and types of Vegetables, Fruits, Fats and Oils, Beverages, Spices and Condiments with examples and explaining its storage.	K1,K2,K3,K4
CO4	Defining the types of milk and milk products and discussing its composition and classification of fermented and unfermented milk products.	K1,K2,K3,K4
CO5	Identifying the composition of flesh foods and eggs. Classifying the types of flesh foods and explaining its storage.	K1,K2,K3,K4

SYLLABUS

21FPU01	FOOD SCIENCE	Sem: I
Unit No.	Topics	Hours
I	Introduction to Food: Food group: Basic 4,5 and 7 food groups; functional food groups-energy yielding, body building and protective foods (only sources and not properties and functions), functions of foods, food pyramid, my plate. Study of various cooking methods – Moist Heat: Boiling, steaming, stewing and pressure cooking. Dry Heat: frying, baking and roasting. Microwave Cooking	12
II	Cereals, Pulses, Millets, Nuts and Oil Seeds: Cereals –Composition and structure of rice, wheat and millets. Parboiling of rice- advantages and disadvantages. Types of wheat and milling of wheat. Pulses: Changes in nutritive value during cooking, processing and storage, cooking quality. Pulses- wet milling, dry milling, germination, soaking and fermentation. Millets- Composition and types of millets. Nuts and Oil Seeds: Types of nuts and oil seeds. Toxins in nuts and oil seeds	12
III	Vegetables, Fruits, Fats and Oils, Beverages, Spices and Condiments. Vegetables and Fruits: Classification, pigments, ripening of fruits, storage of vegetables and fruits. Fats and oil: Types of vegetable oil/ fat and animal fat. Beverages: Classification of beverages. Types of fruit and vegetable beverages. Spices and Condiments: Functions of spices and condiments. Types of spices and condiments.	12
IV	Milk and Milk Products Milk - Composition, nutritive value and kinds of milk. Milk Products- Fermented products and non-fermented products.	12
V	Flesh Foods and Egg. Meat- Classification, composition and nutritive value. Poultry- Classification, composition and nutritive value. Fish- Classification, composition and nutritive value. Egg- Structure, composition and nutritive value. Methods of cooking and storage of eggs.	12

Teaching methods: Lecturing, PowerPoint Projection through LCD, Assignment, Discussion, Activity and Online – Google classroom.

TEXT BOOKS

B Srilakshmi., 2003, Food Science- New Age International, 7th edition.

REFERENCE

1. Potter, N. and Hotchkiss, J.H. 1998, Food Science, 5th Ed., CBS Publications and Distributors, Daryaganji, New Delhi.
2. Shakuntala Manay, Shadaksharaswamy. M., 2000, Foods,

*Facts and Principles, New Age International Pvt Ltd Publishers,
6th Edition, 2015.
3. Suri Malhotra, 2002, Food Science, Nutrition and Safety, 1e*

WEB RESOURCES

<<http://www.fao.org/3/t0567e/T0567E08.htm>>
<<http://ecoursesonline.iasri.res.in/mod/resource/view.php?id=147675>>

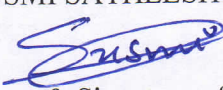
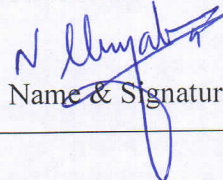
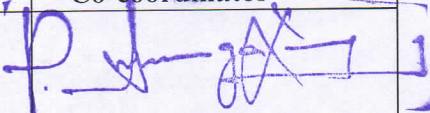
MAPPING WITH PROGRAM OUTCOMES

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M	S	S	S	S	S	S
CO2	S	S	M	M	M	S	M
CO3	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S
CO5	S	S	M	M	M	S	M

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN (if deviation from common pattern)

Follows common pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-ordinator
SUSMI SATHEESH KUMAR 	Dr. N.MURUGALATHA 	
Name & Signature of the Staff	Name & Signature	Name & Signature

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

Course Code:	21FPU02	Course Title					Batch:	2021-2022 & onwards
		PRACTICAL I – FOOD SCIENCE					Semester:	I
Hrs/Week:	5	L	5	T		P	Credits:	5

COURSE OBJECTIVE:

To enable the students to:

- obtain knowledge of different food group.
- understand various techniques of measuring foods.
- understand the effect of dry and moist heat methods of cooking.
- gain knowledge on various pulses processing technique.
- learn the preparation of various food products.

