

**MAHATMA GANDHI UNIVERSITY UNDER  
GRADUATE VOCATIONAL  
PROGRAMMES (HONOURS) SYLLABUS**

**MGU-B.VOC (Honours)**

**(2025 Admission Onwards)**



**Faculty: Science**

**Expert Committee: Agriculture and  
Sustainability**

**Programme: B.Voc (Honours) Agro Food  
Processing**

**Mahatma Gandhi University  
Priyadarshini Hills  
Kottayam – 686560, Kerala, India**

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Syllabus

## Preface

The Board of studies (UG) Science ,Mahatma Gandhi university is extremely happy to introduce the revised curriculum of B. Voc Degree Programme which will be applicable with effect from the academic year 2025-2026 onwards. The curriculum and syllabus have been prepared based on the MGU – UGP (Honours) structure leading to Honours Degree. This syllabus document is a harmonious fusion of numerous brilliant minds, tirelessly dedicating their unwavering efforts . With profound gratitude, the chairperson and the members of the Board of Studies express their sincere appreciation to all those who have contributed to this noble and commendable venture.

We extend our profound gratitude to the esteemed Vice Chancellor, Members of the Syndicate of MG University, the Registrar and the diligent sub- committee members entrusted with the implementation of UGP (Honours) Programme in the University. Their goal – oriented management style , unwavering follow -up, ceaseless inspiration and receptive nature have been instrumental in the process.

We are deeply thankful to the administrative staff of the MG University for their support from the very beginning of this task. Principals of all Arts and Science colleges affiliated to MG University deserve a special mention for having positively responded to our invitation to ensure participation in the workshop.

With genuine optimism , we ardently hope that the meticulously designed syllabus will indeed prove to be highly beneficial for the learners , empowering them with comprehensive knowledge and essential skills. This enriching experience will undoubtedly aid them in shaping their future with confidence and competence

We extend our heartfelt gratitude to everyone who played a significant role in the syllabus drafting process.

MGU-B.VOC. (HONOURS)

With Warm Regards,

Chairman

Board of Studies of Science

(UG)

Syllabus

## Expert Committee & External Experts

### EXPERT COMMITTEE FOR AGRICULTURE AND SUSTAINABILITY

Sl.No.	Name of the Members	Designation	College
1.	Dr. Jolly V Antony (Convener)	Professor of Chemistry	Maharaja's College, Ernakulam
2.	Dr.N. Suja	Assistant Professor of Aquaculture	St. Aloysius College, Edathua
3.	Dr. Pratheesh Mathew	Assistant Professor of Zoology	St. Thomas College, Pala
4.	Dr.Sreejaya R	Assistant Professor of Zoology	St. Thomas College, Ranni
5.	Mrs.Renu Mathew	B.Voc Nodal Officer	St. Dominic's College, Kanjirappally
6.	Mr. Shony G Kizhakkethottam	B.Voc Nodal Officer	St. George'S College, Aruvithura
7.	Mrs. Sherin Mary Simon	Assistant Professor of B.Voc Food Processing	St. Theresa's College, Ernakulam
8.	Mrs. Deena Paul	Assistant Professor of Chemistry	St. Joseph's College, Moolamattam
9.	Dr. Ajalesh B. Nair	Assistant Professor of Chemistry	UC College, Aluva
10.	Dr. Deepthi A.S	Associate Professor of Botany	Catholicate College, Pathanamthitta

## Syllabus Index

Name of the Major Subject: **Agro Food Processing**

### SEMESTER: 1

Course Code	Title of the Course	Type of the Course	Credit	Hours/ week	Hour Distribution /week		
					L	P	O
MG1SDCA FP100	Basic Principles of Food Processing and Preservation	SDC	4	5	3	2	0
MG1SDCA FP101	Bakery and Confectionary	SDC	4	4	4	0	0
MG1SDCA FP102	Dairy Technology	SDC	4	5	3	2	0
MG1MDC AFP100	Ready to Eat convenience Food	MDC	3	3	3	0	0
MG1SDCA FP103	On-the-Job Training	SDC	2	5	0	0	5

L — Lecture, P — Practical/Practicum , O — On the Job Training



### SEMESTER: 2

Course Code	Title of the Course	Type of the Course	Credit	Hours/ week	Hour Distribution /week		
					L	P	O
MG2SDCA FP100	Fruit and Vegetable Processing Technology	SDC	4	5	3	2	0
MG2SDCA FP101	Food Chemistry	SDC	4	5	3	2	0
MG2SDCA FP102	Quality assurance and management	SDC	4	4	4	0	0
MG2MDC AFP100	Value Addition in Fruits and Vegetables	MDC	3	4	2	2	0
MG2SDCA FP103	On-the-Job Training	SDC	2	5	0	0	5

L — Lecture, P — Practical/Practicum , O — On the Job Training

**SEMESTER: 3**

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG3SDCA FP200	Food Science and Nutrition	SDC	4	4	4	0	0
MG3SDCA FP201	Food Microbiology	SDC	4	5	3	2	0
MG3SDCA FP202	Food Analysis and Adulteration testing	SDC	4	5	3	2	0
MG3MDC AFP200	Technology of coconut-based products	MDC	3	3	3	0	0
MG3SDCA FP203	On-the-Job Training	SDC	2	5	0	0	5
MG3MPC AFP200	Food Analysis and Adulteration testing	MPC	4	5	3	2	0

L — Lecture, P — Practical/Practicum , O — On the Job Training

**SEMESTER: 4**

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG4SDCA FP200	Food Processing Machineries	SDC	4	4	4	0	0
MG4SDCA FP201	Sensory Evaluation	SDC	4	5	3	2	0
MG4SDCA FP202	Technology of Beverages	SDC	4	5	3	2	0
MG4SECA FP200	Food Packing Technology	SEC	3	3	3	0	0
MG4VAC AFP200	Personal Management	VAC	3	3	3	0	0
MG4MPC AFP200	Technology of Beverages	MPC	4	5	3	2	0
MG4INTA FP200	Internship	INT	2	20 Days	0	0	0

L — Lecture, P — Practical/Practicum , O — On the Job Training

**SEMESTER: 5**

Course Code	Title of the Course	Type of the Course	Credit	Hours/ week	Hour Distribution /week		
					L	P	O
MG5SDCA FP300	Food Plant Design	SDC	4	4	4	0	0
MG5SDEA FP300/ MG5SDEA FP301	Cereals and pulses processing technology / Fat and oil Processing Technology	SDE SDE	4 4	5 5	3 3	2 2	0 0
MG5SDCA FP301	Food Engineering	SDC	4	5	3	2	0
MG5SECA FP300	Extrusion and snack food technology	SEC	3	4	2	2	0
MG5VAC AFP300	Entrepreneurship in food processing	VAC	3	3	3	0	0
MG5MPC AFP300	Cereals and pulses processing technology	MPC	4	4	4	0	0

L — Lecture, P — Practical/Practicum , O — On the Job Training



**SEMESTER: 6**

Course Code	Title of the Course	Type of the Course	Credit	Hours/ 5week	Hour Distribution /week		
					L	P	O
MG6SDEA FP300	Food Additives/	SDE	4	5	3	2	0
MG6SDEA FP301	Food Service management	SDE	4	5	3	2	0
MG6SDCA FP300	Meat , Fish and Poultry Processing Technology	SDC	4	5	3	2	0
MG6SECA FP300	Computer Hardware and networking	SEC	3	3	3	0	0
MG6VAC AFP300	Post-Harvest Technology	VAC	3	3	3	0	0
MG6MPC AFP300	Food Service management	MPC	4	4	4	0	0
MG6PRJA FP300	PROJECT	PRJ	4	8	0	8	0

L — Lecture, P — Practical/Practicum , O — On the Job Training

**SEMESTERS: 7 & 8**

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG7APPA FP400	Apprenticeship	Apprenticeship	28	280 days	0	28	0
MG7RINA FP400	Research Internship	Internship	20	200 days	0	20	0

L — Lecture, P — Practical/Practicum , O — On the Job Training

**B.Voc Honours**

Course Code	course	Methodology	Number of days	Credits	Hour Distribution		
					L	P	O
MG7APP/AFP400	APP	Apprenticeship	280	28	0	0	28
NA	MPC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-

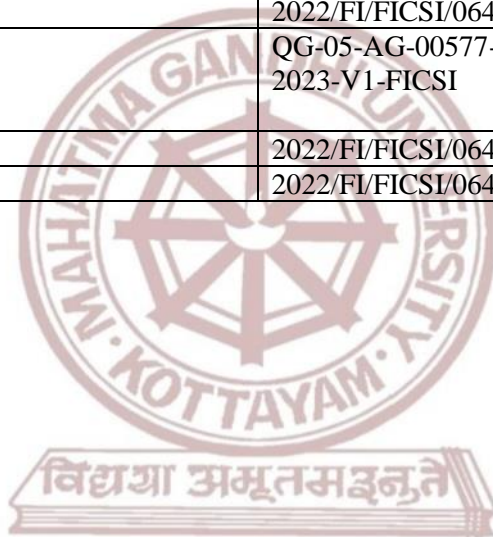
<b>B.Voc Honours with Research</b>							
<b>Course Code</b>	<b>course</b>	<b>Methodology</b>	<b>Number of days</b>	<b>Credits</b>	<b>Hour Distribution</b>		
					<b>L</b>	<b>P</b>	
					<b>O</b>		
MG7RINAFP400	RIN	Research Internship	20	20	0	0	
NA	SDC	Online	NA	4	-	-	-
NA	SDC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-

**MGU-B.VOC. (HONOURS)**

**Syllabus**

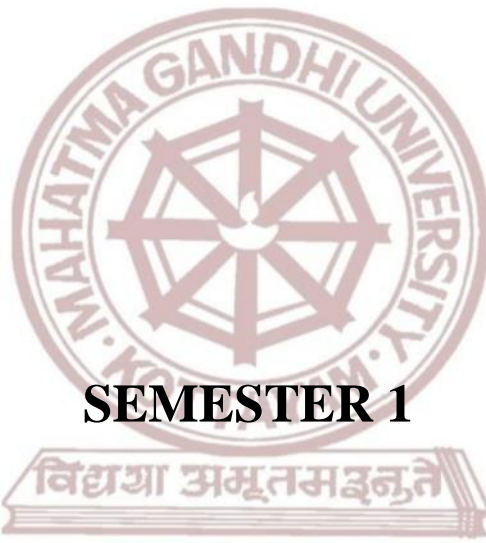
**Job Roles and Qualification Packs for Certificate, Diploma, Bachelor's, and Honours Degrees.**

<b>JOB ROLES</b>	<b>NHEQF LEVEL</b>	<b>QPs ALIGNED</b>	<b>SECTOR SKILL</b>
Food Analyst	4.5	2022/FI/FICSI/06456	FICSI
Food lab instrumentation specialist	5.0	QG-05-AG-00577-2023-V1-FICSI	FICSI
Supervisor	5.5	2022/FI/FICSI/06455	FICSI
Internal Auditor	6.0	2022/FI/FICSI/06458	FICSI



**MGU-B.VOC. (HONOURS)**

**Syllabus**



## **SEMESTER 1**

**MGU-B.VOC. (HONOURS)**

# *Syllabus*

**SEMESTER 1**

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG1SDCA FP100	Basic Principles of Food Processing and Preservation	SDC	4	5	3	2	0
MG1SDCA FP101	Bakery and Confectionary	SDC	4	4	4	0	0
MG1SDCA FP102	Dairy Technology	SDC	4	5	3	2	0
MG1MDC AFP100	Ready to Eat convenience Food	MDC	3	3	3	0	0
MG1SDCA FP103	On-the-Job Training	SDC	2	5	0	0	5



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Basic Principles of Food Processing and Preservation			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG1SDCAFP100			
<b>Course Level</b>	100			
<b>Course Summary</b>	This course aims to explain a sequence steps to produce a acceptable and quality food product and to acquire knowledge on different preservation techniques.			
<b>Semester</b>	1	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
		<b>Total Hours</b>		75
<b>Pre-requisites, if any</b>	Nil			

## Syllabus

### COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Remembering the concepts of processing and preservation of food	K	1,1
2	Understand the concepts of food processing and preservation technique to produce an acceptable and quality	U	1,2,8

	food product with that the extension of shelf life.		
3	Analyze the prospects of processing and preservation so as to develop a good quality product.	An	1,2,3
4	Evaluate the various steps in processing techniques to transform raw materials into safe stable products	E	1,2,6

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	1	0	0	0	0	0	0	0	0
CO 2	1	1	0	0	0	0	0	2	0	0
CO 3	1	1	1	0	0	0	0	0	0	0
CO 4	2	2	0	0	0	3	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Classification of Foods</b>	1.1	Food – Definition , Classification	3	1
	1.2	Functions of food	2	2
	1.3	New concepts of food	3	2
<b>2</b> <b>Fundamentals of Food Processing</b>	2.1	Steps involved in Food Processing	2	1
	2.2	Harvesting – Different types Storage and Manufacturing	3	2
	2.3	Preservation – Various preservation methods	3	1

	2.4	Packaging , Distribution and marketing	3	2
<b>3</b> <b>Basic Principles of Food Preservation</b>	3.1	Food Spoilage , Definition, Types	3	2
	3.2	Preservation , Definition, Principles and Importance	3	1
	3.3	Methods of preservation	3	2
	3.4	Preservation by irradiation and fermentation	3	2
	3.5	Pasteurisation -History and steps	2	1
	3.6	Types of cans and bottles , Spoilage encountered	3	2
	3.7	Refrigeration , advantages , mechanism, Difference between refrigeration and freezing	3	1
	3.8	Freezing, methods, steps , types ,common spoilage	3	2
	3.9	Preservation by removal of moisture	3	1
<b>4</b> <b>Practical</b>	4.1	Preparation of Jam	8	3
	4.2	Preparation of Squash	8	3
	4.3	Preparation of Pickle	7	3
	4.4	Preparation of chips	7	3
<b>5</b> <b>Teachers Specific</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> <ol style="list-style-type: none"> <li>1. Lecture</li> <li>2. Use of ICT Tools</li> <li>3. Hands-on Activities</li> <li>4. Collaborative Learning</li> <li>5. Experiential Learning</li> </ol>
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT – Theory and Practical</b>  <b>A. Continuous Comprehensive Assessment (CCA)</b> <b>Theory</b> Total Marks: 25 Assessment Methods b) Assignment c) Written Exam d) Presentation  <b>Practical</b> Total marks:15 Assessment Methods: Practical, Assignment
	<b>B. End Semester Evaluation (ESE) – 70 marks</b> <b>MGU-B.VOC. (HONOURS)</b>  <b>Theory</b> Total Marks : 50 Assessment Methods :Written Exam <b>Duration of Examination : 1.50hr</b> <b>Pattern of examination for Theory- Non-MCQ</b> <b>Different parts of written examination: Part A, Part B ,Part C</b> <b>Answer Type: Short answer, Short Essays, Essay</b> <b>Marks for part: 2, 5, 15</b> <b>Number of questions in each part: 7,7,2</b> <b>Number of questions to be answered: 5,5,1</b>  <b>Marks for part :</b>  <b>Part A-</b> Short Answer –(5 out of 7) – $5 \times 2 = 10$ <b>Part B-</b> Short Essay - (5 out of 7) - $5 \times 5 = 25$ <b>Part C-</b> Essay - (1 out of 2) - $1 \times 15 = 15$

	<p><b>PRACTICAL</b></p> <p><b>Total Marks: 35</b></p> <p><b>Assessment Methods:</b></p> <p>a) Practical Exam: 25marks</p> <p>b) Record: 5marks</p> <p>c) Viva: 5marks</p> <p><b>Duration of Examination: 1.50hr</b></p>
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## REFERENCE

1. Fellows, P. J. (2017). Food processing technology: Principles and practice (4th ed.). Woodhead Publishing.
2. Potter, N. N., & Hotchkiss, J. H. (1998). Food science (5th ed.). Springer.
3. Rahman, M. S. (2009). Food preservation: Principles and practices. CRC Press.
4. Desrosier, N. W., & Desrosier, J. N. (2013). The technology of food preservation (4th ed.). Springer.
5. Singh, R. P., & Heldman, D. R. (2014). Introduction to food engineering (5th ed.). Academic Press.

MGU-B.VOC. (HONOURS)

## SUGGESTED READINGS

1. Fellow, P. J. (2009). Emerging food processing technologies: Principles and applications. Woodhead Publishing.
2. Hui, Y. H. (Ed.). (2014). Handbook of food and beverage fermentation technology. CRC Press.
3. Leistner, L., & Gould, G. W. (2002). Hurdle technologies: Combination treatments for food stability, safety and quality. Springer.
4. Toledo, R. T., Escher, F. E., & Singh, R. K. (2018). Fundamentals of food process engineering (4th ed.). Springer.
5. Manay, N. S., & Shadaksharaswamy, M. (2017). Foods: Facts and principles (3rd ed.). New Age International Publishers.



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Bakery and Confectionery Technology			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG1SDCAFP101			
<b>Course Level</b>	100			
<b>Course Summary</b>	This course aims to explain the processing methods used in confectionery and culinary industries			
<b>Semester</b>	1	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		4	0	0
				<b>Total Hours</b>
				60
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

# Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Remember the principles, ingredients, and processing techniques involved in bakery and confectionery product development	K	1,2,6
2	Identify the functions of key bakery ingredients (flour, sugar, fat, leavening agents, etc.) and their role in product quality	U	2,10
3	Demonstrate knowledge of confectionery product and their	An	1,2,8

	manufacturing		
4	Evaluate quality parameters, sensory attributes and shelf life of bakery and confectionary products.	E	1,2,5

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	2	0	0	0	2	0	0	0	0
CO 2	0	2	0	0	0	0	0	0	0	2
CO 3	1	1	0	0	0	0	0	3	0	0
CO 4	1	1	0	0	3	0	0	0	0	0
CO 5	2	0	2	0	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Manufacture of Sugar</b>	1.1	Manufacturing Steps - Sugarcane, Gur, Khandsari sugar, Raw Sugar	5	2
	1.2	Manufacturing Steps- Refined Sugar, White and Beet Sugar	5	2
<b>2</b> <b>Classification of Confectionery</b>				
	2.1	Sugar Boiled Confectionery- Crystalline and Amorphous Confectionery	5	2
<b>3</b> <b>Cocoa Processing, Bread, Cake and Biscuit Manufacturing</b>	3.1	Processing of Cocoa	5	2,3
	3.2	Manufacture of Chocolate	5	2,3
	3.3	Types of Chocolate	5	1

	3.4	Cocoa Butter	5	1
	3.5	Cocoa Powder	5	2
	3.6	Processing of bread and cake	5	1
	3.7	Preparation of biscuit	5	2
<b>4</b> <b>Bread , Cake and Biscuit Manufacturing</b>	4.1	Processing of bread and cake	5	1,2
	4.2	Preparation of biscuit	5	1,2
<b>5</b> <b>Teachers Specific</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT - Both Theory and Practical</b> <b>Syllabus</b>
	<b>A. Continuous Comprehensive Assessment (CCA)</b>  <b>Theory</b> Total Marks : 30 Assessment Methods : Assignment, Presentation, Written Exam
	<b>B. End Semester Evaluation (ESE)</b>  <b>Theory</b>

	<p>Total Marks :70  Assessment Methods : Written Exam  <b>Duration of Examination</b> :1:50hr  <b>Pattern of examination for Theory</b> - Non-MCQ  <b>Different parts of written examination</b> :Part A, Part B, Part C,  <b>Answer Type</b> :Short answer, Short Essays, Essay  <b>Marks for part</b> : 2, 5, 15  <b>Number of questions in each part</b> : 12,6,4  <b>Number of questions to be answered</b> : 10,4,2</p> <p><b>Marks For part</b>  <b>Part A</b>- Short Answer- (10 out of 12)-(10 × 2=20)  <b>Part B</b> – Short Essay –( 4out of 6)-(4 ×5=20)  <b>Part C</b>- Essay -( 2 out of 4 )- (2×15=30)</p>
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## REFERENCES

1. Cauvain, S. P., & Young, L. S. (2006). *Baked products: Science, technology and practice* (2nd ed.). Wiley-Blackwell.
2. Cauvain, S. P., & Young, L. S. (2009). *Technology of breadmaking* (2nd ed.). Springer.
3. Dubey, R. C. (2014). *Basic biotechnology* (4th ed.). S. Chand Publishing.
4. Edwards, W. P. (2018). *The science of bakery products*. Royal Society of Chemistry.

## SUGGESTED READINGS

1. Minifie, B. W. (2012). *Chocolate, cocoa and confectionery: Science and technology* (3rd ed.). Springer.
2. Rajiv, J. (2014). *Textbook of bakery and confectionery*. PHI Learning Pvt. Ltd.
3. Reddy, B. S., & Ranganathan, T. V. (2016). *Bakery and confectionery products*. PHI Learning.
4. Sahi, S. S., & Alava, J. M. (2017). *Breadmaking: Improving quality* (2nd ed.). Woodhead Publishing.



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Dairy Technology			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG1SDCAFP102			
<b>Course Level</b>	100			
<b>Course Summary</b>	This course aims to explain the processing methods used in confectionery and culinary industries			
<b>Semester</b>	1	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
				<b>Total Hours</b>
				75
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Remember the composition and properties of milk	K	1,2,6
2	Understanding about milk collection and preservation techniques	U	7,2,6
3	Learn the principles and methods of milk processing	U	10,6
4	Understand the manufacturing processes of various dairy products	U	6,8,2
5	Apply knowledge of packaging,	A	6,2,10

	storage, and distribution of dairy products		
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	1	0	0	0	3	0	0	0	0
CO 2	0	2	0	0	0	1	2	0	0	0
CO 3	0	0	0	0	0	2	0	0	0	1
CO 4	0	1	0	0	0	3	0	2	0	0
CO 5	0	3	0	0	0	3	0	0	0	2

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Introduction</b>	1.1	Milk – Definition , Sources, Composition	3	1
	1.2	Milk Constituents Property	3	2
	1.3	Microbiology Of Milk	3	3
	1.4	Collection and Transportation	3	1
	1.5	Grading of Milk	3	2
<b>2</b> <b>Milk Processing</b>	2.1	Types of Milk	3	3
	2.2	Processing steps involved in different types of milk	5	1
<b>3</b> <b>Butter, Cream, Cheese, Ice-</b>	3.1	Butter- Definition, classification, composition and nutritive value ,method of manufacture, packaging,	3	2

<b>cream and Indigenous Dairy Product</b>		storage		
	3.2	Cream- Definition, classification, composition and nutritive value, method of manufacture, packaging, storage	3	3
	3.3	Cheese- Definition, classification, composition and nutritive value ,method of manufacture, packaging, storage	3	1
	3.4	Ice-cream- Definition, classification, composition and nutritive value , method of manufacture, packaging, storage	3	2
	3.5	Fat rich products	2	2,3
	3.6	Coagulated Products	2	2,3
	3.7	Fermented Products	2	2,3
	3.8	Frozen Products	2	2,3
	3.9	Sweet Dairy Products	2	2,3
	<b>4 Practical</b>	4.1	Analysis of milk	8
4.2		Manufacture of paneer	8	3
4.3		Manufacture of Rasagula	7	3
4.4		Manufacture of Gulab jamun	7	3
<b>5 Teachers Specific</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT – Both Theory and Practical</b>  <b>A. Continuous Comprehensive Assessment (CCA)</b>  <b>Theory</b> Total Marks : 25 Assessment Methods  <b>Practical</b> Total Marks : 15 Assessment Methods (a) Practical (b) Record (c) Viva  <b>B. End Semester Evaluation (ESE)</b> <b>Theory</b> Total Marks :50 Assessment Methods :Written Exam <b>Duration of Examination :1.50hr</b> <b>Pattern of examination for Theory - Non-MCQ</b> <b>Different parts of written examination :Part A, Part B, Part C,</b> <b>Answer Type :Short answer, Short Essays, Essay</b> <b>Marks for part : 2, 5, 15</b> <b>Number of questions in each part : 7,7,2</b> <b>Number of questions to be answered : 5,5,1</b>  <b>Marks For part</b> <b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b> <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b> <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b>

	<p><b>Practical</b></p> <p><b>Total Marks: 35</b></p> <p><b>Assessment Methods</b></p> <p>(a) Practical Exam- 25marks</p> <p>(b) Record- 5marks</p> <p>(c) Viva- 5marks</p> <p><b>Duration of Examination: 1.50hr</b></p>
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## REFERENCES

1. Eckles, C. H., Combs, W. B., & Macy, H. (2014). *Milk and milk products* (4th ed.). Biotech Books.
2. Fox, P. F., & McSweeney, P. L. H. (2015). *Dairy chemistry and biochemistry* (2nd ed.). Springer.
3. Kessler, H. G. (2002). *Food and bio process engineering: Dairy technology*. Verlag A. Kessler.
4. Robinson, R. K. (Ed.). (2002). *Encyclopedia of dairy sciences* (Vols. 1–4). Academic Press.

## SUGGESTED READINGS

1. Aneja, R. P., Mathur, B. N., Chandan, R. C., & Banerjee, A. K. (2002). *Technology of Indian milk products*. Dairy India Yearbook.
2. Sukumar, D. (2002). *Outlines of dairy technology*. Oxford University Press.
3. Mathur, B. N., & Narayanan, K. M. (2014). *Dairy plant management*. ICAR.
4. Rangappa, K. S., & Achaya, K. T. (1974). *Indian dairy products*. Asia Publishing House.
5. Aneja, R. P., & Singh, R. (2015). *Milk microbiology and dairy products*. New Age International Publishers.



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Ready to eat convenience food			
<b>Type of Course</b>	MDC 1			
<b>Course Code</b>	MG1MDCAFP100			
<b>Course Level</b>	100			
<b>Course Summary</b>	This course aims to explain about the types and market trends of ready to eat convenience foods.			
<b>Semester</b>	1	<b>Credits</b>		3
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	0	0
<b>Total Hours</b>				45
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

# Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the concept , scope and market demand of ready to eat foods	U	1
2	Identify and evaluate various types of RTE foods, including their ingredients and formulation .	E	1
3	Analyze the skills to develop or innovative RTE food products with consideration of sensory quality, shelf life and consumer preferences	An	10

4	Design and conduct sensory , nutritional and microbiological evaluations for RTE convenience foods	A	6
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	1	0	0	0	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	3
CO 4	0	0	0	0	0	2	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction to ready to eat foods	1.1	Ready to eat foods- Definition , classification, History and evolution of convenience foods	5	1
	1.2	Differences between RTE , RTC AND RTD	4	2,3
2 Processing, Preservation and packaging of RTE	2.1	Selection of raw materials	5	3
	2.2	Common additives , preservatives and nutritional consideration	5	1
	2.3	Thermal and Non – Thermal Processing	5	1,2
	2.4	Freeze drying and dehydration	4	2
	2.5	Packaging materials , innovation and shelf life extension	4	3

<b>3</b> <b>Quality Control and Safety</b>	3.1	HACCP,FSSAI,FDA,ISO standards	4	2,3
	3.2	Microbial testing and shelf life assessment , Allergen management	5	1
	3.3	Mandatory labelling requirements	4	2
<b>4</b> <b>Teachers Specific</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT - Theory</b> विद्यया अमृतमश्नुते
	<b>A. Continuous Comprehensive Assessment (CCA)- 25 marks</b> <b>Theory – 25Marks</b> Assessment Methods (a)Assignment (b)Presentation (c)Written Exam
	<b>B. End Semester Evaluation (ESE)</b> <b>Theory</b> Total Marks :50 Assessment Methods :Written Exam <b>Duration of Examination :1.50hr</b>

	<p><b>Pattern of examination for Theory - Non-MCQ</b></p> <p><b>Different parts of written examination :Part A, Part B, Part C,</b></p> <p><b>Answer Type :Short answer, Short Essays, Essay</b></p> <p><b>Marks for part : 2, 5, 15</b></p> <p><b>Number of questions in each part : 7,7,2</b></p> <p><b>Number of questions to be answered : 5,5,1</b></p> <p><b>Marks For part</b></p> <p><b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b></p> <p><b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b></p> <p><b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b></p>
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## REFERENCES

1. Bhat, R., Alias, A. K., & Paliyath, G. (2012). *Progress in food preservation*. Wiley-Blackwell.
2. Saxena, A., & Bawa, A. S. (2010). *Food processing and preservation*. CBS Publishers.
3. Srilakshmi, B. (2019). *Food science* (7th ed.). New Age International Publishers.

## SUGGESTED READINGS

1. Fellows, P. J. (2017). *Food processing technology: Principles and practice* (4th ed.). Woodhead Publishing.
2. Smith, J., & Charter, E. (2011). *Functional food product development*. Wiley-Blackwell.

## OJT –( On – the – Job – Training)

<b>Course Name</b>	<b>On-the-Job Training</b>				
<b>Type of Course</b>	<b>SDC</b>				
<b>Course Code</b>	MG1SDCAFP103				
<b>Course Summary</b>	<p>On-the-Job Training (OJT) is designed to equip students with practical skills, workplace discipline, and industry exposure by actively engaging them in real-world professional environments. Conducted in collaboration with firms, industries, research institutions, or higher education establishments, OJT enables students to understand industry standards, apply academic knowledge, and perform job-specific tasks using contemporary tools and practices. The training must be undertaken in the student's own skill domain, aligned with the major area of study in their undergraduate program, to ensure relevance and coherence with their academic and career goals. The program also fosters essential workplace competencies such as communication, responsibility, adaptability, and teamwork. Furthermore, it offers students a platform for career exploration and networking, helping them evaluate potential career paths and align their aspirations with industry demands.</p>				
<b>Semester</b>	<b>1</b>	<b>Duration</b>	<b>5 hours/week</b>	<b>Credits</b>	<b>2</b>

MGU-B.VOC. (HONOURS)

### COURSE OUTCOMES (CO)

CO No:	Expected Course Outcome	Learning Domains	PO No:
1	Recall about the technical aspects and effective ways to communicate in professional settings	K	1,3,6,10
2	Understand the workplace culture, learning norms ,expectations, and dynamics of a professional environment	U	2,4,5,10
3	Understand how individual roles contribute to broader organizational objectives	U	1,2,3,6
4	Apply theoretical knowledge relating classroom learning to practical work scenarios.	A	4,5,8,9

*\*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

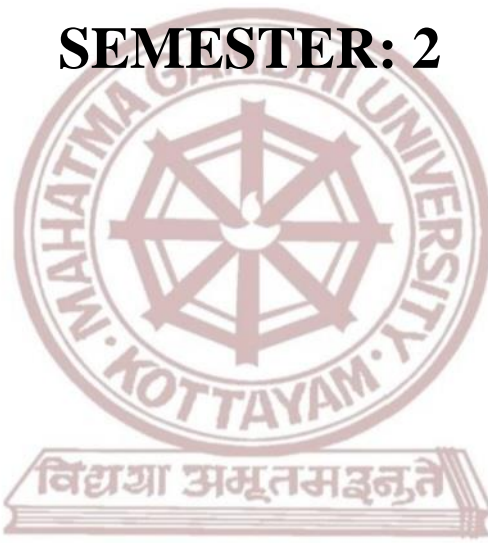
### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	2	0	0	2	0	0	0	2
CO 2	0	1	0	2	1	0	0	2	0	2
CO 3	1	1	1	0	0	2	0	0	0	0
CO 4	0	0	0	1	2	3	0	1	2	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

Assessment Types	MODE OF ASSESSMENT											
	<b>A</b>	<b>Internal Evaluation</b>										
		<table border="1"> <thead> <tr> <th>Components</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Feedback from the hosting organization</td> <td>5</td> </tr> <tr> <td>Internal Supervisor feedback</td> <td>10</td> </tr> <tr> <td><b>Total</b></td> <td><b>15</b></td> </tr> </tbody> </table>	Components	Marks	Feedback from the hosting organization	5	Internal Supervisor feedback	10	<b>Total</b>	<b>15</b>		
	Components	Marks										
	Feedback from the hosting organization	5										
	Internal Supervisor feedback	10										
	<b>Total</b>	<b>15</b>										
	<b>B</b>	<b>External Evaluation</b>										
		<table border="1"> <thead> <tr> <th>Components</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Presentation</td> <td>10</td> </tr> <tr> <td>Report</td> <td>10</td> </tr> <tr> <td>Viva Voce</td> <td>15</td> </tr> <tr> <td><b>Total</b></td> <td><b>35</b></td> </tr> </tbody> </table>	Components	Marks	Presentation	10	Report	10	Viva Voce	15	<b>Total</b>	<b>35</b>
	Components	Marks										
Presentation	10											
Report	10											
Viva Voce	15											
<b>Total</b>	<b>35</b>											

## **SEMESTER: 2**



**MGU-B.VOC. (HONOURS)**

## **Syllabus**

**SEMESTER: 2**

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG2SDCA FP100	Fruit and Vegetable Processing Technology	SDC	4	5	3	2	0
MG2SDCA FP101	Food Chemistry	SDC	4	5	3	2	0
MG2SDCA FP102	Quality assurance and management	SDC	4	4	4	0	0
MG2MDC AFP100	Value Addition in Fruits and Vegetables	MDC	3	4	2	2	0
MG2SDCA FP103	On-the-Job Training	SDC	2	5	0	0	5

L — Lecture, P — Practical/Practicum , O — On the Job Training



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Fruit and Vegetable Processing Technology			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG2SDCAFP100			
<b>Course Level</b>	100			
<b>Course Summary</b>	This course aims to explain the selection of fruits for processing and value addition .It also explains about the effective control and quality control measures during processing.			
<b>Semester</b>	2	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
				<b>Total Hours</b>
				75
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

# Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the classification , composition and nutritive value of fruits and vegetables	U	1
2	Understand common causes of post-harvest losses and apply techniques to reduce them	U	10
3	Describe methods of preservation such as drying , canning, freezing	An	2
4	Evaluate quality standards, packaging	E	8

	and storage techniques for processed produce		
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	0	0	0	0	0	0	2
CO 3	0	2	0	0	0	0	0	0	0	0
CO 4	0	0	0	0	0	0	0	1	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction	1.1	Ripening and quality of fruits	3	1
	1.2	Harvesting and transportation	3	3
	1.3	Selection and preparation of fruits for processing	3	2
2 Processing of juice , jam and jelly	<b>Syllabus</b>			
	2.1	Fruit juice manufacture	3	1
	2.2	Aseptic processing of fruit juice	3	1
	2.3	Theory of jell formation	3	1
	2.4	Jellies, Marmalades, squashes, syrups specification	3	1
3 Processing of tomato , apple, orange, mango pineapple and	3.1	Products of Tomato	3	4,3

agro products				
	3.2	Apple and Apple Products	3	2,4
	3.3	Orange and orange products	3	2
	3.4	Pineapple and pineapple products	3	1
	3.5	Mango and Mango Products	3	1,2
	3.6	Processing of tapioca products	3	3
	3.7	Processing of Banana products	3	2
	3.8	Jackfruit and its value addition, scope of value added	3	1,2
4 Practicals	4.1	Manufacture of tomato puree, tomato ketchup, tomato sauce	8	2,3
	4.2	Manufacture of lemon pickle and juice	8	2,3
	4.3	Processing of pineapple jam	7	2,3
	4.4	Processing of mango squash and pickle	7	2,3
5 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT - Theory and Practical</b>

**A. Continuous Comprehensive Assessment (CCA)**

**Theory**

Total Marks : 25

Assessment Methods :Assignment, Seminar

**Practical**

Total Marks : 15

Assessment Methods :Record, Observations of Practical Skills

**B. End Semester Evaluation (ESE)**

**Theory**

Total Marks :50

Assessment Methods : Written Exam

**Duration of Examination** :1.50 hr

**Pattern of examination for Theory** - Non-MCQ

**Different parts of written examination** :Part A, Part B, Part C,

**Answer Type** :Short answer, Short Essays, Essay

**Marks for part** : 2, 5, 15

**Number of questions in each part** : 7,7,2

**Number of questions to be answered** : 5,5,1

**Marks For part. (HONOURS)**

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 5 out of 7)-(5 ×5=25)**

**Part C- Essay -( 1 out of 2 )- (1×15=15)**

**Practical**

**Total Marks** : 35

**Assessment Methods**

(a) Practical Exam: 25marks

(b) Record:5marks

(c) Viva:5marks

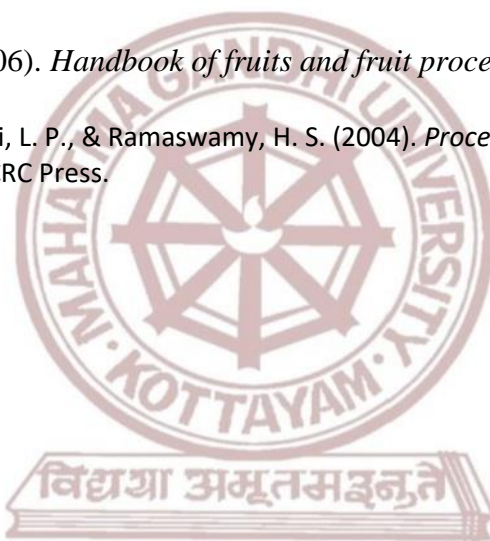
**Duration of Examination** : 1.50 hr

## REFERENCES

- Srivastava, R. P., & Kumar, S. (2010). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers & Distributors.
- Verma, L. R., & Joshi, V. K. (2000). *Postharvest technology of fruits and vegetables* (Vols. 1 & 2). Indus Publishing.
- Tiwari, B. K., & Jha, S. N. (2016). *Advances in food process engineering: Processing, quality assurance, and trends*. New India Publishing Agency.

## SUGGESTED READINGS

- Hui, Y. H. (Ed.). (2006). *Handbook of fruits and fruit processing*. Blackwell Publishing.
- Barrett, D. M., Somogyi, L. P., & Ramaswamy, H. S. (2004). *Processing fruits: Science and technology* (2nd ed.). CRC Press.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Chemistry			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG2SDCAFP101			
<b>Course Level</b>	100			
<b>Course Summary</b>	This course aims to explain about various functional and chemical constituents of food.			
<b>Semester</b>	2	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	2	0
				<b>Total Hours</b>
				75
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the chemical composition and structure of major food components	U	1
2	Describe the role and behavior of minor food constituents	K	2
3	Analyze the chemical changes that occur during processing storage	A	10
4	Evaluate the impact of food additives, preservatives and functional	E	6

	ingredients on food quality, safety and nutrition	
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	2	0	0	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	1
CO 4	0	0	0	0	0	3	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction	1.1	Introduction to chemistry of foods composition, Factors affecting foods	5	2
	1.2	Chemistry of water, water activity, moisture determination	4	2
2 Carbohydrates and proteins	2.1	Properties and classification , starch ,cellulose, pectin ,enzymes and its use in foods	3	4
	2.2	Gel formation, starch degradation , dextrinization	3	4
	2.3	Browning reactions	3	2
	2.4	Classification of proteins	3	2
	2.5	Physical and chemical properties of amino acids , functional properties ,hydrolysis of protein	3	4

	2.6	Changes of protein during processing	3	2
3 Oil , fats, Vitamins and minerals	3.1	Classification, composition, Physical and chemical properties	3	4
	3.2	Hydrolysis, Hydrogenation, rancidity and flavor reversion	2	1,2
	3.3	Winterization, refining of oil	2	2
	3.4	Emulsion	2	1,2
	3.5	Classification – Fat and water soluble	3	2
	3.6	Structure sources , functions	2	2
	3.7	Causes of losses of vitamins in foods	2	2
	3.8	Minerals- classification, sources , functions	2	2
4 Practical	4.1	Standardisation of Fehling's solution	7	2,3
	4.2	Standardization of Sodium hydroxide with standard oxalic acid	8	2,3
	4.3	Estimation of starch	7	2,3
	4.4	Qualitative test for protein and carbohydrate	8	2,3
5 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT – Both Theory and Practical</b>
	<b>A. Continuous Comprehensive Assessment (CCA)</b> <b>Theory</b> Total Marks : 25 Assessment Methods :Assignment, Seminar <b>Practical</b> Total Marks : 15 Assessment Methods : Record, Observation of Practical Skills
	<b>B. End Semester Evaluation (ESE)</b> <b>Theory</b> Total Marks :50 Assessment Methods :Written Exam <b>Duration of Examination :1.50hr</b> <b>Pattern of examination for Theory - Non-MCQ</b> <b>Different parts of written examination :Part A, Part B, Part C,</b> <b>Answer Type :Short answer, Short Essays, Essay</b> <b>Marks for part : 2, 5, 15</b> <b>Number of questions in each part : 7,7,2</b> <b>Number of questions to be answered : 5,5,1</b> <b>Marks For part</b> <b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b> <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b> <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b>  <b>Practical</b> <b>Total Marks : 35</b> <b>Assessment Methods</b> (a) Practical Exam- 25marks

	(b) Record- 5marks (c) Viva- 5marks <b>Duration of Examination : 1.50 hr</b>
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## REFERENCES

- De, S. (2013). *Outlines of dairy technology*. Oxford University Press. (Includes strong sections on milk chemistry relevant to food chemistry basics.)
- Manay, N. S., & Shadaksharaswamy, M. (2010). *Foods: Facts and principles* (3rd ed.). New Age International Publishers.
- Srilakshmi, B. (2019). *Food science* (7th ed.). New Age International Publishers.

## SUGGESTED READINGS

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- Damodaran, S., Parkin, K. L., & Fennema, O. R. (2017). *Fennema's food chemistry* (5th ed.). CRC Press.
- Coultate, T. P. (2009). *Food: The chemistry of its components* (5th ed.). Royal Society of Chemistry.
- DeMan, J. M. (1999). *Principles of food chemistry* (3rd ed.). Springer.

MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	QUALITY ASSURANCE AND MANAGEMENT			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG2SDCAFP102			
<b>Course Level</b>	100			
<b>Course Summary</b>	This course aims to explain the Quality parameters and control systems, food standards, regulation and specification			
<b>Semester</b>	2	<b>Credits</b>		<b>Total Hours</b>
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	
		4	0	0
<b>Pre-requisites, if any</b>	Nil			

## Syllabus

### COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Remember the fundamental principles and importance of quality assurance and quality control in the context of food production and processing	K	1
2	Describe national and international food quality and safety standards and regulation ( FSSAI, Codex Alimentarius, ISO 22000,HACCP ,	U	10

	GMP)		
3	Apply quality management systems in the food industry operations	A	2
4	Evaluate the impact of hygiene ,and sanitation practices on maintaining food quality and safety across the supply chain	E	6

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	0	0	0	0	0	0	3
CO 3	0	3	0	0	0	0	0	0	0	0
CO 4	0	0	0	0	0	3	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Concept of Quality	1.1	Quality Attributes	6	2
	1.2	Measurement and Evaluation	6	1
	2			
2 Concept of Quality management	2.1	Objective , importance and functions of quality control and quality management	4	2
	2.2	Sampling Procedures and plans	3	3
	2.3	Food Safety and Standard Act 2006	3	3
	2.4	Certification and quality assurance	3	3

	2.5	Labelling Issues	3	3
	2.6	International Food standards	3	3
3 HACCP System	3.1	HACCP : Definition, principles	6	2
	3.2	Guidelines for application of HACCP System	6	2
4 Food Quality Law and Regulation	4.1	Quality Assurance , Total Quality Management , GMP/GHP, GLP, GAP	5	2,5
	4.2	Indian and international quality systems and standards like ISO and Food Codex	4	1,2,5
	4.3	Export Import policy	4	2,5
	4.4	Laboratory quality procedures and assessment of laboratory performance	4	1,2
5 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b>  1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT - Theory</b>

	<p><b>A. Continuous Comprehensive Assessment (CCA)- 30 MARKS</b></p> <p><b>Theory</b></p> <p>Assessment Methods</p> <p>(a) Assignment</p> <p>(b) Presentation</p> <p>(c) Written Exam</p> <hr/> <p><b>B. End Semester Evaluation (ESE)</b></p> <p><b>Theory</b></p> <p>Total Marks :70</p> <p>Assessment Methods :Written Exam</p> <p><b>Duration of Examination :2 hr</b></p> <p><b>Pattern of examination for Theory - Non-MCQ</b></p> <p><b>Different parts of written examination :Part A, Part B, Part C,</b></p> <p><b>Answer Type :Short answer, Short Essays, Essay</b></p> <p><b>Marks for part : 2, 5, 15</b></p> <p><b>Number of questions in each part : 12,6,4</b></p> <p><b>Number of questions to be answered : 10,4,2</b></p> <p><b>Marks for part :</b></p> <p><b>Part A- Short Answer –(10 out of 12) – <math>10 \times 2 = 20</math></b></p> <p><b>Part B- Short Essay - (4 out of 6) - <math>4 \times 5 = 20</math></b></p> <p><b>Part C- Essay - (2 out of 4) - <math>2 \times 15 = 30</math></b></p> <p style="text-align: center;"><b>Syllabus</b></p>
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## REFERENCES

1. Vasudevan, R. (2019). *Food quality control*. CBS Publishers & Distributors.
2. Alli, I. (2014). *Food quality assurance: Principles and practices* (2nd ed.). CRC Press.
3. Charantimath, P. M. (2017). *Total quality management*. Pearson Education. (Though not food-specific, widely applied in QA systems for food industries.)

## SUGGESTED READINGS

1. Mortimore, S., & Wallace, C. (2013). *HACCP: A practical approach* (3rd ed.). Springer.
2. Mehta, R., & George, P. S. (2005). *Food safety regulation concerns and trade: The developing country perspective*. Macmillan India.



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Value Addition of Fruits and Vegetables			
<b>Type of Course</b>	MDC			
<b>Course Code</b>	MG2MDCAFP100			
<b>Course Level</b>	100			
<b>Course Summary</b>	This course aims to explain the processing methods of value-added fruits and vegetables			
<b>Semester</b>	2	<b>Credits</b>		3
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		2	1	0
				<b>Total Hours</b>
				60
<b>Pre-requisites, if any</b>	Nil			

## Syllabus

### COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the concept , importance and scope of value addition in the fruits and vegetable sector	U	1
2	Identify various methods of processing and preservation techniques suitable for different fruits and vegetables	An	3
3	Evaluate the quality , safety , and	E	6

	nutritional aspects of processed fruit and vegetable products		
4	Evaluate skills in the preparation of value-added products	E	10

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	1	0	0	0	0	0	0	0	0
CO 3	0	0	0	0	0	2	0	0	0	0
CO 4	0	0	0	0	0	0	0	0	0	3

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction to Value addition and it's processing	1.1	Definition and significance	2	2
	1.2	Benefits to farmers, consumers and entrepreneurs	4	2
	1.3	Classification of value-added products	4	2
	1.4	Pre -processing techniques	4	1
	1.5	Processing Techniques	3	2
	2 Packaging , storage and Quality and safety	2.1 Packaging materials and techniques ,	3	1

standards				
	2.2	Storage condition	4	2,3
	2.3	Nutritional labelling , common contaminants and control measures	3	1,2
	2.4	Standards- FSSAI. CODEX ALIMENTARIUS, HACCP	3	1,2
3 practical	3.1	Preparation of jam	8	3
	3.2	Preparation of squash	7	3
	3.3	Preparation of pickle	7	2,3
	3.4	Preparation of fruit leather	8	3
4 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>

## **A. Continuous Comprehensive Assessment (CCA)**

### **Theory**

Total Marks : 15

Assessment Methods

- (a) Assignment
- (b) Presentation

### **Practicum**

Total Marks: 15

Assessment Methods: Assignment, Observation of practical skills

## **B. End Semester Evaluation (ESE)**

### **Theory**

Total Marks :35

Assessment Methods :Written Exam

**Duration of Examination** :1.50 hr

**Pattern of examination** for Theory - Non-MCQ

**Different parts of written examination** :Part A, Part B, Part C,

**Answer Type** :Short answer, Short Essays, Essay

**Marks for part** : 2, 5, 15

**Number of questions in each part** : 7,4,2

**Number of questions to be answered** : 5,2,1

**Marks for Parts :**

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 2 out of 4)-(2 ×5=10)**

**Part C- Essay -( 1 out of 2)- (1×15=15)**

### **Practical**

Total Marks: 35

Assessment Methods:

- a) Practical Exam -25 Marks
- b) Viva – 5 Marks
- c) Record – 5 Marks

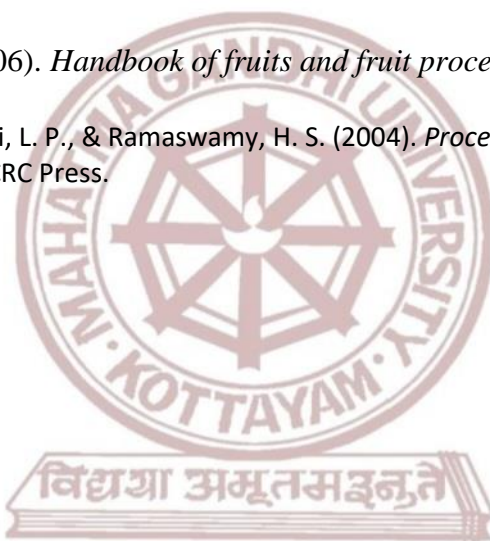
**Duration of examination** – 1.50 hr

## REFERENCES

- Srivastava, R. P., & Kumar, S. (2010). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers & Distributors.
- Verma, L. R., & Joshi, V. K. (2000). *Postharvest technology of fruits and vegetables* (Vols. 1 & 2). Indus Publishing.
- Tiwari, B. K., & Jha, S. N. (2016). *Advances in food process engineering: Processing, quality assurance, and trends*. New India Publishing Agency.

## SUGGESTED READINGS

- Hui, Y. H. (Ed.). (2006). *Handbook of fruits and fruit processing*. Blackwell Publishing.
- Barrett, D. M., Somogyi, L. P., & Ramaswamy, H. S. (2004). *Processing fruits: Science and technology* (2nd ed.). CRC Press.



MGU-B.VOC. (HONOURS)

Syllabus

## OJT –( On – the – Job – Training)

<b>Course Name</b>	<b>On-the-Job Training</b>
<b>Type of Course</b>	<b>SDC</b>
<b>Course Code</b>	MG2SDCAFP103
<b>Course Summary</b>	<p>On-the-Job Training (OJT) is designed to equip students with practical skills, workplace discipline, and industry exposure by actively engaging them in real-world professional environments. Conducted in collaboration with firms, industries, research institutions, or higher education establishments, OJT enables students to understand industry standards, apply academic knowledge, and perform job-specific tasks using contemporary tools and practices. The training must be undertaken in the student's own skill domain, aligned with the major area of study in their undergraduate program, to ensure relevance and coherence with their academic and career goals. The program also fosters essential workplace competencies such as communication, responsibility, adaptability, and teamwork. Furthermore, it offers students a platform for career exploration and networking, helping them evaluate potential career paths and align their aspirations with industry demands.</p>

### MGU-B.VOC. (HONOURS)

#### COURSE OUTCOMES (CO)

<b>CO No:</b>	<b>Expected Course Outcome</b>	<b>Learning Domains</b>	<b>PO No:</b>
1	Remember the standard operating procedure for tasks and processes	K	1,3,6,10
2	Understand and evaluate potential career opportunities by reflecting on their internship experiences and professional interactions.	U	2,4,5,10
3	Integrate academic knowledge with practical applications to solve work-related challenges and contribute to organizational goals.	An	1,2,3,6
4	Apply job-specific skills effectively in real-world tasks and responsibilities within the assigned industry setting.	A	4,5,8,9

*\*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

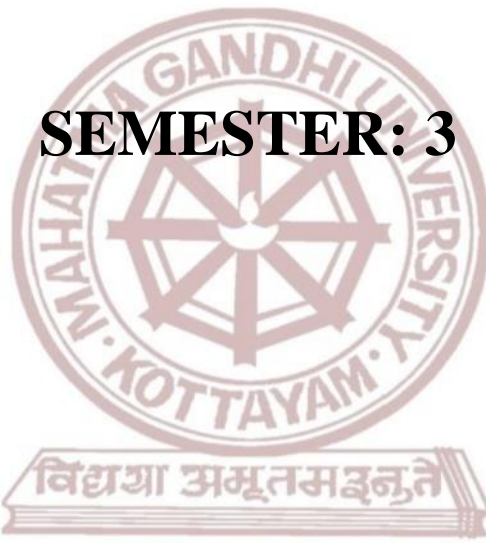
### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	2	0	0	1	0	0	0	2
CO 2	0	1	0	2	1	0	0	2	0	2
CO 3	1	2	1	0	0	2	0	0	0	0
CO 4	0	0	0	1	2	3	0	1	2	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

Assessment Types	MODE OF ASSESSMENT											
	<b>A</b>	<b>Internal Evaluation</b>										
		<table border="1"> <thead> <tr> <th>Components</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Feedback from the hosting organization</td> <td>5</td> </tr> <tr> <td>Internal Supervisor feedback</td> <td>10</td> </tr> <tr> <td><b>Total</b></td> <td><b>15</b></td> </tr> </tbody> </table>	Components	Marks	Feedback from the hosting organization	5	Internal Supervisor feedback	10	<b>Total</b>	<b>15</b>		
	Components	Marks										
	Feedback from the hosting organization	5										
	Internal Supervisor feedback	10										
	<b>Total</b>	<b>15</b>										
	<b>B</b>	<b>External Evaluation</b>										
		<table border="1"> <thead> <tr> <th>Components</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Presentation</td> <td>10</td> </tr> <tr> <td>Report</td> <td>10</td> </tr> <tr> <td>Viva Voce</td> <td>15</td> </tr> <tr> <td><b>Total</b></td> <td><b>35</b></td> </tr> </tbody> </table>	Components	Marks	Presentation	10	Report	10	Viva Voce	15	<b>Total</b>	<b>35</b>
	Components	Marks										
Presentation	10											
Report	10											
Viva Voce	15											
<b>Total</b>	<b>35</b>											

**SEMESTER: 3**



**MGU-B.VOC. (HONOURS)**

**Syllabus**

### SEMESTER 3

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG3SDCA FP200	Food Science and Nutrition	SDC	4	4	4	0	0
MG3SDCA FP201	Food Microbiology	SDC	4	5	3	2	0
MG3SDCA FP202	Food Analysis and Adulteration testing	SDC	4	5	3	2	0
MG3MDC AFP200	Technology of coconut-based products	MDC	3	3	3	0	0
MG3SDCA FP203	On-the-Job-Training	SDC	2	5	0	0	5
MG3MPC AFP200	Food Analysis Adulteration Testing	MPC	4	5	3	2	0

L — Lecture, P — Practical/Practicum , O — On the Job Training



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Science and Nutrition			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG3SDCAFP200			
<b>Course Level</b>	200			
<b>Course Summary</b>	This course aims to explain the relation between the nutrition and health and also about the various types of nutrients and their function in body			
<b>Semester</b>	3	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		4	0	0
				<b>Total Hours</b>
				60
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the basic principles of food science ,including food composition , structure and functionality of nutrients	U	1
2	Identify the physical, chemical, and microbiological changes during food processing and storage	An	6
3	Evaluate the role of various nutrients in human health and the consequences	E	10

	of their deficiencies and excesses		
4	Apply the knowledge to various food processing techniques and in human health	A	1,3,6,10

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	0	0	2	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	3
CO 4	1	0	2	0	0	2	0	0	0	2

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction to nutrition	1.1	Definition of nutrition and health	3	2
	1.2	Inter relationship between nutrition and health	3	2
	1.3	Nutrients	3	2
	1.4	Malnutrition , Reference man and reference women	3	2
	1.5	Food, Functions of food, classification of food, Basic food group, Food pyramid	3	2
	1.6	Nutritional status , visible symptoms of good health	3	2
	2 Macronutrients	2.1	Carbohydrate	4
2.2		Protein	4	2

	2.3	Lipids	4	2
3 Vitamins and minerals	3.1	Classification, Structure, Function, Sources	4	2
	3.2	General causes for loss in food ,bioavailability	3	2
	3.3	Deficiency and toxicity	3	2
	3.4	Enrichment , fortification and restoration	2	2
4 Water and Electrolytes	4.1	Water : Function , sources , requirement	3	2
	4.2	Mechanism of water regulation	3	2
	4.3	Water intoxication and dehydration	3	2
	4.4	Electrolytes, functions, sources	3	2
	4.5	Sodium , potassium balance	3	2
	4.6	Water and electrolyte balance	3	2
5 Teachers Specific Content		<b>Syllabus</b>		

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT - Theory</b>

	<p><b>A. Continuous Comprehensive Assessment (CCA)</b></p> <p><b>Theory</b>  Total Marks : 30  Assessment Methods : Assignment, Presentation</p> <hr/> <p><b>B. End Semester Evaluation (ESE)-70</b></p> <p><b>Theory</b>  Total Marks :70  Assessment Methods :Written Exam  <b>Duration of Examination</b> :2 hr  <b>Pattern of examination for Theory</b> - Non-MCQ  <b>Different parts of written examination</b> :Part A, Part B, Part C,  <b>Answer Type</b> :Short answer, Short Essays, Essay  <b>Marks for part</b> : 2, 5, 15  <b>Number of questions in each part</b> : 12,6,4  <b>Number of questions to be answered</b> : 10,4,2</p> <p><b>Marks for part :</b></p> <p><b>Part A-</b> Short Answer –(10 out of 12) – <math>10 \times 2 = 20</math>  <b>Part B -</b> Short Essay - (4 out of 6) - <math>4 \times 5 = 20</math>  <b>Part C-</b> Essay - (2 out of 4) - <math>2 \times 15 = 30</math></p> <p style="text-align: center;"><b>Syllabus</b></p>
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## REFERENCES

- Manay, N. S., & Shadaksharaswamy, M. (2010). *Foods: Facts and principles* (3rd ed.). New Age International Publishers.
- Srilakshmi, B. (2019). *Food science* (7th ed.). New Age International Publishers.
- Swaminathan, M. (2012). *Advanced text book on food and nutrition* (Vols. 1 & 2). The Bangalore Printing & Publishing Co. Ltd.

## SUGGESTED READINGS

- Potter, N. N., & Hotchkiss, J. H. (2012). *Food science* (5th ed.). Springer.



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Microbiology			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG3SDCAFP201			
<b>Course Level</b>	200			
<b>Course Summary</b>	This course aims to acquire an elementary knowledge about micro-organisms related to food industry			
<b>Semester</b>	3	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
<b>Total Hours</b>				75
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Remember the basic concepts of microbiology	K	1
2	Understand and identify the major food borne pathogens and spoiled organisms	U	10
3	Apply food safety and preservation principles	A	2
4	Operate microbiology lab	E	1,2

## CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	0	0	0	0	0	0	3
CO 3	0	2	0	0	0	0	0	0	0	0
CO 4	1	2	0	0	0	0	0	0	0	

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

## COURSE CONTENT

### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction to microbiology	1.1	Microbiology in daily life	2	2
	1.2	Characteristics and morphology of bacteria , fungi, virus, protozoa and algae	4	2
	1.3	Growth curve	2	2
	1.4	Effect pH, Water activity, O <sub>2</sub> availability and temperature on the growth of micro organisms	3	2
2 Cultures and media	2.1	Different type of media— Selective media and differential media	4	2
	2.2	Preparation of media	4	2
	2.3	Cultural Techniques	3	2

3 Beneficial Microorganisms and food borne diseases	3.1	Microorganisms used, raw materials , used as substrate, condition for growth and production	4	2
	3.2	Nutritive value and use of SSCP,	3	2
	3.3	Micro-organism , biomass, fermentation, enzymes and hormones anti biotics and vaccines	4	2
	3.4	Microorganism and effluent treatment	4	2
	3.6	Food intoxication , staphylococcus intoxication, botulism,	4	2
	3.7	Food infection – salmonellosis, clostridium perfringens, Bacillus cereus gastroenteritis , E.coli infection	4	2
4 Practicals	4.1	Composition ,preparation and sterilization of media	8P	3
	4.2	Staining of microorganisms	8P	2,3,5
	4.3	Demonstration techniques for pure culture of microorganisms	7P	2,3,5
	4.4	Microbiology of milk	7P	2,3,5
5 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>  <b>Theory and Practical</b>  <b>A. Continuous Comprehensive Assessment (CCA)</b>  <b>Theory</b> Total Marks : 25 Assessment Methods: Assignment, presentation  <b>Practical</b> Total Marks : 15 Assessment method: observation of practical skills  <b>B. End Semester Evaluation (ESE)</b> <b>Theory</b> Total Marks :50 Assessment Methods :Written Exam <b>Duration of Examination</b> :1.50hr <b>Pattern of examination for Theory - Non-MCQ}</b> <b>Different parts of written examination</b> :Part A, Part B, Part C, <b>Answer Type</b> :Short answer, Short Essays, Essay <b>Marks for part</b> : 2, 5, 15 <b>Number of questions in each part</b> : 7,7,2 <b>Number of questions to be answered</b> : 5,5,1  <b>Marks For part</b> <b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b> <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b> <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b>  <b>Practical :</b> Total Marks :35 Assessment methods

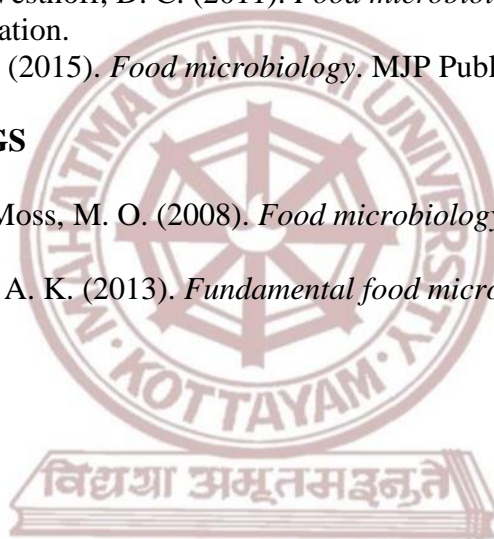
	<ol style="list-style-type: none"><li>1. Practical Exam- 25marks</li><li>2. Record-5marks</li><li>3. Viva-5marks</li></ol> <p><b>Duration of Examination : 1.50 hr</b></p>
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## REFERENCES

1. Banwart, G. J. (2003). *Basic food microbiology* (2nd ed.). CBS Publishers & Distributors.
2. Frazier, W. C., & Westhoff, D. C. (2011). *Food microbiology* (5th ed.). Tata McGraw-Hill Education.
3. Ranganathan, T. V. (2015). *Food microbiology*. MJP Publishers.

## SUGGESTED READINGS

1. Adams, M. R., & Moss, M. O. (2008). *Food microbiology* (3rd ed.). Royal Society of Chemistry.
2. Ray, B., & Bhunia, A. K. (2013). *Fundamental food microbiology* (5th ed.). CRC Press.