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Defining different food groups, their nutritive value and role in day's diet	K1
CO2	Demonstrating different methods of cooking	K2
CO3	Planning and preparing recipes with different ingredients	K3
CO4	Examining nutritive value to food selection	K4
CO5	Planning and preparing energy and stress free drinks	K3

SYLLABUS

21FPU02	PRACTICAL I – FOOD SCIENCE	Sem:I
S.No	LIST OF EXPERIMENTS	Hours
1.	Food group- Grouping of foods, discussion on nutritive value.	5
2.	Measuring Methods- Tapping, leveling and heaping in coarse and fine cereals	5
3.	Cooking methods - Moist heat methods - boiling, simmering, seaming, and pressure cooking. Dry heat methods - roasting and baking. Microwave cooking.	6
4.	Fat as a medium for cooking- Shallow and deep fat frying.	5
5.	Cereals and Millets - Best cooking methods of fine and coarse cereals and millets. Recipes with cereals & millets.	6
6.	Pulses - Cooking of soaked and unsoaked pulses. Germination and fermentation of pulses. Recipes with pulses.	5

7.	Vegetables and Fruits - Preparation of soups and salads. Recipes with vegetables and fruits.	6
8.	Milk and milk products - Recipes with milk, paneer & curd.	6
9.	Fleshy Foods - Different cuts of fish, meat and poultry - Recipe preparations.	6
10.	Eggs - boiled egg, poached egg. Recipes with egg.	5
11.	Beverages -Preparation of tea and coffee.	5

Teaching methods: Hands on Experiment

TEXT BOOKS

1. B Srilakshmi- *Food Science- New Age International, 2003, 7th edition.*

REFERENCE BOOKS

1. Philip, Thangam . E, *Modern Cookery For Teaching And Trade. Ed. 6 - Vol.02. Orient BlackSwan; Sixth edition (1 January 2010)*
2. Parker, R. *Introduction to food Science, Delmer, Thomson Learning Co., Delma, 2000.*
- 3.

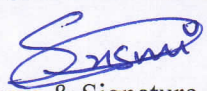
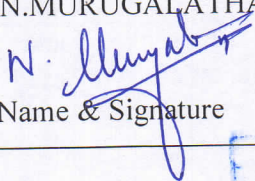
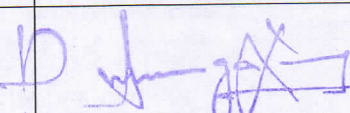
MAPPING WITH PROGRAM OUTCOMES

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	S
CO4	S	S	M	M	M	S	S
CO5	S	S	M	S	S	S	S

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN (if deviation from common pattern)

Follows common pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
SUSMI SATHEESH KUMAR 	Dr. N.MURUGALATHA 	
Name & Signature of the Staff	Name & Signature	Name & Signature

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

Course Code:	21FPU03	Course Title					Batch:	2021-2022 & onwards
		ALLIED FOOD CHEMISTRY					Semester:	I
Hrs/Week:	4	L	4	T		P	Credits:	4

COURSE OBJECTIVE:

To enable the students to:

- understand the types and physicochemical properties of water
- gain knowledge on carbohydrates types and characteristics of food starches
- know the proteins role in processing of food
- learn the characteristic changes in lipids
- To acquire knowledge on different food additives and pigments used in food industry

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Defining the physico chemical changes in food and relates the water activity and its effect on shelf life of food. Explaining on emulsions and colloids and deduce its properties.	K1, K2, K3, K4
CO2	Identifying the important polysaccharides and explaining the gelatinization process and analyzing the interaction of food and its effects on acid, alkali and heat.	K1, K2, K3, K4
CO3	Describing the structural properties of proteins and illustrates its action on acid, alkali and heat on proteins and explaining the role of enzymes in foods.	K1, K2, K3, K4
CO4	Identifying the physical and chemical properties of lipids and analyzing its effects on food.	K1, K2, K3, K4
CO5	Examining the role of non nutritive components in foods. Categorizing pigments and interpreting the action of heat, acid and alkali on pigments.	K1, K2, K3, K4