**MGU-B.VOC. (HONOURS)**

# Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Analysis and Adulteration Testing			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG3SDCAFP202			
<b>Course Level</b>	200			
<b>Course Summary</b>	This course aims to explain about the various chemical methods of food analysis and also to get familiar with adulteration test used for quality control			
<b>Semester</b>	3	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
				<b>Total Hours</b>
				75
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand Lab accreditation , safety practices and QA/QC Systems	U	1
2	Identify and quantify adulterants in milk, oils, spices , beverages etc	E	6
3	Learn national/international regulation and legislation on labelling , additives and packaging	An	10
4	Apply the knowledge on food analysis and adulteration testing	A	1,2

## CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	0	0	2	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	3
CO 4	1	2	0	0	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

## COURSE CONTENT

### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction to Food Analysis and Sampling Techniques	1.1	Proximate principles and analysis of food	3	2
	1.2	Official methods of analysis	3	2
	1.3	Population and sampling, Importance of sampling	3	2
	1.4	Types of sampling	3	2
	1.5	Sampling Plan, Preparation of samples	3	2
	1.6	Problems of sampling	3	3
	2 Chemical analysis of moisture, carbohydrate, protein, fat, vitamin C and minerals	2.1	Analysis of Moisture Methods	4

	2.2	Analysis of Carbohydrates Methods	4	4,3
	2.3	Analysis of Protein Methods	4	4,3
	2.4	Estimation of minerals by ashing	4	4,3
3 Food Adulteration	3.1	Definition , Classification	3	4
	3.2	Health Hazards caused by various adulterants and the critical level of metals in various foods	4	4
	3.3	Common adulterants in food and their testing	4	4
4 Practicals	4.1	Analyse the chemical constituents of spices	8	3
	4.2	Adulteration test for milk	8	2,3
	4.3	Analysis of fat	7	2,3
	4.4	Analysis of vitamin c	7	2
5 Teachers Specific Content				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT – Both theory and practical</b>

**A. Continuous Comprehensive Assessment (CCA)**

**Theory**

Total Marks : 25

Assessment Methods: Assignment, Presentation

**Practical**

Total Marks : 15

Assessment method: observation of practical skills

**B. End Semester Evaluation (ESE)**

**Theory**

Total Marks :50

Assessment Methods : Written Exam

**Duration of Examination :1.50hr**

**Pattern of examination for Theory - Non-MCQ}**

**Different parts of written examination :Part A, Part B, Part C,**

**Answer Type :Short answer, Short Essays, Essay**

**Marks for part : 2, 5, 15**

**Number of questions in each part : 7,7,2**

**Number of questions to be answered : 5,5,1**

**Marks For part**

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 5 out of 7)-(5 ×5=25)**

**Part C- Essay -( 1 out of 2 )- (1×15=15)**

**Practical :**

Total Marks :35

Assessment methods

a. Practical Exam-25marks

b. Record-5marks

c. Viva-5marks

**Duration of Examination : 1.50 hr**

## REFERENCES

1. Jha, S. N. (2008). *Rapid detection of food adulterants and contaminants*. New India Publishing Agency.
2. Ranganna, S. (2019). *Handbook of analysis and quality control for fruits and vegetable products* (3rd ed.). Tata McGraw-Hill.
3. Vasudevan, R. (2019). *Food quality control*. CBS Publishers & Distributors.

## SUGGESTED READINGS

1. Nielsen, S. S. (Ed.). (2017). *Food analysis* (5th ed.). Springer.
2. Pomeranz, Y., & Meloan, C. E. (2000). *Food analysis: Theory and practice* (3rd ed.). Springer.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Technology of coconut-based products			
<b>Type of Course</b>	MDC			
<b>Course Code</b>	MG3MDCAFP200			
<b>Course Level</b>	200			
<b>Course Summary</b>	This course aims to explain about the cultural significance of ethnic cuisines and analyze the nutritional value of key ethnic ingredients			
<b>Semester</b>	3	<b>Credits</b>		3
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	0	0
				<b>Total Hours</b>
				45
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## Syllabus

### COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Remember the basic concepts of coconut and coconut-based products	K	1
2	Understand and gain in depth knowledge of processing methods for coconut-based products	U	10
3	Recognize the importance of sustainable practices in coconut processing	E	6
4.	Innovate and analyze new coconut-	An	1,3,9

	based products		
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	0	0	0	0	0	0	3
CO 3	0	0	0	0	0	2	0	0	0	0
CO 4	1	0	1	0	0	0	0	0	2	1

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction to coconut technology	1.1	Overview of coconut cultivation and production.	4	2
	1.2	Nutritional and economic importance of coconut	4	2
	1.3	coconut development in major producing countries	4	2
2 Primary coconut products and processing	<b>MGU-B.VOC. (HONOURS)</b>			
	2.1	Copra- Drying methods, grading ,quality standards,	5	2
	2.2	coconut oil- Extraction methods ( expeller ,rotary solvent ),refining, packaging and shelf life	5	2
	2.3	Virgin Coconut oil- cold and hot processing, fermentation methods , quality parameters	5	2
	2.4	Desiccated coconut – processing , quality and uses	4	2

3 Coconut water and coconut milk-based products	3.1	Tender coconut water-collection preservation, bottling,	4	1,3
	3.2	Coconut milk and cream : Extraction , homogenization, preservation	5	2
	3.3	coconut milk powder-technology, drying methods ( spray , freeze drying )	5	1,2
4 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b> <b>Theory</b>
	<b>C. Continuous Comprehensive Assessment (CCA)</b> <b>Theory</b> Total Marks : 25 Assessment Methods : Assignment, Presentation

#### **D. End Semester Evaluation (ESE)-70**

##### **Theory**

Total Marks :50

Assessment Methods :Written Exam

**Duration of Examination :1hr**

**Pattern of examination for Theory - Non-MCQ**

**Different parts of written examination :Part A, Part B, Part C,**

**Answer Type :Short answer, Short Essays, Essay**

**Marks for part : 2, 5, 15**

**Number of questions in each part : 7,7,2**

**Number of questions to be answered : 5,5,1**

**Marks For part**

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 5 out of 7)-(5 ×5=25)**

**Part C- Essay -( 1 out of 2 )- (1×15=15)**

#### **REFERENCES**

1. Kumar, T. S. S., & Rethinam, P. (2016). *Coconut processing and products*. Asia-Pacific Coconut Community (APCC).
2. Patil, U. H., & Manivannan, A. (2019). *Coconut processing technologies*. ICAR-Central Plantation Crops Research Institute (CPCRI), Kasaragod.
3. Thampan, P. K. (1981). *Handbook on coconut palm*. Oxford & IBH Publishing.

#### **SUGGESTED READINGS**

1. Rethinam, P., & Kumaran, P. M. (2001). *Coconut for food security, health and industrial products*. Asian and Pacific Coconut Community (APCC).
2. Industrial Technology Institute. (2002). *Processing technologies for virgin coconut oil and other coconut-based products*. Colombo, Sri Lanka.

## OJT –( On – the – Job – Training)

<b>Course Name</b>	<b>On-the-Job Training</b>				
<b>Type of Course</b>	<b>SDC</b>				
<b>Course Code</b>	MG3SDCAFP203				
<b>Course Summary</b>	<p>On-the-Job Training (OJT) is designed to equip students with practical skills, workplace discipline, and industry exposure by actively engaging them in real-world professional environments. Conducted in collaboration with firms, industries, research institutions, or higher education establishments, OJT enables students to understand industry standards, apply academic knowledge, and perform job-specific tasks using contemporary tools and practices. The training must be undertaken in the student's own skill domain, aligned with the major area of study in their undergraduate program, to ensure relevance and coherence with their academic and career goals. The program also fosters essential workplace competencies such as communication, responsibility, adaptability, and teamwork. Furthermore, it offers students a platform for career exploration and networking, helping them evaluate potential career paths and align their aspirations with industry demands.</p>				
<b>Semester</b>	<b>3</b>	<b>Duration</b>	<b>5 hours/week</b>	<b>Credits</b>	<b>2</b>

MGU-B.VOC. (HONOURS)

### COURSE OUTCOMES (CO)

<b>CO No:</b>	<b>Expected Course Outcome</b>	<b>Learning Domains</b>	<b>PO No:</b>
1	Recall standard workplace procedures, safety protocols, and company policies relevant to the assigned role.	K	1,3,6,10
2	Understand the industrial operations, standards, and professional expectations through direct exposure to workplace environments.	U	2,4,5,10
3	Integrate academic knowledge with practical applications to solve work-related challenges and contribute to organizational goals.	An	1,2,3,6
4	Exhibit essential workplace competencies such as punctuality, accountability, communication,	S	4,5,8,9

	teamwork, and adaptability.		
5	Identify and evaluate potential career opportunities by reflecting on their internship experiences and professional interactions.	E	1,9,10
*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)			

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	2	0	0	1	0	0	0	2
CO 2	0	1	2	0	0	2	0	0	0	1
CO 3	1	2	1	0	0	1	0	0	0	0
CO 4	1	0	1	0	0	0	0	0	2	1

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

Assessment Types	MODE OF ASSESSMENT											
	<b>A</b>	<b>Internal Evaluation</b>										
		<table border="1"> <thead> <tr> <th>Components</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Feedback from the hosting organization</td> <td>5</td> </tr> <tr> <td>Internal Supervisor feedback</td> <td>10</td> </tr> <tr> <td><b>Total</b></td> <td><b>15</b></td> </tr> </tbody> </table>	Components	Marks	Feedback from the hosting organization	5	Internal Supervisor feedback	10	<b>Total</b>	<b>15</b>		
	Components	Marks										
	Feedback from the hosting organization	5										
	Internal Supervisor feedback	10										
	<b>Total</b>	<b>15</b>										
	<b>B</b>	<b>External Evaluation</b>										
		<table border="1"> <thead> <tr> <th>Components</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Presentation</td> <td>10</td> </tr> <tr> <td>Report</td> <td>10</td> </tr> <tr> <td>Viva Voce</td> <td>15</td> </tr> <tr> <td><b>Total</b></td> <td><b>35</b></td> </tr> </tbody> </table>	Components	Marks	Presentation	10	Report	10	Viva Voce	15	<b>Total</b>	<b>35</b>
	Components	Marks										
Presentation	10											
Report	10											
Viva Voce	15											
<b>Total</b>	<b>35</b>											



**SEMESTER: 4**

**MGU-B.VOC. (HONOURS)**

*Syllabus*

### SEMESTER 4

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG4SDCA FP200	Food Processing Machinerics	SDC	4	4	4	0	0
MG4SDCA FP201	Sensory Evaluation	SDC	4	5	3	2	0
MG4SDCA FP202	Technology of Beverages	SDC	4	5	3	2	0
MG4SECA FP200	Food Packing Technology	SEC	3	3	3	0	0
MG4VAC AFP200	Personal Management	VAC	3	3	3	0	0
MG4MPC AFP200	Technology Of Beverages	MPC	4	5	3	2	0
MG4INTA FP200	Internship	INT	2	20days			



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Processing Machineries			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG4SDCAFP200			
<b>Course Level</b>	200			
<b>Course Summary</b>	This course aims to explain the design of food process and food plant design, based on the established chemical process designed and also about the various processing equipment on the basis of unit operations of mechanical processes			
<b>Semester</b>	4	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		4	0	0
<b>Total Hours</b>				60
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## Syllabus

### COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand equipment principles and design	U	1
2	Analyze unit operation and optimize performance for efficiency and safety	An	6
3	Ensure equipment meets GMP and HACCP requirements : recognize contamination risks and apply sanitation products	E	10
4.	Evaluate the basic concepts of food	E	2,3

	machineries	
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	0	0	2	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	3
CO 4	0	1	2	0	0	0	0	0	0	0

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Design and selection of food processing equipment	1.1	Materials of construction- metals, steel, stainless steels, aluminum, copper, plastic, and glass	4	2
	1.2	Fabrication of equipment- strength of construction	4	2
	1.3	Fabrication and installation of equipment, hygienic design of food processing equipment	4	2
2 Mechanical processing equipment	2.1	Size reduction- cutting, crushing and grinding	4	2
	2.2	size enlargement- agglomeration	4	2
	2.3	homogenization- pressure homogenization, colloid mills,	4	2
	2.4	ultrasonic homogenizers, forming-extrusion and forming equipment	4	2
3 Refrigeration , Freezing Equipment and Food Dehydration	3.1	Refrigeration –refrigeration cycle, compressors, evaporators, condensers, cooling equipment	5	2,3

<b>Equipment</b>				
	3.2	hydrocooling, vacuum cooling, surface contact cooling, tunnel cooling, vacuum cooling	5	2
	3.3	freezing-air freezing, cold surface freezing, liquid freezing	5	2,3
	3.4	Principles of drying, commercial food drying equipment	4	2
4 <b>Thermal Processing Equipment</b>	4.1	Canning-basic canning operations	4	2
	4.2	batch sterilizers-still retorts, batch rotary sterilizers, crateless retorts, retorts for glass and flexible containers,	5	2
	4.3	continuous flow sterilizers-direct heating and indirect heating	4	2
5 Teachers Specific Content				

## Syllabus

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b> <b>Theory</b>

**A. Continuous Comprehensive Assessment (CCA)**

**Theory**

Total Marks : 30

Assessment Methods : Assignment, Presentation

**B. End Semester Evaluation (ESE)-70**

**Theory**

Total Marks :70

Assessment Methods :Written Exam

**Duration of Examination** :2 hr

**Pattern of examination for Theory** - Non-MCQ

**Different parts of written examination** :Part A, Part B, Part C,

**Answer Type** :Short answer, Short Essays, Essay

**Marks for part** : 2, 5, 15

**Number of questions in each part** : 12,6,4

**Number of questions to be answered** : 10,4,2

**Marks for part :**

**Part A**

**Short Answer** –(10 out of 12) –  $10 \times 2 = 20$

**Short Essay** - (4 out of 6) -  $4 \times 5 = 20$

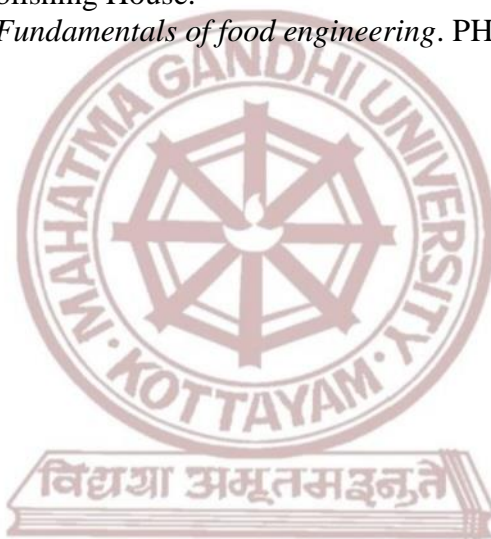
**Essay** - (2 out of 4) -  $2 \times 15 = 30$

## REFERENCES

1. Singh, R. P., & Heldman, D. R. (2014). *Introduction to food engineering* (5th ed.). Academic Press.
2. Brennan, J. G., Butters, J. R., Cowell, N. D., & Lilly, A. E. V. (1990). *Food engineering operations* (3rd ed.). Elsevier.
3. Fellows, P. J. (2017). *Food processing technology: Principles and practice* (4th ed.). Woodhead Publishing.
4. Toledo, R. T., Escher, F., & Singh, R. P. (2007). *Fundamentals of food process engineering* (3rd ed.). Springer.

## SUGGESTED READINGS

1. Sahay, K. M., & Singh, K. K. (2014). *Unit operations of agricultural processing* (2nd ed.). Vikas Publishing House.
2. Rao, D. G. (2010). *Fundamentals of food engineering*. PHI Learning Pvt. Ltd.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Sensory Evaluation			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG4SDCAFP201			
<b>Course Level</b>	200			
<b>Course Summary</b>	This course aims to explain about the different aspects of sensory science and its application			
<b>Semester</b>	4	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
				<b>Total Hours</b>
				75
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the sensory physiology and psychology	U	1
2	Analyze and interpret sensory data	An	4
3	Utilize sensory evaluation product development / formulation	A	10
4	Evaluate the new products with desired sensory attributes	E	1

## CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	3	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	3
CO 4	1	0	0	0	0	0	0	0	0	0

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

## COURSE CONTENT

### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction	1.1	Sensory evaluation: Definition & Importance of sensory evaluation	3	2
	1.2	Practical requirements for conducting sensory tests	3	2
	1.3	limitations of sensory evaluation	3	2
2 Testing conditions	2.1	General testing conditions - Testing area, testing set up, lighting, testing schedule	4	2
	2.2	Preparation of samples, sample coding, evaluation card preparation	4	2
	2.3	Sampling Techniques	4	2
3 Sensory assessment and sensory test	3.1	Taste—Taste sensation on the tongue, Recognition test for the four basic tastes  Taste modifiers, Perception of sweet taste	4	3
	3.2	Odour and Smell – Anatomy of nose, Smelling techniques, Vonskramlk, Test, Theories of olfaction	4	2,3

	3.3	Texture—Definition, Classification of textural characteristics, glossary of textural terms	4	2,3
	3.4	Definition for mechanical properties, Texture measurement Color vision and appearance measurement-Structure of eye, Visual perception and color of foods	4	2,3
	3.5	Flavor and aroma - aroma perception, Definition of flavor, Flavor profile methods, flavor compounds	4	2,3
	3.6	Sensory Tests,t –test , chi square test	4	2,3
<b>4 Practical</b>	4.1	<ol style="list-style-type: none"> <li>1. Triangle test</li> <li>2. Single sample test</li> <li>3. Paired comparison test</li> <li>4. Duo- trio test</li> <li>5. Hedonic rating test</li> <li>6. Numerical scoring test</li> <li>7. Ranking test</li> <li>8. Overall acceptability</li> <li>9. Flavor profile</li> <li>10. Descriptive test</li> </ol>	16	3
	4.2	null hypothesis, mean, median, variance	7	3
	4.3	standard deviation, t-test, chi-square test	7	3
<b>5 Teachers Specific content</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> <ol style="list-style-type: none"> <li>1.Lecture</li> <li>2.Use of ICT Tools</li> <li>3.Hands-on Activities</li> <li>4.Experiential Learning</li> </ol>
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<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>
	<b>Theory and Practical</b>
	<p style="text-align: center;"><b>A. Continuous Comprehensive Assessment (CCA)</b></p> <p><b>Theory</b> Total Marks : 25 Assessment Methods : Assignment, Presentation</p> <p style="text-align: center;"><b>Practical</b> Total Marks : 15 Assessment method: observation of practical skills, practical assignment</p>
	<p style="text-align: center;"><b>B. End Semester Evaluation (ESE)</b></p> <p><b>Theory</b> Total Marks :50 Assessment Methods : Written Exam <b>Duration of Examination</b> :1.50 hr <b>Pattern of examination for Theory - Non-MCQ}</b> <b>Different parts of written examination</b> :Part A, Part B, Part C, <b>Answer Type</b> :Short answer, Short Essays, Essay <b>Marks for part</b> : 2, 5, 15 <b>Number of questions in each part</b> : 7,7,2 <b>Number of questions to be answered</b> : 5,5,1</p> <p style="text-align: center;"><b>Marks For part</b></p> <p style="text-align: center;"><b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b> <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b> <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b></p> <p><b>Practical :</b> Total Marks :35 Assessment methods: (a) Practical Exam-25marks (b) Record-5marks (c) Viva-5marks <b>Duration of Examination</b> : 1.50 hr</p>

## REFERENCES

1. Lawless, H. T., & Heymann, H. (2010). *Sensory evaluation of food: Principles and practices* (2nd ed.). Springer .
2. Amerine, M. A., Pangborn, R. M., & Roessler, E. B. (2013). *Principles of sensory evaluation of food*. CBS Publishers & Distributors (Indian edition).
3. Ranganna, S. (2019). *Handbook of analysis and quality control for fruit and vegetable products* (3rd ed.). Tata McGraw-Hill.