SYLLABUS

21FPU03	ALLIED FOOD CHEMISTRY	Sem: I
Unit No.	Topics	Hours
I	<p>Physico Chemical Changes in Foods – Water Definition of water in food, structure of water and ice. Types of water in foods and sorption phenomenon. Water activity in foods - packaging and shelf-life.</p> <p>Emulsion and colloids Emulsion – Types, properties, emulsifying agents, natural and synthetic emulsifiers. Colloids systems in food, types and properties.</p>	10
II	<p>Chemistry of Carbohydrates Classification - Structure of important polysaccharides (starch, glycogen, cellulose, pectin, hemicellulose, gums), components and characteristics of food starches, swelling of starch granules. Gel formation - factors affecting gelatinization, retrogradation, syneresis. Stages of sugar cookery, crystal formation and its factors affecting. Action of acid, alkali and enzymes. Non enzymatic browning</p>	9
III	<p>Chemistry of Proteins Structural properties of proteins-electrophoresis, sedimentation, amphoterism and denaturation. Functional properties of proteins - organoleptic, solubility, viscosity, binding, gelation/texturization, emulsification, foaming, gluten formation. Action of heat, Acid and alkali on vegetable and animal proteins -egg, milk, meat and fish.</p> <p>Enzymes Enzymes in foods - Proteolytic enzymes, oxidases, lipases, applications.</p>	10
IV	<p>Chemistry of Lipids Classification of lipids- Physical properties-melting point, softening point, specific gravity, refractive index, smoke, flash and fire point, turbidity point. Chemical properties- Reichert Meissel value, Polenske value, iodine value, peroxide value, saponification value. Effect of frying on fats, changes in fats and oils- rancidity, lipolysis, flavor reversion, auto-oxidation and its prevention. Technology of edible fats and oils- Refining, hydrogenation and interesterification, fat mimetics.</p>	10
V	<p>Chemistry of Non-nutrient substances Pectins, phenolic components, vegetable gums, volatile compounds. Active principles of spices and condiments. Food additives- Definition, types of food additives. Flavours- Definition, types and chemical structures. Pigments – water and fat soluble pigments (chlorophyll, carotenoids, anthocyanins and anthoxanthins, lycopene, betalain). Action of heat, acid and alkali on vegetable pigments.</p>	10

Teaching methods: Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

TEXT BOOKS

1. Manay, S. and Shadaksharamasamy, Food: Facts and Principles, New Age International (P) Publishers, New Delhi.

REFERENCE BOOKS

1. B Srilakshmi- Food Science- New Age International, 2003, 7 th edition.
2. John M deMan, Principles of Food Chemistry – 3rd edition, Springer New York Heidelberg Dordrecht London ISBN 9781461463900 (eBook). 1999
3. Potter, N. and Hotchkiss, J.H. Food Science, 5th Ed., CBS Publications and Distributors, Daryaganji, New Delhi, 1998.

WEB RESOURCES

<https://www.academia.edu/27799682/Principles_of_Food_Chemistry_Third_Edition

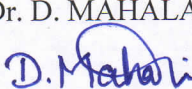
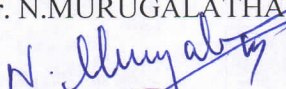

MAPPING WITH PROGRAM OUTCOMES

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	S	S
CO2	S	S	M	M	M	S	M
CO3	S	S	S	S	S	S	S
CO4	S	M	S	S	S	M	S
CO5	S	S	M	M	M	S	M

Strong, M- Medium, L – Low

ASSESSMENT PATTERN (if deviation from common pattern)

Follows common pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Dr. D. MAHALAKSHMI  Name & Signature of the Staff	Dr. N.MURUGALATHA  Name & Signature	 Name & Signature

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science
Coimbatore-641 028.

Course Code:	21FPU04	Course Title					Batch:	2021-2022 & onwards	
		ALLIED PRACTICAL II – FOOD CHEMISTRY					Semester:	I	
Hrs/Week:	3	L		T		P	3	Credits:	2

COURSE OBJECTIVE:

To enable the students to:

- understand the physico chemical changes in food
- acquire knowledge on adulteration in foods
- learn the preparation methods of food
- gain knowledge on the role of enzymes in food
- find out the changes in food by chemical reaction

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Identifying the physico chemical changes in foods	K1
CO2	Recognizing the knowledge acquired in food preparation	K2
CO3	Illustrating the effect of chemical reactions in foods	K3
CO4	Examining the food interactions and outcomes	K4
CO5	Distinguishing different components in food	K4