## SUGGESTED READINGS

1. Kemp, S. E., Hort, J., & Hollowood, T. (Eds.). (2018). *Descriptive analysis in sensory evaluation*. John Wiley & Sons.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	TECHNOLOGY OF BEVERAGES			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG4SDCAFP202			
<b>Course Level</b>	200			
<b>Course Summary</b>	This course aims to explain about the up-to-date knowledge on fermented foods and beverages			
<b>Semester</b>	4	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
<b>Total Hours</b>				75
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand about the classification , composition and functional properties of various alcoholic and non-alcoholic beverages	U	1
2	Analyze the principles and the technologies used in beverage formulation , preservation, flavor enhancement	An	4
3	Evaluate a basic beverage product by selecting suitable ingredients, processing steps and packaging technologies	E	10

4	Apply the knowledge on beer processing and safety	A	2,3
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	3	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	3
CO 4	0	1	2	0	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 <b>Introduction &amp; Classification of Beverages</b>	1.1	Introduction and classification of beverages	2	2
	1.2	Mineral water-water source and deionization of mineral water	3	2
	1.3	Water treatment process: Filtration, Adsorption, ion exchange, Chemical oxidation, Biological process, Remineralization and microbiological treatments	3	2
	1.4	Microbiology of bottled water.	3	3
2 <b>Alcoholic Beverages</b>	2.1	Beer Making and Types of Beer: ale, lager, pilsner, stout and porter beer	3	2
	2.2	Wine making and Types of wine: white wine, red wine, dry wine, sweet wine and sparkling wine	3	2
	2.3	Whisky manufacture and types of whisky: Scotch whisky, malt whisky, Irish whisky and Canadian whisky,	3	2
	2.4	Manufacture of rum, vodka, brandy and gin	3	3

3 - Carbonated Beverages, Tea and coffee	3.1	Carbonated soft drinks- Ingredients and preservatives used in carbonation	4	1,2,3
	3.2	Syrup room operation and equipment's involved	4	2,3
	3.4	Steps involved in processing of tea.	3	1,2
	3.5	Types of tea: Black tea, Green tea and Oolong tea	3	1,3
	3.6	Manufacture of coffee	2	1,2
	3.7	Types of coffee: Vacuum coffee, drip coffee, percolator coffee, steeped coffee, espresso coffee, iced coffee and Instant coffee	3	1,2
	3.8	Decaffeination of coffee and types of decaffeination	3	1,3
	4 Practical	4.1	Decaffeination of coffee and types of decaffeination	10
4.2		Preparation of cappuccino Blending of tea	10	3
4.3		Preparation of Wine	10	3
5 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
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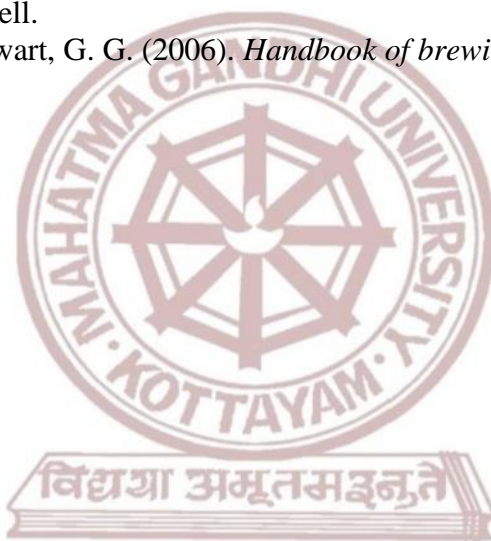
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>
	<b>Theory and Practical</b>
	<p style="text-align: center;"><b>A. Continuous Comprehensive Assessment (CCA)</b></p> <p><b>Theory</b>  Total Marks : 25  Assessment Methods: Assignment, Seminar</p> <p style="text-align: center;"><b>Practical</b>  Total Marks : 15  Assessment method: Practical assignment, Observation of practical skills</p> <hr/> <p style="text-align: center;"><b>B. End Semester Evaluation (ESE)</b></p> <p><b>Theory</b>  Total Marks :50  Assessment Methods : Written Exam  <b>Duration of Examination</b> :1.50 hr  <b>Pattern of examination</b> for Theory - Non-MCQ  <b>Different parts of written examination</b> :Part A, Part B, Part C,  <b>Answer Type</b> :Short answer, Short Essays, Essay  <b>Marks for part</b> : 2, 5, 15  <b>Number of questions in each part</b> : 7,7,2  <b>Number of questions to be answered</b> : 5,5,1</p> <p style="text-align: center;"><b>Marks For part</b></p> <p style="text-align: center;"><b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b>  <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b>  <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b></p> <p><b>Practical :</b>  Total Marks :35  Assessment methods:  (a) Practical Exam: 25marks  (b) Record: 5marks  (c) Viva: 5marks  <b>Duration of Examination</b> : 1.50 hr</p>

## REFERENCES

1. Chakraborty, S. (2015). *Fundamentals of food engineering*. PHI Learning Pvt. Ltd.
2. Raghavan, B. (2007). *Handbook of spices, seasonings, and flavorings*. CRC Press (Indian edition).
3. Srivastava, R. P., & Kumar, S. (2010). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers.

## SUGGESTED READINGS

1. Ashurst, P. R. (2016). *Chemistry and technology of soft drinks and fruit juices* (3rd ed.). Wiley-Blackwell.
2. Priest, F. G., & Stewart, G. G. (2006). *Handbook of brewing* (2nd ed.). CRC Press.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Packaging Technology			
<b>Type of Course</b>	SEC			
<b>Course Code</b>	MG4SECAFP200			
<b>Course Level</b>	200			
<b>Course Summary</b>	This course aims to explain about the different methods and materials used for packaging.			
<b>Semester</b>	4	<b>Credits</b>		3
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	0	0
<b>Total Hours</b>				
45				
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the fundamental principles of food packaging and the role of packaging in food preservation and safety	U	1
2	Analyze the interaction between the food products and packaging materials	An	6

3	Apply standards and regulation related to food packaging , including food safety , labeling and environmental impact	A	10
4	Evaluate different food packaging technologies	E	2

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	0	0	2	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	3
CO 4	0	2	0	0	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction to food packaging	1.1	Definition, functions and requirements for effective packaging,	4	2
	1.2	Classification of packaging- Primary, secondary and tertiary packaging	4	2
	1.3	Flexible, rigid and Semi- rigid packaging	4	2
	1.4	Materials for food packaging	4	2
2 Different forms of food containers	2.1	Boxes, jars, cans, bottle. Interaction of packages with foods	4	2
	2.2	Global migration of plastics	4	2
	2.3	packaging requirements for various products- fish, meat, spices, vegetables & fruits, canned foods, dehydrated foods	5	2

3 Modern concepts of packaging technology	3.1	Aseptic packaging, Form-Fill-Seal packaging, Edible Films, Retort pouch packaging	4	2,3
	3.2	Easy-Open-End, Boil-In-Bags, Closures, tetra pack, vacuum-packaging	4	2
	3.3	MAP & CAP, Hyper baric storage, insect resistant packaging, intelligent packaging	4	4
	3.4	Food packaging Laws & Specification	4	1,2
4 Teachers Specific Content				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experimental Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>  <b>Theory</b> <b>C. Continuous Comprehensive Assessment (CCA)</b>  <b>Theory</b> Total Marks : 25 Assessment Methods : Assignment, Presentation

## D. End Semester Evaluation (ESE)

### Theory

Total Marks :50

Assessment Methods :Written Exam

**Duration of Examination** :1 hr

**Pattern of examination** for Theory - Non-MCQ

**Different parts of written examination** :Part A, Part B, Part C,

**Answer Type** :Short answer, Short Essays, Essay

**Marks for part** : 2, 5, 15

**Number of questions in each part** : 7,7,2

**Number of questions to be answered** : 5,5,1

### Marks For part

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 5 out of 7)-(5 ×5=25)**

**Part C- Essay -( 1 out of 2 )- (1×15=15)**

## REFERENCES

1. Robertson, G. L. (2010). *Food packaging: Principles and practice* (2nd ed., Indian reprint). CRC Press.
2. Selke, S. E. M., & Culter, J. D. (2004). *Plastics packaging: Properties, processing, applications, and regulations* (Indian edition). Hanser Publishers.

## SUGGESTED READINGS

1. Han, J. H. (Ed.). (2013). *Innovations in food packaging* (2nd ed.). Academic Press.
2. Coles, R., McDowell, D., & Kirwan, M. J. (2003). *Food packaging technology*. Blackwell Publishing.



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Personnel Management			
<b>Type of Course</b>	VAC			
<b>Course Code</b>	MG4VACA200			
<b>Course Level</b>	200			
<b>Course Summary</b>	This course aims to explain about the management of human resources in food service establishment.			
<b>Semester</b>	4	<b>Credits</b>		3
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	0	0
		<b>Total Hours</b>		45
<b>Pre-requisites, if any</b>	Nil			

## Syllabus

### COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Remember the basic knowledge of personal management	K	1
2	Understand the fundamentals of personnel management	U	6
3	Apply time management, goal setting and stress management techniques to enhance productivity and personal well-being.	An	10

4	Assess strength and weakness and develop a structured plan for continuous personal and professional growth	E	2
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	0	0	2	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	3
CO 4	0	2	0	0	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Organization and management	1.1	Organization-definition, function, types and organizational process	9	2
	1.2	Management- function and tools of management, technique of effective management	9	2
2 Food Material and Personnel Management	2.1	Food material management-procedures	9	2
	2.2	Personnel Management	9	2
3 Laws affecting Food Service Operations	3.1	Labour Policies and legislations	9	2
4 Teachers Specific Content				

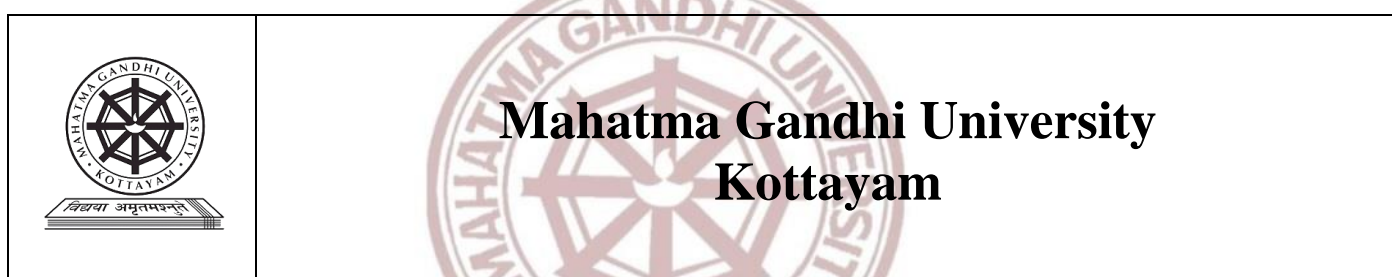
<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b> <b>Theory</b>  <b>A. Continuous Comprehensive Assessment (CCA)</b>  <b>Theory</b> Total Marks : 25 Assessment Methods : Assignment, Presentation  <b>B. End Semester Evaluation (ESE)</b> <b>Theory</b> Total Marks :50 Assessment Methods :Written Exam <b>Duration of Examination :1 hr</b> <b>Pattern of examination for Theory - Non-MCQ</b> <b>Different parts of written examination :Part A, Part B, Part C,</b> <b>Answer Type :Short answer, Short Essays, Essay</b> <b>Marks for part : 2, 5, 15</b> <b>Number of questions in each part : 7,7,2</b> <b>Number of questions to be answered : 5,5,1</b> <b>Marks For part</b> <b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b> <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b> <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b>

## REFERENCES

1. Tripathi, P. C. (2019). *Personnel management and industrial relations* (21st ed.). Sultan Chand & Sons.
2. Aswathappa, K. (2017). *Human resource management: Text and cases* (8th ed.). McGraw-Hill Education India.

## SUGGESTED READINGS

1. Flippo, E. B. (1984). *Personnel management* (6th ed.). McGraw-Hill.



<b>Faculty/ Discipline</b>	SCIENCE				
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING				
<b>Course Name</b>	TECHNOLOGY OF BEVERAGES				
<b>Type of Course</b>	MPC				
<b>Course Code</b>	MG4MPCAFP200				
<b>Course Level</b>	200				
<b>Course Summary</b>	This course aims to explain about the up-to-date knowledge on fermented foods and beverages				
<b>Semester</b>	4	<b>Credits</b>		4	<b>Total Hours</b>
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>	
		3	1	0	75
<b>Pre-requisites, if any</b>	Nil				

## COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand about the classification , composition and functional properties of various alcoholic and non-alcoholic beverages	U	1
2	Analyze the principles and the technologies used in beverage formulation , preservation, flavor enhancement	An	4
3	Evaluate a basic beverage product by selecting suitable ingredients, processing steps and packaging technologies	E	10
4	Apply the knowledge on beer peocessing and safety	A	2,3

#### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	0	0	3	0	0	0	0	0	0
CO 3	0	0	0	0	0	0	0	0	0	3
CO 4	0	1	2	0	0	0	0	0	0	0

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

### MGU-B.VOC. (HONOURS)

#### COURSE CONTENT

##### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction & Classification of Beverages	1.1	Introduction and classification of beverages	2	2
	1.2	Mineral water-water source and deionization of mineral water	3	2
	1.3	Water treatment process: Filtration, Adsorption, ion exchange, Chemical oxidation, Biological process, Remineralization and microbiological treatments	3	2
	1.4	Microbiology of bottled	3	3

		water.		
2 <b>Alcoholic Beverages</b>	2.1	Beer Making and Types of Beer: ale, lager, pilsner, stout and porter beer	3	2
	2.2	Wine making and Types of wine: white wine, red wine, dry wine, sweet wine and sparkling wine	3	2
	2.3	Whisky manufacture and types of whisky: Scotch whisky, malt whisky, Irish whisky and Canadian whisky,	3	2
	2.4	Manufacture of rum, vodka, brandy and gin	3	3
3 <b>- Carbonated Beverages, Tea and coffee</b>	3.1	Carbonated soft drinks- Ingredients and preservatives used in carbonation	4	1,2,3
	3.2	Syrup room operation and equipment's involved	4	2,3
	3.4	Steps involved in processing of tea.	3	1,2
	3.5	Types of tea: Black tea, Green tea and Oolong tea	3	1,3
	3.6	Manufacture of coffee	2	1,2
	3.7	Types of coffee: Vacuum coffee, drip coffee, percolator coffee, steeped coffee, espresso coffee, iced coffee and Instant coffee	3	1,2
	3.8	Decaffeination of coffee and types of decaffeination	3	1,3
	4 Practicals	4.1	Decaffeination of coffee and types of decaffeination	10P

	4.2	Preparation of cappuccino Blending of tea	10P	3
	4.3	Preparation Of Wine	10P	3
5 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>  <b>Theory and Practical</b>
	<b>E. Continuous Comprehensive Assessment (CCA)</b>  <b>Theory</b> Total Marks : 25 Assessment Methods: Assignment, Seminar <b>Practical</b> Total Marks : 15 Assessment method: Practical assignment, Observation of practical skills
	<b>F. End Semester Evaluation (ESE)</b>  <b>Theory</b> Total Marks :50 Assessment Methods : Written Exam <b>Duration of Examination :1.50 hr</b> <b>Pattern of examination for Theory - Non-MCQ</b> <b>Different parts of written examination :Part A, Part B, Part C,</b> <b>Answer Type :Short answer, Short Essays, Essay</b> <b>Marks for part : 2, 5, 15</b> <b>Number of questions in each part : 7,7,2</b> <b>Number of questions to be answered : 5,5,1</b>

	<p style="text-align: center;"><b>Marks For part</b></p> <p style="text-align: center;"><b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b></p> <p style="text-align: center;"><b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b></p> <p style="text-align: center;"><b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b></p> <p><b>Practical :</b></p> <p>Total Marks :35</p> <p>Assessment methods:</p> <p>(d) Practical Exam: 25marks</p> <p>(e) Record: 5marks</p> <p>(f) Viva: 5marks</p> <p><b>Duration of Examination : 1.50 hr</b></p>
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## REFERENCES

4. Chakraborty, S. (2015). *Fundamentals of food engineering*. PHI Learning Pvt. Ltd.
5. Raghavan, B. (2007). *Handbook of spices, seasonings, and flavorings*. CRC Press (Indian edition).
6. Srivastava, R. P., & Kumar, S. (2010). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers.

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3. Ashurst, P. R. (2016). *Chemistry and technology of soft drinks and fruit juices* (3rd ed.). Wiley-Blackwell.
4. Priest, F. G., & Stewart, G. G. (2006). *Handbook of brewing* (2nd ed.). CRC Press.

# INTERNSHIP

<b>Course Name</b>	<b>Summer Internship</b>				
<b>Type of Course</b>	<b>INT</b>				
<b>Course Code</b>	MG4INTAFP200				
<b>Course Summary</b>	<p>The internship is designed to provide students with real-world exposure and hands-on experience in professional environments aligned with their skill domain and major area of study. It acts as a vital link between academic learning and industry application, allowing students to apply theoretical concepts to practical situations. Through active engagement in industry, research institutions, or academic labs, students gain insights into organizational operations, workplace practices, and professional expectations. The internship also supports the development of key professional competencies such as communication, teamwork, time management, and ethical responsibility. Additionally, it encourages critical thinking, reflection, and self-assessment, helping students identify personal strengths and explore potential career pathways. Students shall undergo the internship in a Firm, Industry, or Organization, or engage in Training in Labs with faculty and researchers, or other Higher Education or Research Institutions, ensuring alignment with their area of academic specialization.</p>				
<b>Semester</b>	<b>4</b>	<b>Duration</b>	<b>60 hours</b>	<b>Credits</b>	<b>2</b>

## Syllabus

### COURSE OUTCOMES (CO)

<b>CO No:</b>	<b>Expected Course Outcome</b>	<b>Learning Domains</b>	<b>PO No:</b>
	Upon the successful completion of the course, the student will be able to	U	1,3,4,6
1	Demonstrate practical understanding of operational aspects in their domain by engaging in real-world industry settings.	A	1,3,6,10
2	Apply academic knowledge and skills to identify and solve industry-relevant problems.	A	1,2,3,10

3	Exhibit professional competencies including effective communication, teamwork, time management, and ethical responsibility.	S	4,5,8,9
4	Develop an understanding of workplace practices, expectations, and challenges.	U	1,6,10
5	Reflect critically on their internship experience to identify personal strengths, growth areas, and career aspirations.	E	1,6,10
<i>*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)</i>			

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	2	0	0	1	0	0	0	2
CO 2	1	2	1	0	0	2	0	0	0	1
CO 3	0	0	0	1	2	0	0	1	2	3
CO 4	1	0	0	0	0	2	0	0	0	1
CO 5	1	0	0	0	0	2	0	0	0	1

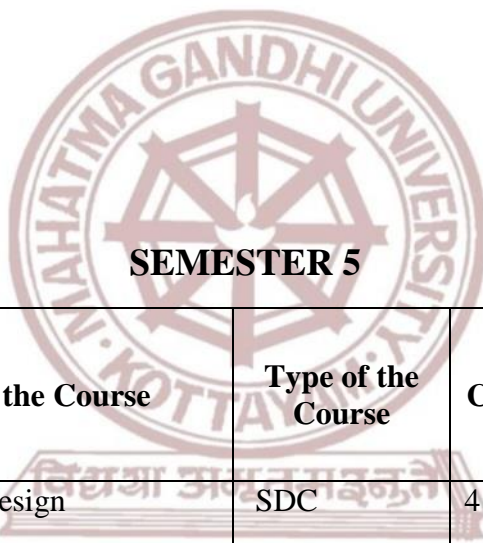
Assessment Types	MODE OF ASSESSMENT											
	<b>A</b>	<b>Internal Evaluation</b>										
		<table border="1"> <thead> <tr> <th>Components</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Feedback from the hosting organization</td> <td>5</td> </tr> <tr> <td>Internal Supervisor feedback</td> <td>10</td> </tr> <tr> <td><b>Total</b></td> <td><b>15</b></td> </tr> </tbody> </table>	Components	Marks	Feedback from the hosting organization	5	Internal Supervisor feedback	10	<b>Total</b>	<b>15</b>		
	Components	Marks										
	Feedback from the hosting organization	5										
	Internal Supervisor feedback	10										
	<b>Total</b>	<b>15</b>										
	<b>B</b>	<b>External Evaluation</b>										
		<table border="1"> <thead> <tr> <th>Components</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Presentation</td> <td>10</td> </tr> <tr> <td>Report</td> <td>10</td> </tr> <tr> <td>Viva Voce</td> <td>15</td> </tr> <tr> <td><b>Total</b></td> <td><b>35</b></td> </tr> </tbody> </table>	Components	Marks	Presentation	10	Report	10	Viva Voce	15	<b>Total</b>	<b>35</b>
	Components	Marks										
Presentation	10											
Report	10											
Viva Voce	15											
<b>Total</b>	<b>35</b>											



**SEMESTER: 5**

**MGU-B.VOC. (HONOURS)**

**Syllabus**



**SEMESTER 5**

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG5SDCA FP300	Food Plant Design	SDC	4	4	4	0	0
MG5SDEA FP300/	Cereals and pulses processing technology /	SDE	4	5	3	2	0
MG5SDEA FP301	Fat and oil Processing Technology	SDE	4	5	3	2	0
MG5SDCA FP303	Food Engineering	SDC	5	5	3	2	0
MG5SDCA FP304	Extrusion and snack food technology	SEC	4	4	2	2	0
MG5VAC AFP300	Entrepreneurship in food processing	VAC	3	3	3	0	0
MG5MPC AFP300	Cereals and Pulses Processing Technology	MPC	4	4	4	0	0

L — Lecture, P — Practical/Practicum , O — On the Job Training



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Plant Design			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG5SDCAFP300			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about the concepts of plant layout, how to build a food plant with appropriate utilities and to know the importance of a proper food plant design.			
<b>Semester</b>	5	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		4	0	0
		<b>Total Hours</b>		60
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the fundamental principles of food plant layout and site selection.	U	1,2,6
2	Apply design principles to develop appropriate layouts for different types of food processing plants	A	1,2,10
3	Analyze the design requirements for sanitation, ventilation, lighting, waste disposal and other utilities in food plants.	An	1,2,8

4	Evaluate the suitability of building materials, equipment placement, and workflow efficiency in plant designs.	E	1,2,7
5	Design a basic floor plan and utility flow diagram for a small-scale food processing plant ensuring compliance with food safety and hygiene regulations.	E	10

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	1	0	0	0	2	0	0	0	0
CO 2	2	2	0	0	0	0	0	0	0	1
CO 3	2	1	0	0	0	0	0	2	0	0
CO 4	1	1	0	0	0	0	1	0	0	0
CO 5	0	0	0	0	0	0	0	0	0	2

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Basic concepts of Plant Design and Plant Location</b>	1.1	Plant Design- definition and basic concepts	2	2
	1.2	Application of HACCP	2	2,3
	1.3	ISO, FPO & MPO requirements	2	2
	1.4	Influence of location on plant layout	2	2,3
	1.5	Location factors, location theory and models	2	2,3
	1.6	Economic plant size	2	1,2
	2.1	Preparation of plant layout	2	2,3

<b>2 Plant Layout</b>	2.2	Plant layout problems	2	2,3
	2.3	Layout-importance and objectives	2	2
	2.4	Classical types of layouts	3	2,3
	2.5	Evaluation and advantages of good layout	2	2,5
<b>3 Plant Building</b>	3.1	Consideration in building design	3	2,3
	3.2	Types of factory buildings	2	1,2
	3.3	Choice of building construction	2	2,3
	3.4	Materials used for making floors, doors, drains etc.	3	2,3
<b>4 Plant layout and Equipment Layout</b>	4.1	Plant layout and design of bakery industries	3	2,3
	4.2	Plant layout and design of fruit and vegetable processing unit	3	2,3
	4.3	Plant layout and design of milk and milk product processing industries	3	2,3
	4.4	Plant layout and design of meat, fish and poultry processing industries	3	2,3
<b>5 Teachers Specific Content</b>				

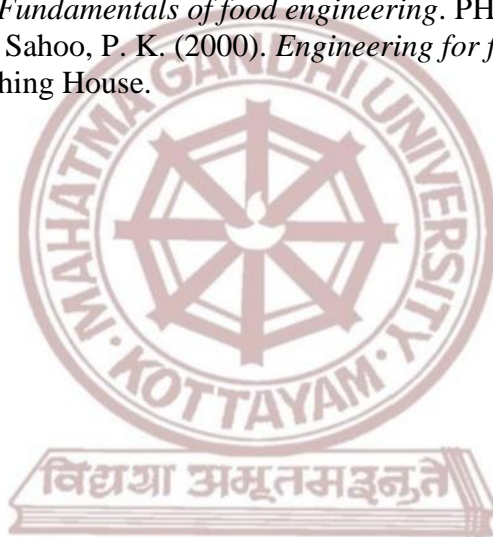
<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b> <b>Theory</b>
	<b>A. Continuous Comprehensive Assessment (CCA) -30marks</b> <b>Theory</b> Total Marks : 30 Assessment Methods (a) Assignment (b) Presentation
	<b>B. End Semester Evaluation (ESE)</b> <b>Theory</b> Total Marks :70 Assessment Methods :Written Exam <b>Duration of Examination :2 hr</b> <b>Pattern of examination for Theory - Non-MCQ</b> <b>Different parts of written examination :Part A, Part B, Part C,</b> <b>Answer Type :Short answer, Short Essays, Essay</b> <b>Marks for part : 2, 5, 15</b> <b>Number of questions in each part : 12,6,4</b> <b>Number of questions to be answered : 10,4,2</b> <b>Marks for part :</b> <b>Part A - Short Answer –(10 out of 12) – <math>10 \times 2 = 20</math></b> <b>Part B - Short Essay - (4 out of 6 ) - <math>4 \times 5 = 20</math></b> <b>Part C - Essay - (2 out of 4) - <math>2 \times 15 = 30</math></b>

## REFERENCES

1. Clark, S., Jung, S., & Lamsal, B. (2014). *Food processing: Principles and applications* (2nd ed.). Wiley-Blackwell.
2. Heldman, D. R. (2003). *Food plant design*. CRC Press.
3. Peters, M. S., Timmerhaus, K. D., & West, R. E. (2003). *Plant design and economics for chemical engineers* (5th ed.). McGraw-Hill.
4. Singh, R. P., & Heldman, D. R. (2014). *Introduction to food engineering* (5th ed.). Academic Press.

## SUGGESTED READINGS

1. Rao, D. G. (2010). *Fundamentals of food engineering*. PHI Learning Pvt. Ltd.
2. Sinha, V. R. P., & Sahoo, P. K. (2000). *Engineering for food and dairy processing plants*. Jaico Publishing House.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Cereals and Pulses Processing Technology			
<b>Type of Course</b>	SDE			
<b>Course Code</b>	MG5SDEAFP300			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about structure, composition and storage methods of cereals and pulses			
<b>Semester</b>	5	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
				<b>Total Hours</b>
				75
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

# Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Explain the structure, composition, and functional properties of cereals and pulses.	U	10
2	Apply appropriate milling and processing technologies	A	3
3	Analyze quality parameters and evaluate the efficiency of different processing techniques used in cereals and pulses industries	An	1

4	Identify common by-products and value-added products from cereals and pulses and assess their commercial potential.	E	2
5	Demonstrate knowledge of equipment used in cereal and pulse processing plants.	A	1

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	0	0	0	0	0	0	0	0	0	2
CO 2	0	0	3	0	0	0	0	0	0	0
CO 3	2	0	0	0	0	0	0	0	0	0
CO 4	0	2	0	0	0	0	0	0	0	0
CO 5	2	0	0	0	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Rice and Wheat	1.1	Rice-structure, composition	2	2
	1.2	Processing methods and by-products	2	2,3
	1.3	Various types of rice products	2	2,3
	1.4	Wheat- classification, structure and composition	2	2
	1.5	Harvesting and storage	2	2,3
	1.6	Different types of wheat products	2	2,3
	2.1	Corn-structure, composition and processing methods	3	2

<b>2 Millets</b>	2.2	Various products from corn	2	2,3
	2.3	Jowar- structure, composition and processing methods	3	2
	2.4	Ragi- structure, composition and processing methods	2	2
	2.5	Bajra and Rye- structure, composition and processing methods	2	2,3
<b>3 Breakfast Cereals and pulses</b>	3.1	Breakfast cereals-definition, classification and nutritive value	3	2
	3.2	Processing of ready-to-eat cereals	3	2,3
	3.3	Various products of breakfast cereals	3	2
	3.4	Pulses- composition and processing	3	2,3
	3.5	Toxic constituents of pulses	3	2
	3.6	Varieties of pulses commonly used	3	2
	3.7	Soybean-processing and fermented products of soybean	3	2,3
<b>4. Practical</b>	4.1	Gelatinisation of starch	10P	3
	4.2	Gluten formation and baking quality of gluten	10P	2,3
	4.3	Effect of mechanical action and ingredients(milk , fat , hot and hard water ) in the development of gluten	10P	2,3
<b>5 Teachers Specific</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>  <b>Theory and practical</b>
	<b>A. Continuous Comprehensive Assessment (CCA) -30marks</b>  <b>Theory</b> Total Marks : 25 Assessment Methods (a) Assignment (b) Presentation <b>Practical: 15</b> Assessment Methods: Observation of practical skills
	<b>B. End Semester Evaluation (ESE)</b> <b>Theory</b> Total Marks :50 Assessment Methods :Written Exam <b>Duration of Examination :1.50 hr</b> <b>Pattern of examination for Theory - Non-MCQ</b> <b>Different parts of written examination :Part A, Part B, Part C,</b> <b>Answer Type :Short answer, Short Essays, Essay</b> <b>Marks for part : 2, 5, 15</b> <b>Number of questions in each part : 7,7,2</b> <b>Number of questions to be answered : 5,5,1</b>  <b>Marks For part</b> <b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b> <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b> <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b>  <b>Practical: 35 marks</b> <b>Assessment method:</b>

	<p>a) Practical Exam: 25marks b) Record:5marks c) Viva: 5marks</p> <p><b>Duration of Examination :1.50 hr</b></p>
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## REFERENCES

1. Chakraborty, S. K. (2015). *Post-harvest technology and cereals, pulses & oilseeds*. Oxford & IBH Publishing.
2. Dhirendra, K., & Sahay, K. M. (2017). *Unit operations of agricultural processing* (3rd ed.). Vikas Publishing House.
3. Khader, V. (2015). *Textbook of food storage and preservation*. Kalyani Publishers.

## SUGGESTED READINGS

1. Dendy, D. A. V., & Dobraszczyk, B. J. (2001). *Cereals and cereal products: Chemistry and technology*. Springer.
2. Pomeranz, Y. (1987). *Modern cereal science and technology*. VCH Publishers.



**MGU-B.VOC. (HONOURS)**

**Syllabus**



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Fats and Oil Processing Technology			
<b>Type of Course</b>	SDE			
<b>Course Code</b>	MG5SDEAFP301			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about various aspects of oil processing, its packing and storage			
<b>Semester</b>	5	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
<b>Total Hours</b>				75
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Remember the sources, types and physicochemical properties of fats and oils	K	1,2
2	Describe the unit operations involved in the extraction, refining, bleaching and deodorization of fats and oils	U	2,3
3	Apply appropriate methods for the processing and preservation of edible fats and oils	A	2

4	Analyze the quality parameters and stability of fats and oils during processing and storage	An	6
5	Evaluate the safety, hygiene, and regulatory standards related to fats and oils.	E	6

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	2	0	0	0	0	0	0	0	0
CO 2	0	2	1	0	0	0	0	0	0	0
CO 3	0	2	0	0	0	0	0	0	0	0
CO 4	0	0	0	0	0	2	0	0	0	0
CO 5	0	0	0	0	0	2	0	0	0	0

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Introduction</b>	1.1	Fats and Oils- classification, properties	3	2
	1.2	Use in food industry	2	2,3
	1.3	Shortenings	2	2
	1.4	Recent processing techniques	2	2,3
<b>2</b> <b>Processing and extraction of oil</b>	2.1	Steps involved in oil processing	2	2,3
	2.2	Oil extraction-methods of extraction	2	2
	2.3	Major and minor oil seeds	2	2

	2.4	Hydrogenated vegetable oils and margarine	2	2,3
<b>3</b> <b>Fat</b> <b>Characterization</b> <b>and packaging</b> <b>and storage</b>	3.1	Importance of fat analysis	3	2,3
	3.2	Methods of fat analysis	3	2
	3.3	Acid value and free fatty acids	3	2
	3.4	Polar components in frying fat	3	23
	3.5	Tests	3	2,3
	3.6	Packing steps	3	2,4
	3.7	Packing materials	2	2,3
	3.8	Factors to be considered during packing	2	1,2
	3.9	Antioxidants	3	2
	3.10	Storage	3	2,3
<b>4</b> <b>Practical</b>	4.1	Solid Fat Index	10	1,2
	4.2	Acid Value and Free Fatty Acids	10	2
	4.3	Iodine Value	10	2,3
<b>5</b> <b>Teachers</b> <b>Specific</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>  <b>Theory and Practical</b>
	<b>A. Continuous Comprehensive Assessment (CCA)</b>  <b>Theory</b> Total Marks : 25 Assessment Methods : Assignment, Presentation  <b>Practical</b> Total Marks : 15 Assessment method: observation of practical skills, practical assignment
	<b>B. End Semester Evaluation (ESE)</b>  <b>Theory</b> Total Marks :50 Assessment Methods : Written Exam <b>Duration of Examination</b> :1.50 hr <b>Pattern of examination</b> for Theory - <b>Non-MCQ</b> <b>Different parts of written examination</b> :Part A, Part B, Part C, <b>Answer Type</b> :Short answer, Short Essays, Essay <b>Marks for part</b> : 2, 5, 15 <b>Number of questions in each part</b> : 7,7,2 <b>Number of questions to be answered</b> : 5,5,1  <b>Marks For part</b> <b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b> <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b> <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b>  <b>Practical :</b> Total Marks :35

	Assessment methods: a) Practical Exam: 25marks b) Record:5marks c) Viva:5marks <b>Duration of Examination : 1.50 hr</b>
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## REFERENCES

1. Chakrabarty, M. M. (2003). *Chemistry and technology of oils and fats*. Allied Publishers Pvt. Ltd.
2. Gunstone, F. D., & Padley, F. B. (Eds.). (1997). *Lipid technologies and applications*. CRC Press (Indian reprint available).
3. Sundram, K., & Nair, M. R. (2002). *Coconut oil: Chemistry, production and applications*. Asian and Pacific Coconut Community (APCC).

## SUGGESTED READINGS

1. Hamm, W., Hamilton, R. J., & Calliauw, G. (2013). *Edible oil processing* (2nd ed.). Wiley-Blackwell.
2. Bailey, A. E. (2005). *Bailey's industrial oil and fat products* (6th ed., Vols. 1–6). Wiley-Interscience.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	FOOD ENGINEERING			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG5SDCAFP303			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about the equipment's used in food industry and to apply material balances and energy balances to the field of food engineering			
<b>Semester</b>	5	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
				<b>Total Hours</b>
				75
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the basic principles of mass and energy balance as applied in food processing operations.	U	2
2	Design basic food processing systems and select appropriate equipment based on engineering principles	E	1
3	Analyze and evaluate different unit operations such as evaporation, drying, filtration and refrigeration used in food processing.	An	2

4	Apply the concepts of fluid flow, heat transfer, and mass transfer to various food engineering systems	A	2
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	0	1	0	0	0	0	0	0	0	0
CO 2	2	0	0	0	0	0	0	0	0	0
CO 3	0	2	0	0	0	0	0	0	0	0
CO 4	0	2	0	0	0	0	0	0	0	0

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1 Engineering Units</b>	1.1	Dimensions-primary and secondary units	4	1
	1.2	Extensive and intensive properties	4	1
	1.3	State of system	4	1
<b>2 Heat transfer in food processing</b>	<b>MGU-B.VOC. (HONOURS)</b>			
	2.1	Modes of heat transfer	6	1,2
	2.2	Systems for heating and cooling food product	5	2
<b>3 Mechanical Operations ,Separation and irradiation</b>	3.1	Mixing-different types of mixers	5	1,2
	3.2	Clarification and concentration process	5	2

	3.3	Irradiation – definition, principle	2	2,3s
	3.4	Advantages and disadvantages	2	1,2
	3.5	Application of radiation in food industry	3	2,3
	3.6	Doses of radiation	3	2,3
	3.7	Effect of radiation in food	2	1,2
<b>4 Practicum</b>	4.1	Study of various machines in food processing industry-report writing and presentation	30P	4
<b>5 Teachers Specific Content</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b> <b>Theory and Practicum</b>  <b>A. Continuous Comprehensive Assessment (CCA) -30marks</b>  <b>Theory</b> Total Marks : 25 Assessment Methods : Assignment, Presentation,  <b>Practicum: 15</b> Assessment Method: assignment, seminar

## **B. End Semester Evaluation (ESE)**

### **Theory**

Total Marks :50

Assessment Methods :Written Exam

**Duration of Examination :1hr**

**Pattern of examination for Theory - Non-MCQ**

**Different parts of written examination :Part A, Part B, Part C,**

**Answer Type :Short answer, Short Essays, Essay**

**Marks for part : 2, 5, 15**

**Number of questions in each part : 7,7,2**

**Number of questions to be answered : 5,5,1**

**Marks For part**

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 5 out of 7)-(5 ×5=25)**

**Part C- Essay -( 1 out of 2 )- (1×15=15)**

Practicum: 35

Assessment methods:

- a) Report:10marks
- b) Presentation: 15marks
- c) Viva: 10marks

**Duration of Examination :1hr**

**MGU-B.VOC. (HONOURS)**

## **REFERENCES**

1. Rao, D. G. (2010). *Fundamentals of food engineering*. PHI Learning Pvt. Ltd.
2. Sahay, K. M., & Singh, K. K. (2014). *Unit operations of agricultural processing* (2nd ed.). Vikas Publishing House.
3. Chavan, R. S. (2014). *Textbook of food engineering*. Oxford Book Company.

## **SUGGESTED READINGS**

1. Toledo, R. T., Escher, F., & Singh, R. P. (2007). *Fundamentals of food process engineering* (3rd ed.). Springer.



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Extrusion and Snack Food Technology			
<b>Type of Course</b>	SEC			
<b>Course Code</b>	MG5SECAFP300			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about extrusion process and processing, preservation of snack foods			
<b>Semester</b>	5	<b>Credits</b>		3
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		2	1	0
<b>Total Hours</b>				60
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the basic principles and mechanism involved in extrusion technology and its application in snack food processing.	U	PO1
2	Evaluate and classify different types of extruders and explain their construction, working and suitability for various food applications.		PO2
3	Analyze the influence of raw materials, process parameters, and	An	PO3

	extrusion conditions on product characteristics.		
4	Apply knowledge of extrusion to develop different types of snack foods.	A	PO2

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	0	2	0	0	0	0	0	0	0	0
CO 3	0	0	1	0	0	0	0	0	0	0
CO 4	0	2	0	0	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Introduction to Snack Foods</b>	1.1	Classification of snacks	4	1,2
	1.2	Overview of snack food markets and trends.	4	1,2
	1.3	Nutritional and sensory importance of snack food	4	1
<b>2</b> <b>Fundamentals of Extrusion and Snack Product Development</b>	<i>Syllabus</i>			
	2.1	Principles of extrusion technology	3	2
	2.2	Types of extrusion	3	1
	2.3	Types of extruded snacks	3	1,2

	2.4	Texturized vegetable protein(TVP)	3	2
	2.5	Flavouring and seasoning systems	3	3
	2.6	Post extrusion processes	3	2
<b>3 Practical</b>	3.1	Processing of extruded snacks- noodles, pakavada, rice murukku etc.	30	2,3
<b>4 Teachers Specific Content</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b> <b>Theory and Practical</b>
	<b>A. Continuous Comprehensive Assessment (CCA)</b> <b>Theory</b> Total Marks : 15marks Assessment Methods : Assignment, Presentation  <b>Practical</b> Total Marks:15marks Assessment Methods: Skills on practical
	<b>B. End Semester Evaluation (ESE)</b>  <b>Theory</b> <b>Total Marks :35</b> <b>Assessment Methods :Written Exam</b> <b>Duration of Examination :1.50 hr</b>

	<p><b>Pattern of examination for Theory - Non-MCQ</b>  <b>Different parts of written examination :Part A, Part B, Part C,</b>  <b>Answer Type :Short answer, Short Essays, Essay</b>  <b>Marks for part : 2, 5, 15</b>  <b>Number of questions in each part : 7,3,2</b>  <b>Number of questions to be answered : 5,2,1</b>  <b>Marks For part</b>  <b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b>  <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b>  <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b></p> <p><b>Practical</b>  <b>Total Marks: 35Marks</b>  <b>Assessment Methods:</b>  a) Practical Exam: 25marks  b) Record: 5marks  c) Viva: 5marks</p> <p><b>Duration of Examination :1.50 hr</b></p>
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**REFERENCES**

1. Smith, J. S., & Singh, N. (Eds.). (2005, Indian edition). *Extrusion processing technology: Food and non-food biomaterials*. CRC Press.
2. Riaz, M. N. (2000). *Extruders in food applications*. CRC Press.

**SUGGESTED READINGS**

1. Harper, J. M. (1981). *Extrusion of foods: Vol. I & II*. CRC Press.
2. Kokini, J. L., Ho, C. T., & Karwe, M. V. (Eds.). (1992). *Food extrusion science and technology*. Marcel Dekker.



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Entrepreneurship Development			
<b>Type of Course</b>	VAC			
<b>Course Code</b>	MG5VACAFP300			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about the significance of entrepreneurs in the country and to introduce the procedures and legal issues involved in setting up an enterprise.			
<b>Semester</b>	5	<b>Credits</b>		3
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	0	0
<b>Total Hours</b>	45			
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the fundamentals of entrepreneurship, types of enterprises, and the role of entrepreneurship in economic development.	U	1,9
2	Identify and analyze business opportunities and assess the feasibility of an entrepreneurial venture.	An	1,2,5
3	Apply entrepreneurial competencies, risk management strategies, and decision-making skills in real or	A	1,2,4,5

	simulated business scenarios.		
4	Demonstrate ethical practices, leadership qualities, and innovation in entrepreneurial activities.	E	1,5,6,8

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	0	0	0	0	0	0	0	2	0
CO 2	1	1	0	0	2	0	0	0	0	0
CO 3	1	1	2	1	0	0	0	0	0	0
CO 4	2	2	0	2	2	0	0	0	0	0

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Introduction</b>	1.1	Concept of entrepreneurship	3	1,2
	1.2	Essential attributes of an entrepreneur	3	2
	1.3	Women entrepreneur, Intrapreneur	3	2
	1.4	Types of enterprises	3	2,3
	1.5	Partnership and Sole Praetorship	3	2
	1.6	Problem Solving Skills and SWOT Techniques	3	2,3
<b>2</b> <b>Project Formulation and Finance Management</b>				
	2.1	Various approaches principles of product selection and development techno-economic feasibility of the project	3	1,2
	2.2	Structure of project report	3	2,3

	2.3	Financial institutions	3	2
	2.4	Role of central and state government in promoting entrepreneurship	3	2,3
<b>3 Resource and Marketing Management</b>	3.1	Management of men , machine and materials	3	2,3
	3.2	CPM and PERT as planning tools for establishing SSIs	3	2
	3.3	Marketing for small business	3	2,3
	3.4	Strategies for sales promotion	3	2,3
	3.5	Pricing policy and it's implication on sale	3	2,3
<b>4 Teachers Specific Content</b>				



<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>  <b>Theory</b>

	<p><b>A. Continuous Comprehensive Assessment (CCA)</b></p> <p><b>Theory</b>  Total Marks : 25  Assessment Methods : Assignment, Presentation</p>
	<p><b>B. End Semester Evaluation (ESE)</b></p> <p><b>Theory</b>  Total Marks :50  Assessment Methods :Written Exam  <b>Duration of Examination</b> :1.50 hr  <b>Pattern of examination</b> for Theory - Non-MCQ  <b>Different parts of written examination</b> :Part A, Part B, Part C,  <b>Answer Type</b> :Short answer, Short Essays, Essay  <b>Marks for part</b> : 2, 5, 15  <b>Number of questions in each part</b> : 7,7,2  <b>Number of questions to be answered</b> : 5,5,1</p> <p><b>Marks For part</b>  <b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b>  <b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b>  <b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b></p> <p>MGU-B.VOC. (HONOURS)</p> <p>Syllabus</p>

## REFERENCES

1. Gupta, C. B., & Srinivasan, N. P. (2019). *Entrepreneurship development in India*. Sultan Chand & Sons.
2. Kapur, J. N. (2016). *Entrepreneurship development and project management*. Sultan Chand & Sons.
3. Sasi, K. P. (2018). *Entrepreneurship development in food processing industry*. Kalyani Publishers.