SYLLABUS

21FPU04	ALLIED PRACTICAL II – FOOD CHEMISTRY	Sem: I
S.No	LIST OF EXPERIMENTS	Hours
1.	Gelatinization of various starches, microscopic examination of starches. Stages of sugar cookery.	4
2.	Determination of gluten content in dough making.	4
3.	Estimation of acid value of fats and oils.	4
4.	Estimation of saponification number of fats and oils.	3
5.	Fat absorption ratio of shallow and deep-fried foods.	3
6.	Preparation of panner and setting of curds.	3
7.	Determination of the strength of pectin in different fruits and vegetable extracts.	4
8.	Determination of thermal inactivation time of enzymes in fruits and vegetables.	4
9.	Effect of acid, alkali and heat on vegetable pigments.	4
10.	Enzymatic browning and its prevention.	3

Teaching methods: Hands on Experiments

TEXT BOOKS

I. Manay, S. and Shadaksharamasamy, 2020, *Food: Facts and Principles*, New Age International (P) Publishers, New Delhi.

REFERENCE BOOKS

I.B Srilakshmi, 200, *Food Science- New Age International*, , 7 th edition.

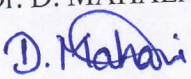
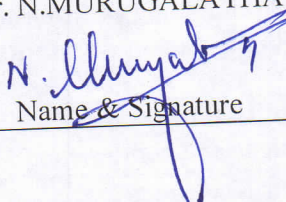
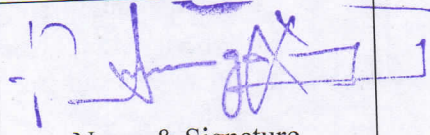
MAPPING WITH PROGRAM OUTCOMES

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	S	S
CO2	S	S	M	M	M	S	M
CO3	S	S	S	S	S	S	S
CO4	S	M	S	S	S	M	S
CO5	S	S	M	M	M	S	M

S-Strong, M- Medium, L – Low

ASSESSMENT PATTERN (if deviation from common pattern)

Follows common pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
Dr. D. MAHALAKSHMI  Name & Signature of the Staff	Dr. N.MURUGALATHA  Name & Signature	 Name & Signature

Co-ordinator
Curriculum Development
Puduchan College of Arts
Coimbatore-64

Course Code:	21FPU05	Course Title					Batch:	2021-2022 & onwards
		FOOD PROCESSING TECHNOLOGY I					Semester:	II
Hrs/Week:	5	L	5	T		P	Credits:	5

COURSE OBJECTIVE:

To enable the students to:

- impart knowledge on commonly grown crops in India.
- learn the production and storage of food grains, Fruits and vegetables.
- understand the composition and milling of cereals, millets and pulses and their products.
- gain knowledge on the processing of nuts, oils and fats, beverages, spices and condiments.
- Create awareness about processing of various extruded and fortified foods.
- find out the changes in food by chemical reaction

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Identifying the concepts of processing of cereals and interpreting the milling process of wheat.	K1, K2, K3, K4
CO2	Enumerating the milling process and nuts and oil seed and interpreting milling of pulses.	K1, K2, K3, K4
CO3	Experimenting with the processing of fruits and vegetables and identifying preservation of fruits and vegetables.	K1, K2, K3, K4
CO4	Illustrating processing of beverages and recognizing usage of spices and condiments.	K1, K2, K3, K4
CO5	Applying the uses of extruded foods and identifying various fortified foods.	K1, K2, K3, K4

SYLLABUS

21FPU05	FOOD PROCESSING TECHNOLOGY I	Sem: II
Unit No.	Topics	Hours
I	<p>Cereals and Millets: Paddy Processing- Composition and paddy dehusking process. Curing of paddy, parboiling process-soaking, steaming, drying, CFTRI and LSU Dryer. Rice milling- Rice milling flow chart, Engelberg huller mills. Production of flattened rice and puffed rice from paddy and uses of rice bran in the food industry. Wheat milling- Wheat milling process. Products of wheat.</p>	12

	Millet Milling- Processing and milling of maize, jowar and ragi.	
II	Pulses, Nuts and Oil Seeds: Milling of pulses- Varieties – Dry milling and wet milling process of pulses. Toxic constituents in pulses. Processed products by germination, fermentation, parching and puffing. Nuts and Oil seeds Processing- Refining and processing of oil seeds- groundnut, coconut. Soybean products- Soy milk, tofu and texturized vegetable protein. Plasticity, hydrogenation, winterization, shortening fat.	12
III	Fruits and Vegetables: Vegetables- Vegetable cookery- Preliminary Preparation, changes during cooking. loss of nutrients during cooking and effect of cooking on pigments. Fruits- Processed products of fruits- Jams, jelly, marmalade, fruit squash,, raisins, anardana and tutti frutti(flow chart)	12
IV	Beverages, Spices and Condiments: Beverages- Processing of different types of tea, coffee, cocoa and chocolate. Milk- based beverages, malted beverages, carbonated non-alcoholic beverages, alcoholic beverages. Spices and Condiments- Specific spices, herbs and condiments.	12
V	Processing of Extruded and Fortified Foods: Extruded Foods- Extrusion of rice, wheat, millets and pulses. Fortified Foods- Fortification of rice, wheat (breakfast cereals), salt, milk, oil and fat.	12

Teaching methods: Lecturing, PowerPoint Projection through LCD, Assignment, Discussion, Activity, and Online – Google classroom.

TEXT BOOKS

1. Subbalakshmi G, Udipi SA, 2007, *Food processing and preservation*, New Age International Publishers, Delhi.

REFERENCE BOOKS

1. John Cousins David Foskett, 2001, *Food And Beverage Managemant*. Longman; 2nd edition.
2. Warris D.S, 2020, *Food Processing And Preservation - Vol. 1- CBS*, ISBN: 978-9389688597

WEB RESOURCES

1. <<http://www.fao.org/tempref/docrep/fao/004/y2515e/Y2515E02.pdf>>
2. [https://www.researchgate.net/publication/279192433 Juice Processing](https://www.researchgate.net/publication/279192433_Juice_Processing)

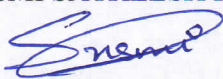
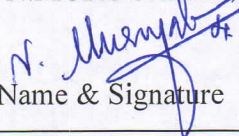
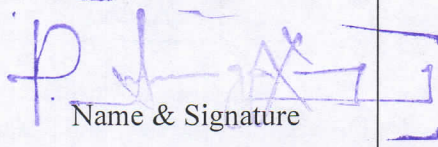
MAPPING WITH PROGRAM OUTCOMES

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	S	S
CO2	S	S	M	M	M	S	M
CO3	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S
CO5	S	S	M	M	M	S	M

Strong, M- Medium, L – Low

ASSESSMENT PATTERN (if deviation from common pattern)

Follows common pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
SUSMI SATHEESH KUMAR  Name & Signature of the Staff	DR. N.MURUGALATHA  Name & Signature	 Name & Signature

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028

Course Code:	21FPU06	Course Title					Batch:	2021-2022 & onward
		BAKERY AND CONFECTIONERY					Semester:	II
Hrs/Week:	4	L	4	T		P	Credits:	4

COURSE OBJECTIVE:

To enable the students to:

- under various factors to setting up of bakery unit.
- understand the rheological characteristics of the dough.
- explain the role of each ingredient and processes involved in baking technology.
- learn about manufacturing of confectionery products.
- impart knowledge on the processing methods used in baking and confectionary industries.

COURSE OUTCOMES (CO)

SL.NO	COURSE OUTCOME	BLOOMS LEVEL
CO1	Describing the structure of the wheat kernel and explaining its processing and its byproducts. Evaluating the quality aspects of flour and dough.	K1,K2,K3,K4
CO2	Illustrating the principle and giving classification and explaining the role of ingredients in baking.	K1,K2,K3,K4
CO3	Discussing the factors to be considered for setting up a bakery unit. Summarizing the study and maintenance of major and minor equipments.	K1,K2,K3,K4
CO4	Discussing the uses of ingredients in cake making. Classifying the different methodologies for preparation and decoration of baking food.	K1,K2,K3,K4
CO5	Explaining the method of processing cocoa and illustrating the chocolate making process Discussing about preparation and processing different confectionery products	K1,K2,K3,K4