## SUGGESTED READINGS

1. Kumar, V., & Saini, R. (2014). *Food entrepreneurship: Marketing, processing and management*. New India Publishing Agency



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Cereals and Pulses Processing Technology			
<b>Type of Course</b>	MPC			
<b>Course Code</b>	MG5MPCAFP300			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about structure, composition and storage methods of cereals and pulses			
<b>Semester</b>	5	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		4	0	0
				<b>Total Hours</b>
				60
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

# Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Explain the structure, composition, and functional properties of cereals and pulses.	U	10
2	Apply appropriate milling and processing technologies	A	3
3	Analyze quality parameters and evaluate the efficiency of different processing techniques used in cereals and pulses industries	An	1

4	Identify common by-products and value-added products from cereals and pulses and assess their commercial potential.	E	2
5	Demonstrate knowledge of equipment used in cereal and pulse processing plants.	A	1

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	0	0	0	0	0	0	0	0	0	2
CO 2	0	0	3	0	0	0	0	0	0	0
CO 3	2	0	0	0	0	0	0	0	0	0
CO 4	0	2	0	0	0	0	0	0	0	0
CO 5	2	0	0	0	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Rice and Wheat	1.1	Rice-structure, composition	4	2
	1.2	Processing methods and by-products	4	2,3
	1.3	Various types of rice products	3	2,3
	1.4	Wheat- classification, structure and composition	4	2
	1.5	Harvesting and storage	3	2,3
	1.6	Different types of wheat products	3	2,3
	2.1	Corn-structure, composition and processing methods	4	2

2 Millets	2.2	Various products from corn	3	2,3
	2.3	Jowar- structure, composition and processing methods	3	2
	2.4	Ragi- structure, composition and processing methods	3	2
	2.5	Bajra and Rye- structure, composition and processing methods	3	2,3
3 Breakfast Cereals	3.1	Breakfast cereals-definition, classification and nutritive value	3	2
	3.2	Processing of ready-to-eat cereals	4	2,3
	3.3	Various products of breakfast cereals	3	2
4 Pulses	4.1	Pulses- composition and processing	4	2,3
	4.2	Toxic constituents of pulses	3	2
	4.3	Varieties of pulses commonly used	3	2
	4.4	Soybean-processing and fermented products of soybean	3	2,3
5 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
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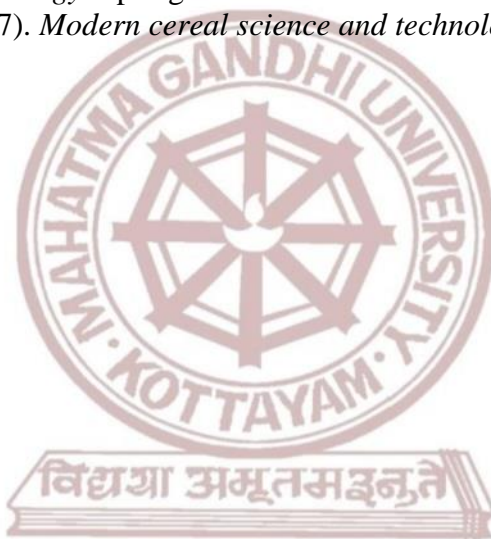
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>
	<p><b>Theory</b></p>
	<p><b>C. Continuous Comprehensive Assessment (CCA) -30marks</b></p> <p><b>Theory</b>  Total Marks : 30  Assessment Methods  (c) Assignment  (d) Presentation</p>
	<p><b>C. End Semester Evaluation (ESE)</b></p> <p><b>Theory</b>  Total Marks :70  Assessment Methods : Written Exam  <b>Duration of Examination</b> :1.50 hr  <b>Pattern of examination for Theory</b> - Non-MCQ  <b>Different parts of written examination</b> :Part A, Part B, Part C,  <b>Answer Type</b> :Short answer, Short Essays, Essay  <b>Marks for part</b> : 2, 5, 15  <b>Number of questions in each part</b> : 12,6,4  <b>Number of questions to be answered</b> : 10,4,2</p> <p><b>Marks For part</b>  <b>Part A</b>- Short Answer- (10 out of 12)-(10 × 2=20)  <b>Part B</b> – Short Essay –( 4 out of 6)-(4 ×5=20)  <b>Part C</b>- Essay -( 2out of 4 )-(2×15=30)</p>

## REFERENCES

4. Chakraborty, S. K. (2015). *Post-harvest technology and cereals, pulses & oilseeds*. Oxford & IBH Publishing.
5. Dhirendra, K., & Sahay, K. M. (2017). *Unit operations of agricultural processing* (3rd ed.). Vikas Publishing House.
6. Khader, V. (2015). *Textbook of food storage and preservation*. Kalyani Publishers.

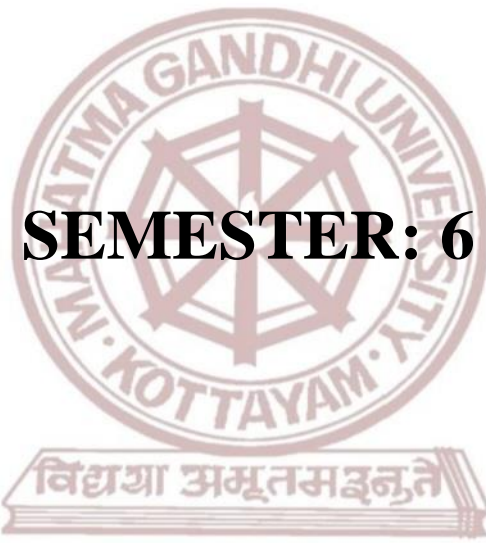
## SUGGESTED READINGS

3. Dendy, D. A. V., & Dobraszczyk, B. J. (2001). *Cereals and cereal products: Chemistry and technology*. Springer.
4. Pomeranz, Y. (1987). *Modern cereal science and technology*. VCH Publishers.



MGU-B.VOC. (HONOURS)

Syllabus



**SEMESTER: 6**

**MGU-B.VOC. (HONOURS)**

*Syllabus*

**SEMESTER 6**

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG6SDEA FP300	Food Additives/	SDE	4	5	3	2	0
MG6SDEA FP301	Food Service management	SDE	4	5	3	2	0
MG6SDCA FP300	Meat , Fish and Poultry	SDC	4	5	3	2	0
MG6SDCA FP302	Computer Hardware and networking	SEC	3	3	3	0	0
MG6VAC AFP303	Post-Harvest Technology	VAC	3	3	3	0	0
MG6MPC AFP300	Food Service Management	MPC	4	4	4	0	0
MG6PRJA FP300	PROJECT	PRJ	4	8	0	8	0



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Additives			
<b>Type of Course</b>	SDE			
<b>Course Code</b>	MG6SDEAFP300			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to attain knowledge regarding the use of additives in the food industry and laws related to food additives to prevent the involuntary infringement of analytical procedures.			
<b>Semester</b>	6	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
<b>Total Hours</b>				
				75
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the Classification and Functions of Food Additives	R	1,2,3,10
2	Evaluate the Safety and Regulatory Aspects	E	1,2,8
3	Analyze the Application of Additives in Various Food Products	An	1,2,3
4	Assess Toxicological Impacts and Controversies	U	1,2,6
5	Promote Sustainable and Ethical Use of Additives	A	1,2,8

## CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	1	1	0	0	0	0	0	0	1
CO 2	1	1	0	0	0	0	0	2	0	0
CO 3	2	1	1	0	0	0	0	0	0	0
CO 4	1	2	0	0	0	2	0	0	0	0
CO 5	0	0	0	0	0	0	0	3	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

## COURSE CONTENT

### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Introduction</b>	1.1	Food Additives- definition, objectives	2	2
	1.2	Classification- based on functions, natural and synthetic additives	4	2
	1.3	Health and safety aspects of food additives	4	2
<b>2</b> <b>Major Food Additives</b>	2.1	Preservatives- Classification and uses	3	2
	2.2	Antioxidants- Classification and uses	3	2
	2.3	Sweeteners- Classification and uses	3	2,3
	2.4	Permitted colours- Classification and uses	3	2
	2.5	Food Flavours- Classification and uses	3	2,3
	2.6	Stabilizers and Thickeners	3	2
	3.1	Aerating and antistaling agents, Bodying and clouding agents, Curing and Clarifiers-	4	2

<b>3</b> <b>Minor Food Additives and</b>		Types and uses		
	3.2	Emulsifiers, enzymes and fat replacers- types and uses	4	2,3
	3.3	Leavening agents, surfactants, viscosity modifiers	4	2
	3.4	Tenderizers, thickeners, whipping agents	5	2
<b>4</b> <b>Practical</b>	4.1	Prepare jelly with different gelling agents	10P	2,3
	4.2	Comparative shelf life	10P	2,3
	4.3	Taste Test of sweetners	10P	2
<b>5</b> <b>Teachers Specific Content</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>  <b>Theory and Practicum</b>

**A. Continuous Comprehensive Assessment (CCA) -30marks**

**Theory**

Total Marks : 25

Assessment Methods : Assignment, Presentation

**Practicum**

Total Marks:15

Assessment Method: Label Study

**B. End Semester Evaluation (ESE)**

**Theory**

Total Marks :50

Assessment Methods

(a) Written Exam

**Duration of Examination** :1.50hr

**Pattern of examination for Theory** - Non-MCQ

**Different parts of written examination** :Part A, Part B, Part C,

**Answer Type** :Short answer, Short Essays, Essay

**Marks for part** : 2, 5, 15

**Number of questions in each part** : 7,7,2

**Number of questions to be answered** : 5,5,1

**Marks For part**

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 5 out of 7)-(5 ×5=25)**

**Part C- Essay -( 1 out of 2 )- (1×15=15)**

Practical: 35

Assessment Method:

a) Practical : 25marks

b) Viva: 10marks

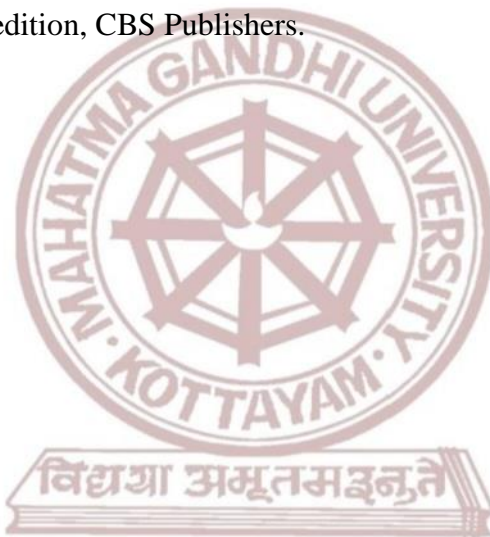
**Duration of Examination** :1.50hr

## REFERENCES

1. Smith, J., & Hong-Shum, L. (2011). *Food additives data book* (2nd ed.). Wiley-Blackwell.
2. Baines, D., & Seal, R. (Eds.). (2012). *Natural food additives, ingredients and flavourings*. Woodhead Publishing.
3. Watson, R. R., & Preedy, V. R. (Eds.). (2015). *Handbook of food bioengineering: Food additives and human health*. Academic Press.
4. Scotter, M. J. (2019). *Chemical hazards in foods of animal origin and food additives*. Academic Press.

## SUGGESTED READINGS

1. Labuza, T. P., & Riboh, D. (1982). *Practical uses of food additives in food processing*. Indian edition, CBS Publishers.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Service Management			
<b>Type of Course</b>	SDE			
<b>Course Code</b>	MG6SDEAFP301			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about different food service outlets, menu planning and different organization levels in a food service outlet.			
<b>Semester</b>	6	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	1	0
				<b>Total Hours</b>
				75
<b>Pre-requisites, if any</b>	Nil			

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

# Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Explain the scope, types and organizational structure of various food service system	U	1
2	Apply principles of menu planning, purchasing and cost control	A	2
3	Demonstrate skills in planning, layout design, and equipment selection for different food service establishments.	A	3
4	Manage human resources, leadership roles, and staff training methods for effective food service operations.	An	5

## CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	0	0	0	0	0	0	0	0	0
CO 2	0	2	0	0	0	0	0	0	0	0
CO 3	0	0	3	0	0	0	0	0	0	0
CO 4	0	0	0	3	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

## COURSE CONTENT

### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Introduction to Food Service Management and Menu Planning</b>	1.1	Introduction to different food service outlets	8	2
	1.2	Definition and functions of catering industry	6	2,3
	1.3	Types of catering establishments	8	2
	1.4	Functions, and types of menu	6	2,3
	1.5	Different types of cuisines	8	2
	1.6	Types and styles of service	8	2,3
	1.7	Equipment's- classification, factors for selection of equipment	7	1,2
<b>2</b> <b>Equipment's and Kitchen Layout</b>	2.1	Service equipment's, care and use of equipment's	6	2
	2.2	Kitchen layout- types of kitchen, location and layout	6	2,3

<b>3</b> <b>Staff</b> <b>Organizational</b> <b>Levels</b>	3.1	Staff organization of different outlets	6	2
	3.2	Roles and duties of different organizational level	6	2,3
<b>4</b> <b>Practical</b>	4.1	Menu Planning	8	3
	4.2	Standard recipe card	7	2,3
	4.3	Model layout of restaurant kitchen	8	3
	4.4	Designing of a simple customer feedback form	7	3
<b>5</b> <b>Teachers</b> <b>Specific</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b> <b>Theory and Practicum</b>
	<b>A. Continuous Comprehensive Assessment (CCA) -30marks</b>  <b>Theory</b> Total Marks : 25 Assessment Methods :Assignment, Seminar <b>Practicum: 15</b> Assessment methods: Food Menu Planning

## B. End Semester Evaluation (ESE)

### Theory

Total Marks :50

Assessment Methods

(b) Written Exam

**Duration of Examination** :2 hr

**Pattern of examination** for Theory - Non-MCQ

**Different parts of written examination** :Part A, Part B, Part C,

**Answer Type** :Short answer, Short Essays, Essay

**Marks for part** : 2, 5, 15

**Number of questions in each part** : 7,7,2

**Number of questions to be answered** : 5,5,1

**Marks For part**

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 5 out of 7)-(5 ×5=25)**

**Part C- Essay -( 1 out of 2 )- (1×15=15)**

Practicum: 35

Assessment Method:

a) Practical: 25marks

b) Viva: 10marks

**Duration of Examination** :1.50 hr

## REFERENCES

1. Sethi, M., & Anand, S. (2011). *Catering management: An integrated approach* (2nd ed.). Wiley Eastern Ltd.
2. Bhat, N. (2018). *Food service management*. CBS Publishers & Distributors.
3. Negi, J. S. (2015). *Food and beverage management*. S. Chand Publishing.

## SUGGESTED READINGS

1. Payne-Palacio, J., & Theis, M. (2016). *Foodservice management: Principles and practices* (13th ed.). Pearson.



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE				
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING				
<b>Course Name</b>	Meat, Fish and Poultry Processing Technology				
<b>Type of Course</b>	SDC				
<b>Course Code</b>	MG6SDCAFP300				
<b>Course Level</b>	300				
<b>Course Summary</b>	This course aims to provide knowledge about the processing, preservation and quality control in meat, fish and poultry processing industries				
<b>Semester</b>	6	<b>Credits</b>		4	
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>	<b>Total Hours</b>
		3	1	0	
<b>Pre-requisites, if any</b>	Nil				

MGU-B.VOC. (HONOURS)

## COURSE OUTCOMES (CO)

# Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Understand the structure, composition, and nutritional significance of meat, fish and poultry products.	U	1
2	Analyze the hygienic and sanitary practices, safety standards, and quality control measures used in processing plants.	An	2
3	Identify and apply various preservation techniques used in meat,	A	3

	fish and poultry processing.		
4	Evaluate the technological aspects of value addition in meat, fish and poultry products.	E	1

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	0	0	0	0	0	0	0	0	0
CO 2	0	2	0	0	0	0	0	0	0	0
CO 3	0	0	3	0	0	0	0	0	0	0
CO 4	1	0	0	0	0	0	0	0	0	0

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1 Meat Processing</b>	1.1	Meat- composition, structure, Quality control	3	2
	1.2	Post-mortem Changes	3	2
	1.3	Preservation Methods	3	2
	1.4	Abattoir practices	3	2
<b>2 Fish Processing</b>	2.1	Composition, Structure, Classification and Selection of Fish.	3	2,3
	2.2	Preservation Methods, Quality control	3	2
	2.3	Application of freezing system in fish processing	3	2
	2.4	Canning and Packaging of fish products	4	3

<b>3 Egg and Poultry Processing</b>	3.1	Egg- formation, structure and composition	4	2
	3.2	Preservation Methods and Egg Quality Parameters , Quality control	3	2,3
	3.3	Poultry- composition, classification	4	2
	3.4	Preservation and Slaughtering techniques	4	2,3
	3.5	By-products and waste utilization	4	3
<b>4 Practical</b>	4.1	Various cooking methods and their effects on meat	6	2
	4.2	Meat tenderisation	6	2,3
	4.3	Characteristics of egg	6	2
	4.4	Eggs cooked in shell	6	2
	4.5	Egg white foaming	6	2,3
<b>5 Teachers Specific Content</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>  <b>Theory and Practical</b>

**A. Continuous Comprehensive Assessment (CCA)**

**Theory**

Total Marks : 25,

Assessment Methods : Assignment, seminar

Practicum: 15

Assessment methods: presentation

**B. End Semester Evaluation (ESE)**

**Theory**

Total Marks :50

Assessment Methods :Written Exam

**Duration of Examination** :1.50hr

**Pattern of examination** for Theory - Non-MCQ

**Different parts of written examination** :Part A, Part B, Part C,

**Answer Type** :Short answer, Short Essays, Essay

**Marks for part** : 2, 5, 15

**Number of questions in each part** : 7,7,2

**Number of questions to be answered** : 5,5,1

**Marks For part**

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 5 out of 7)-(5 ×5=25)**

**Part C- Essay -( 1 out of 2 )- (1×15=15)**

MGU-B.VOC. (HONOURS)

Practicum: 35

Assessment methods:

a) Practical:25marks

b) Record: 5marks

c) Viva: 5marks

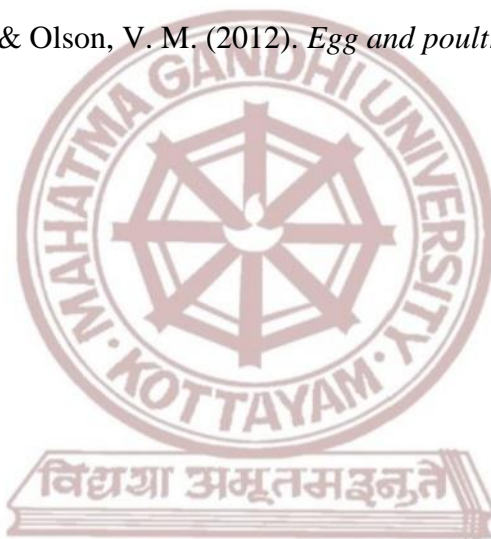
**Duration of Examination** :1.50hr

## REFERENCES

1. Sreelakshmi, B. (2007). *Food science* (2nd ed.). New Age International Publishers.
2. Gopal, T. K. S., & Govindan, T. K. (2010). *Textbook of fish processing technology*. ICAR-Central Institute of Fisheries Technology (CIFT), Cochin.
3. Nambiar, V. S., & Kondaiah, N. (2014). *Meat and poultry processing*. New India Publishing Agency.