SYLLABUS

Code No	Subject	Semester No
21FPU06	BAKERY AND CONFECTIONERY	II
Unit No	Topics	Hours
Unit I	Wheat Processing History of baking, structure and composition of the wheat kernel, steps in wheat milling, by products of wheat, enrichment of flour and bread. quality aspects of flour and dough	12
Unit II	Baking Principles of baking, classification of baked foods, role of ingredients –water, yeast, sugar, shortening, milk, egg, butter, salt, leavening agents, spices, flavorings, fruits and nuts, food colors, setting materials, cocoa and chocolate, emulsifiers, flour improvers, recipe balance, storage of baked products, selection of packaging materials.	9
Unit III	Factors for Setting Up a Bakery Unit Factors to be considered for setting up a bakery unit types of ovens – Construction and working of conventional and modern ovens. Bread making – Steps and methods, role of ingredients variety breads, qualities of a good loaf, bread faults, bread diseases.	15
Unit IV	Preparation and Decoration of Baked Foods Cake making – Functions of ingredients cake mixing methods. Types of cakes- Cake judging, cake faults and remedies biscuit, cookie and pastry making. Types and techniques of icing, frosting and fillings. Sensory evaluation of baked products- Objective and subjective methods	12
Unit V	Confectionery Processing of raw materials -Cocoa and chocolate. Making of toffee, chocolates, fruit drops, hard boiled candies (clear, hard, pulled, grained, filled), soft candies (fondant, modified fondants like toffee, fudge, marshmallows, gums, jellies, chocolates) bars, chewing gums, special confectionery- lozenges.	12

Teaching methods: Lecturing, PowerPoint Projection through LCD, Assignment, Discussion and Activity.

TEXT BOOKS

1. John Kingslee, 2019, *Bakery and Confectionery*, New Age Publishers

RESEARCH BOOKS

1. Philip, Thangam. E, 2010, *Modern Cookery For Teaching And Trade*. Ed. 6 - Vol.02. Orient BlackSwan publisher

WEB RESOURCES

<https://www.udemy.com/course/art-of-baking/>

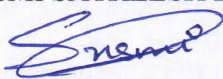
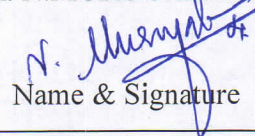
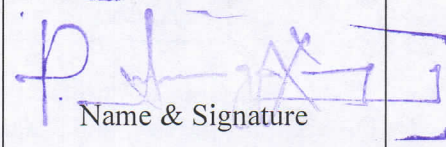
MAPPING WITH PROGRAM OUTCOMES

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	S	S
CO2	S	S	M	M	M	S	M
CO3	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S
CO5	S	S	M	M	M	S	M

Strong, M- Medium, L – Low

ASSESSMENT PATTERN (if deviation from common pattern)

Follows common pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
SUSMI SATHEESH KUMAR  Name & Signature of the Staff	DR. N.MURUGALATHA  Name & Signature	 Name & Signature

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028

Course Code:	21FPU07	Course Title					Batch:	2021-2022 & onwards	
		PRACTICAL III – BAKERY AND CONFECTIONERY					Semester:	II	
Hrs/Week:	5	L		T		P	5	Credits:	3

Course Objectives

To enable the students to:

- impart practical knowledge by visiting bakery unit.
- analyze the gluten content of various flour.
- acquire knowledge on processing methods used in baking industry.
- develop an elementary knowledge on quality assessment of baked foods.
- make the students aware of preparation of Pastries and confectionary.

COURSE OUTCOMES (CO)

SL.NO	COURSE OUTCOME	BLOOMS LEVEL
CO1	Identifying the basic ingredients which will help to prepare baked items.	K3
CO2	Experimenting with methodologies to prepare different types of rusk making and pastries.	K3
CO3	Demonstrating to prepare various confectionaries	K2
CO4	Examining the quality of products produced.	K4
CO5	Identifying the causes of spoilage.	K3

SYLLABUS

Code No	Subject	Sem No:
21FPU07	PRACTICAL V – BAKERY AND CONFECTIONERY	II
S.No	LIST OF EXPERIMENTS	Hours
1.	Wheat processing – Visit to a milling unit	6
2.	Evaluation of gluten content of flour	6
3.	Baking of different cookies and evaluation	6
4.	Preparation of pizza base, arabic bread and assessment of its quality	6
5.	Preparation of bread, buns and assessment of its quality	6
6.	Preparation of cake with egg and eggless cakes with different icing and assessment of its quality.	6
7.	Preperation of muffins and cup cakes and assessment of its quality	6

8.	Preparation of different rusks and assessment of quality	6
9.	Preparation of pastries and assessment of quality	6
10.	Preparation of confectioneries like fudge, fondant, marshmallows, marzipan, jujubes, soft and hard toffees.	6

Teaching methods: Hands on Experiments

TEXT BOOKS

1. Philip, Thangam. E, 2010, Modern Cookery For Teaching And Trade . Ed. 6 - Vol.02. Orient BlackSwan publisher

REFERENCE BOOKS

1. John Kingslee, 2019, Bakery and Confectionery, New Age Publishers

WEB RESOURCES

http://eiilmuniversity.co.in/downloads/Bakery_&_confectionery.pdf

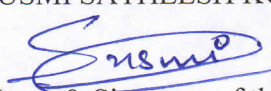
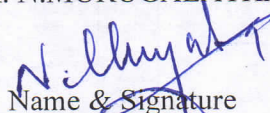

MAPPING WITH PROGRAM OUTCOMES

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	S	S
CO2	S	S	M	M	M	S	M
CO3	S	S	S	S	S	S	S
CO4	S	M	S	S	S	M	S
CO5	S	S	M	M	M	S	M

Strong, M- Medium, L – Low

ASSESSMENT PATTERN (if deviation from common pattern)

Follows common pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
SUSMI SATHEESH KUMAR 	DR. N.MURUGALATHA 	
Name & Signature of the Staff	Name & Signature	Name & Signature
Course Code: 21EPU09	Course Title	Batch: 2021-2022

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science
Coimbatore-641 028.

								& onwards
		ALLIED II - FOOD MICROBIOLOGY					Semester:	II
Hrs/Week:	3	L	3	T		P	Credits:	3

COURSE OBJECTIVE:

To enable the students to:

- acquire an elementary knowledge and understand the relevance of microscopy and its applications in everyday life.
- develop an understanding of the role of microorganisms in food industry and in the maintenance of health.
- learn the types, structure and characteristics of microorganisms.
- understand the factors affecting the growth of microorganism.
- learn the causes of food spoilage and food borne disease.

COURSE OUTCOMES (CO)

SL.NO	COURSE OUTCOME	BLOOMS LEVEL
CO1	Describing the characteristics of important pathogens and focus on spoilage microorganisms in foods.	K1, K2., K3, K4
CO2	Describing the growth and multiplication of bacteria and to analyze the extrinsic factors of microbes.	K1, K2., K3, K4
CO3	Examining contamination, spoilage and discussion on prioritization on preservation methods of various agricultural and dairy products.	K1, K2., K3, K4
CO4	Examining contamination, spoilage and discussion on prioritization on preservation of various non-perishable food products.	K1, K2., K3, K4
CO5	Recognizing, distinguishing and analyzing the beneficial effects of microbes in fermented food.	K1, K2., K3, K4

SYLLABUS

21FPU07	ALLIED II- FOOD MICROBIOLOGY	Sem: II
Unit No.	Topics	Hours
I	Introduction to Microbiology and Structure of Microorganisms Definition and history, microscopy, light and electron microscopy, listing other types, general morphology of microorganisms bacteria, fungi, algae, yeast and virus-bacteriophage.	09

II	Growth and Multiplication Microbial biomass, growth curve, definition of batch and continuous culture. Factors Affecting Growth - Intrinsic factors, nutrient content, ph, redox potential, antimicrobial barrier and water activity. Extrinsic factors: Relative humidity, temperature and gaseous atmosphere.	09
III	Microbiology of Perishable Foods Outline of contamination, spoilage and preservation of vegetables and fruits. Milk and milk products, canned foods, meat and meat products, egg and poultry.	09
IV	Microbiology of Non-Perishable Foods Outline of contamination, spoilage and preservation of cereals and cereal products, sugar and sugar products.	09
V	Beneficial Effects of Microorganisms Fermented foods – Curd, cheese, sauerkraut, meat, soy based foods, alcoholic beverages and vinegar.	09

Teaching methods: Lecturing, PowerPoint Projection through LCD, Assignment, Discussion, Activity, and Online – Google classroom.

TEXT BOOKS

1. Fraizer W.C. and Westhoff D.C., 2017, "Food Microbiology", TATA McGraw Hill Publishing Company Ltd. New Delhi.

REFERENCE BOOKS

1. Adams M.R. and M.O. Moss., 2015, "Food Microbiology", The royal Society of Chemistry, Cambridge, New York.
2. Ananthanarayan and Paniker., 2017, Textbook of Microbiology Tenth edition, The Orient Blackswan; 10th edition.

WEB RESOURCES

- <https://www.researchgate.net/publication/315712936_Natural_food_pigments_application_in_food_products>
 <<https://www.britannica.com/topic/food-preservation>>

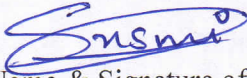
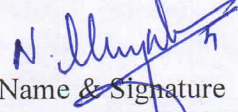
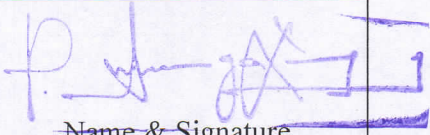
MAPPING WITH PROGRAM OUTCOMES

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	S	S
CO2	S	S	M	M	M	S	M
CO3	S	M	S	S	S	S	S
CO4	S	S	S	S	S	S	S
CO5	S	S	M	M	M		M

Strong, M- Medium, L – Low

ASSESSMENT PATTERN (if deviation from common pattern)

Follows common pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
SUSMI SATHEESH KUMAR  Name & Signature of the Staff	DR. N.MURUGALATHA  Name & Signature	 Name & Signature

Co-ordinator
Curriculum Development Cell
Hindusthan College of Arts & Science,
Coimbatore-641 028.

Course Code:	21FPU09	Course Title					Batch:	2020-2021 & onwards	
		ALLIED PRACTICAL-IV FOOD MICROBIOLOGY					Semester:	II	
Hrs/Week:	3	L		T		P	3	Credits:	2

COURSE OBJECTIVE:

To enable the students to:

- introduction to basic microbiology equipment.
- learn and apply cleaning and sterilization techniques
- differentiate between the types of microorganisms
- perform staining methods
- determine the potability of water

COURSE OUTCOMES (CO)

S.No	COURSE OUTCOME	BLOOMS LEVEL
CO1	Defining the basic microbiological laboratory practices.	K1
CO2	Illustrating the principles of sterilization and methods to prepare media for growing microorganisms in foods.	K2
CO3	Identifying microbes by staining methods.	K3
CO4	Examining personal hygiene and sanitation by standard methods.	K4
CO5	Apply a systematic approach to controlling food safety hazards.	K4

SYLLABUS

21FPU09	ALLIED PRACTICAL IV - FOOD MICROBIOLOGY	Sem: II
S.No	LIST OF EXPERIMENTS	Hours
1	Introduction to the basic microbiology laboratory practices and equipment.	4
2	Preparation and sterilization of nutrient broth and media.	4
3	Morphological study of bacteria and fungi using permanent slides.	4
4	Assessment of surface sanitation by swab/rinse method.	4
5	Scheme for the detection of food borne pathogens.	4
6	Implementation of FSMS – HACCP, ISO : 22000.	4
7	Simple staining and gram's staining.	3
8	Standard plate count method.	3

9	Bacteriological analysis of water.	3
10	Assessment of personal hygiene.	3

Teaching methods: Hands on Experiments

TEXT BOOKS

1. Adams M.R. and M.O. Moss.,2015, "Food Microbiology", The royal Society of Chemistry, Cambridge, New York.

REFERENCE BOOKS

1. Fraizer W.C. and Westhoff D.C., 2017, "Food Microbiology", TATA McGraw Hill Publishing Company Ltd. New Delhi.

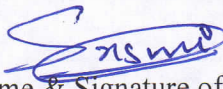
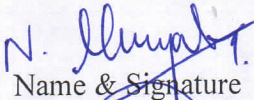
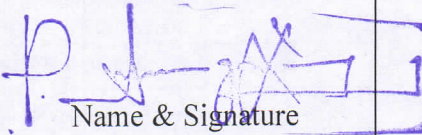
MAPPING WITH PROGRAM OUTCOMES

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	S	S	S	S	S	S	S
CO2	S	M	M	M	M	S	M
CO3	S	S	S	S	S	S	S
CO4	S	M	S	S	S	S	S
CO5	S	S	M	M	M	S	M

Strong, M- Medium, L – Low

ASSESSMENT PATTERN (if deviation from common pattern)

Follows common pattern of Internal and External assessment, suggested in the Regulations.

Course Designed by	Verified by HOD	Approved by CDC Co-coordinator
SUSMI SATHEESH KUMAR  Name & Signature of the Staff	DR. N.MURUGALATHA  Name & Signature	 Name & Signature

Co-ordinator
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