## SUGGESTED READINGS

1. Kerry, J. P., Kerry, J. F., & Ledward, D. (2002). *Meat processing: Improving quality*. Woodhead Publishing/CRC Press.
2. Hall, G. M. (2011). *Fish processing: Sustainability and new opportunities*. Wiley-Blackwell.
3. Stadelman, W. J., & Olson, V. M. (2012). *Egg and poultry meat processing*. Springer.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Computer Hardware and Networking			
<b>Type of Course</b>	SEC			
<b>Course Code</b>	MG6SECAFP302			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about computer hardware components and how a network function.			
<b>Semester</b>	6	<b>Credits</b>		3
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	0	0
<b>Total Hours</b>				45
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

# Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Identify the components and functions of various computer hardware devices	R	1
2	explain the working principles and configurations of input/output devices	U	1
4	Configure network devices and set up basic LAN and wireless networks	A	2
5	Demonstrate awareness of network security basics, antivirus systems and safe computing practices	E	6

## CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	1	0	0	0	0	0	0	0	0	0
CO 3	0	2	0	0	0	0	0	0	0	0
CO 4	0	0	0	0	0	3	0	0	0	0

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

## COURSE CONTENT

### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Basic of Computer and Hardware</b>	1.1	Input and Output devices- types and specification	4	2
	1.2	CPU, Memory device-types	4	2,3
	1.3	BIOS/CMOS Setting	4	2
<b>2</b> <b>Mother Board and Serial Devices</b>	2.1	Study of mother board- RAM,ROM,CMOS,POST,BUS(address data system)	4	2,3
	2.2	Importance of CPU and CPU Cooling	4	1,2
	2.3	Keyboard-types	4	1,2
	2.4	Mouse's-Types	4	1,2
	3.1	HDD types,	4	1,2
<b>3</b> <b>Storage Devices and</b>	3.2	FDD -Types	4	1,2

<b>Parallel Devices</b>				
	3.3	CD and DVD drives	3	2
	3.4	Working of DMP, MFP	3	2
	3.5	Types of PC'S	3	1,2
<b>4 Teachers Specific Content</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b> <b>Theory</b> <b>MGU-B.VOC. (HONOURS)</b>
	<b>C. Continuous Comprehensive Assessment (CCA) -30marks</b> <b>Theory</b> Total Marks : 25 Assessment Methods : Assignment, Presentation
	<b>D. End Semester Evaluation (ESE)</b> <b>Theory</b> Total Marks :50 Assessment Methods : Written Exam <b>Duration of Examination :1hr</b>

	<p><b>Pattern of examination for Theory - Non-MCQ</b></p> <p><b>Different parts of written examination :Part A, Part B, Part C,</b></p> <p><b>Answer Type :Short answer, Short Essays, Essay</b></p> <p><b>Marks for part : 2, 5, 15</b></p> <p><b>Number of questions in each part : 7,7,2</b></p> <p><b>Number of questions to be answered : 5,5,1</b></p> <p><b>Marks For part</b></p> <p><b>Part A- Short Answer- (5 out of 7)-(5 × 2=10)</b></p> <p><b>Part B – Short Essay –( 5 out of 7)-(5 ×5=25)</b></p> <p><b>Part C- Essay -( 1 out of 2 )- (1×15=15)</b></p>
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## REFERENCES

2. Kakkar, D. N., & Goyal, A. (2010). *Computer networks*. Dhanpat Rai Publications.
3. Rajaraman, V. (2018). *Fundamentals of computers* (7th ed.). Prentice-Hall of India.

## SUGGESTED READINGS

1. Stallings, W. (2017). *Data and computer communications* (10th ed.). Pearson.
2. Andrews, J., & Darko, J. (2019). *A+ guide to IT technical support (hardware and software)* (10th ed.). Cengage Learning.

**MGU-B.VOC. (HONOURS)**

**Syllabus**



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Post-Harvest Technology			
<b>Type of Course</b>	VAC			
<b>Course Code</b>	MG6VACAFP300			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about how post-harvest losses occur, its management, preservation and processing techniques and steps.			
<b>Semester</b>	6	<b>Credits</b>		3
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		3	0	0
				<b>Total Hours</b>
				45
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

## Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Remember the significance of post-harvest technology and the factors contributing to post-harvest losses.	K	1
2	Understand the physiological and biochemical changes in agricultural produce.	U	1
3	Apply appropriate methods of handling, packaging, storage and transportation.	A	2

4	Evaluate pest and microbial control measures during storage and post-harvest handling.	E	10
5	Analyse the principles of packaging, grading and marketing of post-harvest produce in compliance with quality standards.	An	2

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	0	0	0	0	0	0	0	0
CO 2	2	0	0	0	0	0	0	0	0	0
CO 3	0	2	0	0	0	0	0	0	0	0
CO 4	0	0	0	0	0	0	0	0	0	2
CO 5	0	1	0	0	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
<b>1</b> <b>Introduction to Post Harvest Technology</b>	1.1	Post-Harvest Technology- Scope and Importance	4	2
	1.2	Post-Harvest Losses	4	2,3
	1.3	Physiological and biochemical changes during ripening and senescence	3	2
	1.4	Harvesting Techniques	4	2,3
<b>2</b> <b>Storage, Processing and Preservation Techniques</b>	2.1	Post-harvest handling systems	3	2
	2.2	Storage techniques	3	2,3

	2.3	Principles of preservation	3	2
	2.4	Minimal processing and fresh-cut technologies	6	2,3
<b>3</b> <b>Packaging, Marketing and Quality Standards</b>	3.1	Post-harvest diseases and pest infestation	3	2
	3.2	Functions and types of packaging materials	3	2,3
	3.3	Smart and active packing technologies	3	2,3
	3.4	Grading and standardization	3	2
	3.5	Marketing channels and government schemes for post-harvest support	3	2,3
<b>5</b> <b>Teachers Specific Content</b>				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b>  <b>Theory</b>

**A. Continuous Comprehensive Assessment (CCA) -30marks**

**Theory**

Total Marks : 25

Assessment Methods :Assignment, Presentation

**B. End Semester Evaluation (ESE)**

**Theory**

Total Marks :50

Assessment Methods

(c) Written Exam

**Duration of Examination :2hr**

**Pattern of examination for Theory - Non-MCQ**

**Different parts of written examination :Part A, Part B, Part C,**

**Answer Type :Short answer, Short Essays, Essay**

**Marks for part : 2, 5, 15**

**Number of questions in each part : 7,7,2**

**Number of questions to be answered : 5,5,1**

**Marks For part**

**Part A- Short Answer- (5 out of 7)-(5 × 2=10)**

**Part B – Short Essay –( 5 out of 7)-(5 ×5=25)**

**MGU-BYOC (HONOURS) Part C- Essay -( 1 out of 2 )- (1×15=15)**

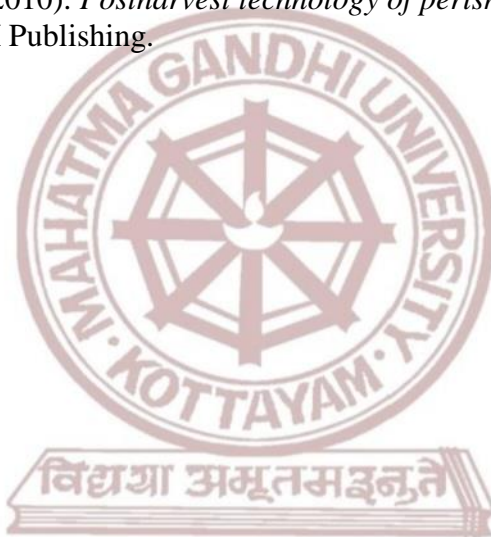
*Syllabus*

## REFERENCES

2. Srivastava, R. P., & Kumar, S. (2010). *Fruit and vegetable preservation: Principles and practices* (3rd ed.). CBS Publishers & Distributors.
3. Verma, L. R., & Joshi, V. K. (2000). *Post-harvest technology of fruits and vegetables: Handling, processing, fermentation, and waste management* (Vols. 1–2). Indus Publishing.
4. Sreelakshmi, B. (2007). *Food science* (2nd ed.). New Age International Publishers.

## SUGGESTED READINGS

1. Fellows, P. J. (2009). *Food processing technology: Principles and practice* (3rd ed.). Woodhead Publishing.
2. Thompson, A. K. (2010). *Postharvest technology of perishable horticultural commodities*. CABI Publishing.



MGU-B.VOC. (HONOURS)

Syllabus



# Mahatma Gandhi University Kottayam

<b>Faculty/ Discipline</b>	SCIENCE			
<b>Programme</b>	B.VOC AGRO FOOD PROCESSING			
<b>Course Name</b>	Food Service Management			
<b>Type of Course</b>	SDC			
<b>Course Code</b>	MG6SDEAFP301			
<b>Course Level</b>	300			
<b>Course Summary</b>	This course aims to provide knowledge about different food service outlets, menu planning and different organization levels in a food service outlet.			
<b>Semester</b>	6	<b>Credits</b>		4
<b>Course Details</b>	<b>Learning Approach</b>	<b>Lecture</b>	<b>Practical</b>	<b>OJT</b>
		4	0	0
<b>Total Hours</b>				60
<b>Pre-requisites, if any</b>	Nil			

## COURSE OUTCOMES (CO)

# Syllabus

CO No.	Expected Course Outcome	Learning Domains	PO No
1	Explain the scope, types and organizational structure of various food service system	U	1
2	Apply principles of menu planning, purchasing and cost control	A	2
3	Demonstrate skills in planning, layout design, and equipment selection for different food service establishments.	A	3
4	Manage human resources, leadership roles, and staff training methods for	An	5

	effective food service operations.	
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### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	0	0	0	0	0	0	0	0	0
CO 2	0	2	0	0	0	0	0	0	0	0
CO 3	0	0	3	0	0	0	0	0	0	0
CO 4	0	0	0	3	0	0	0	0	0	0

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).*

### COURSE CONTENT

#### Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1 Introduction to food service management	1.1	Introduction to different food service outlets	6	2
	1.2	Definition and functions of catering industry	5	2,3
	1.3	Types of catering establishments	6	2
2 Menu Planning	2.1	Functions, and types of menu	6	2,3
	2.2	Different types of cuisines	5	2
	2.3	Types and styles of service	5	2,3
3 Equipment's and Kitchen Layout	3.1	Equipment's- classification, factors for selection of equipment	6	1,2
	3.2	Service equipment's, care and use of equipment's	5	2
	3.3	Kitchen layout- types of kitchen, location and layout	5	2,3

4 Staff Organizational Levels	4.1	Staff organization of different outlets	6	2
	4.2	Roles and duties of different organizational level	5	2,3
5 Teachers Specific				

<b>Teaching and Learning Approach</b>	<b>Classroom Procedure (Mode of transaction)</b> 1.Lecture 2.Use of ICT Tools 3.Hands-on Activities 4.Experiential Learning
<b>Assessment Types</b>	<b>MODE OF ASSESSMENT</b> <b>Theory</b>
	<b>C. Continuous Comprehensive Assessment (CCA) -30marks</b> <b>Theory</b> Total Marks : 30 Assessment Methods :Assignment, Seminar
	<b>D. End Semester Evaluation (ESE)</b> <b>Theory</b> Total Marks :70 Assessment Methods : Written Exam <b>Duration of Examination :1.50 hr</b> <b>Pattern of examination for Theory - Non-MCQ</b> <b>Different parts of written examination :Part A, Part B, Part C,</b> <b>Answer Type :Short answer, Short Essays, Essay</b> <b>Marks for part : 2, 5, 15</b> <b>Number of questions in each part : 12,6,4</b> <b>Number of questions to be answered : 10,4,2</b>

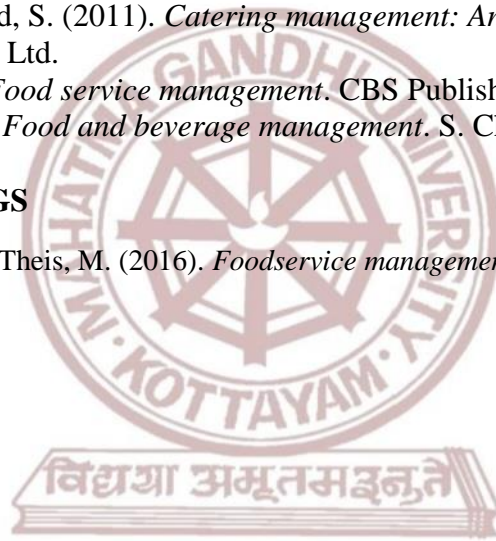
	<p style="text-align: center;"><b>Marks For part</b></p> <p style="text-align: center;"><b>Part A-</b> Short Answer- (10 out of 12)-(10 × 2=20)</p> <p style="text-align: center;"><b>Part B –</b> Short Essay –( 4 out of 6)-(4 ×5=20)</p> <p style="text-align: center;"><b>Part C-</b> Essay -( 2out of 4 )- (2×15=30)</p>
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## REFERENCES

4. Sethi, M., & Anand, S. (2011). *Catering management: An integrated approach* (2nd ed.). Wiley Eastern Ltd.
5. Bhat, N. (2018). *Food service management*. CBS Publishers & Distributors.
6. Negi, J. S. (2015). *Food and beverage management*. S. Chand Publishing.

## SUGGESTED READINGS

2. Payne-Palacio, J., & Theis, M. (2016). *Foodservice management: Principles and practices* (13th ed.). Pearson.



**MGU-B.VOC. (HONOURS)**

**Syllabus**



# PROJECT

MGU-B.VOC. (HONOURS)

Syllabus

<b>Course Name</b>	<b>Project</b>				
<b>Type of Course</b>	<b>PRJ</b>				
<b>Course Code</b>	MG6PRJAFP300				
<b>Course Level</b>	<b>300</b>				
<b>Course Summary</b>	<p>The project work provides students with an opportunity to identify, analyze, and solve real-world problems relevant to their field of study by integrating and applying the theoretical knowledge and skills acquired throughout their academic program. It fosters independent research, critical thinking, innovation, and the practical use of methodologies, tools, and techniques to design effective solutions. Students are encouraged to work individually or in teams, enhancing their collaboration, time management, ethical responsibility, and self-directed learning. The project also develops competencies in academic writing, documentation, and technical communication. Each project is expected to culminate in a comprehensive report, a working model or prototype (where applicable), and a formal presentation followed by a viva voce examination, demonstrating the student's ability to apply knowledge creatively and professionally in a real-world context.</p>				
<b>Semester</b>	<b>6</b>	<b>Duration</b>	<b>8 hours/week</b>	<b>Credits</b>	<b>4</b>

## Syllabus

### COURSE OUTCOMES (CO)

CO No:	Expected Course Outcome	Learning Domains	PO No:
	Upon the successful completion of the course, the student will be able to		
1	Identify, analyze, and define problems relevant to the field of study.	An	1,2,3
2	Apply appropriate methodologies, tools, and techniques to design and implement effective solutions.	C	2,3,10
3	Demonstrate skills in research, critical thinking, project planning, and systematic execution.	S	1,2,5,10
4	Produce well-structured academic reports and communicate project outcomes effectively.	S	4,8,10

5	Exhibit teamwork, time management, ethical responsibility, and initiative in a self-directed project environment.	S	5,8,9,10
6	Address real-world challenges with innovative and context-aware solutions.	A	1,2,6,10
<i>*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)</i>			

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	2	1	0	0	0	0	0	0	0
CO 2	0	1	2	0	0	0	0	0	0	1
CO 3	1	2	0	0	1	0	0	0	0	2
CO 4	0	0	0	1	0	0	0	2	0	2
CO 5	0	0	0	0	1	0	0	2	1	2
CO 6	1	2	0	0	0	1	0	0	0	1

*'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level)*

Assessment Types	MODE OF ASSESSMENT			
	A	Internal Evaluation		
Assessment Types		<b>Components</b>	<b>Marks</b>	
		Commitment and Involvement	5	
		Periodic progress review	10	
		Quality of work/Implementation effort	10	
		Report	5	
		<b>Total</b>	<b>30</b>	
		B	External Evaluation	
			<b>Components</b>	<b>Marks</b>
			Problem Identification and Objectives	10
			Methodology / Design / Technical Content	15
			Implementation / Analysis / Results	15
			Final Report	10
			Presentation	10
			Viva Voce	10
		<b>Total</b>	<b>70</b>	



# **SEMESTER 7 & 8**

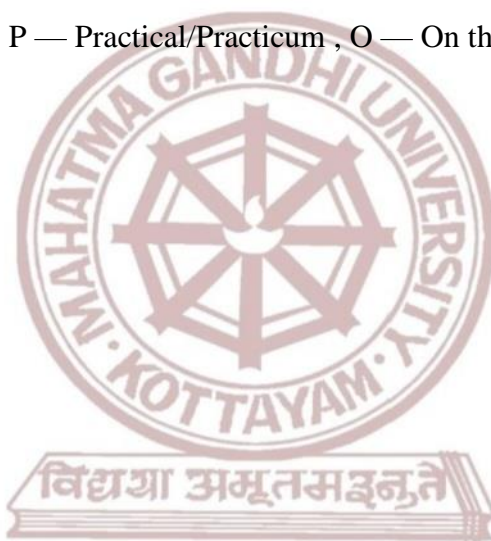
**MGU-B.VOC. (HONOURS)**

**Syllabus**

## SEMESTER 7&8

Course Code	Title of the Course	Type of the Course	Credit	Hours/week	Hour Distribution /week		
					L	P	O
MG7APPA FP400	Apprenticeship	Apprenticeship	28	280 days	0	28	0
MG7RINA FP400	Research Internship	Internship	20	200 days	0	20	0

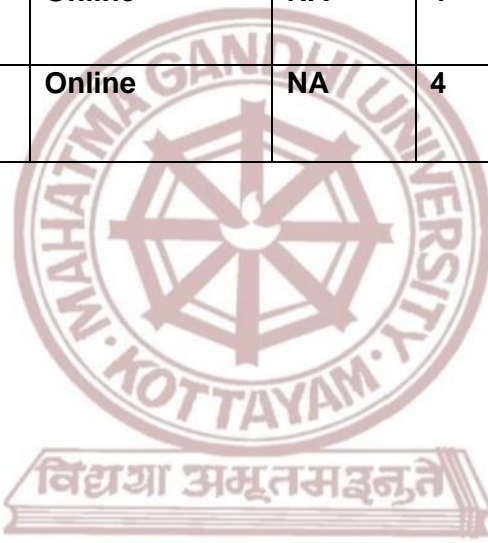
L — Lecture, P — Practical/Practicum , O — On the Job Training



MGU-B.VOC. (HONOURS)

## Syllabus

B.Voc Honours							
Course Code	course	Methodology	Number of days	Credits	Hour Distribution		
					L	P	O
MG7APPAFP400	APP	Apprenticeship	280	28	0	0	28
NA	MPC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-



MGU-B.VOC. (HONOURS)

## Syllabus

<b>B.Voc Honours with Research</b>							
<b>Course Code</b>	<b>course</b>	<b>Methodology</b>	<b>Number of days</b>	<b>Credits</b>	<b>Hour Distribution</b>		
					<b>L</b>	<b>P</b>	
					<b>O</b>		
MG7RINAFP400	RIN	Research Internship	20	20	0	0	
NA	SDC	Online	NA	4	-	-	-
NA	SDC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-
NA	MPC	Online	NA	4	-	-	-



**MGU-B.VOC. (HONOURS)**

## *Syllabus*



# APPRENTICESHIP

MGU-B.VOC. (HONOURS)

Syllabus

<b>Course Name</b>	<b>Apprenticeship</b>
<b>Type of Course</b>	<b>APP</b>
<b>Course Code</b>	MG7APPAFP400
<b>Summary</b>	<p>As an integral component of the B.Voc. Honours degree programme, students are required to complete a structured apprenticeship or work-integrated learning programme in collaboration with relevant industries, organizations, or institutions. This component, spanning a duration of 280 days, carries 28 academic credits and is compulsory in the student's designated skill domain. It is designed to enhance industry preparedness by reinforcing academic knowledge through sustained, domain-relevant practical experience.</p> <p>The apprenticeship offers students the opportunity to engage directly with real-world professional environments, enabling them to apply domain-specific competencies, gain exposure to industry-standard tools and practices, and participate meaningfully in ongoing operations and projects. This extended, immersive experience serves to bridge the gap between theoretical learning and professional expectations, thereby fostering critical skills for career development and employability.</p> <p>To ensure the effectiveness, academic relevance, and accountability of the apprenticeship:</p> <ul style="list-style-type: none"> <li>• Each student will be assigned an academic mentor from the parent institution and an industry supervisor from the host organization.</li> <li>• Students are required to maintain a weekly activity logbook, which must be regularly reviewed and signed by the industry supervisor.</li> <li>• Monthly progress reports will be submitted to and reviewed by the academic mentor in consultation with the industry supervisor.</li> <li>• Mid-term and final evaluations will be conducted based on a combination of employer feedback, student outputs/deliverables, and academic performance metrics.</li> <li>• The institution will conduct site visits, virtual check-ins, or regular follow-ups to ensure student engagement, address issues promptly, and uphold the quality of the apprenticeship experience.</li> </ul> <p>This structured apprenticeship is a critical step in preparing students for the dynamic demands of the professional world, ensuring that their</p>

	academic journey culminates in a well-rounded and industry-aligned skill set.				
<b>Semester</b>	7&8	<b>Duration</b>	280 days	<b>Credits</b>	28

### COURSE OUTCOMES (CO)

CO No:	Expected Course Outcome	Learning Domains	PO No:
	Upon the successful completion of the course, the student will be able to		
1	Gain hands-on professional experience by engaging in long-term, domain-specific apprenticeship in real-world industry environments.	S	1,3,6,10
2	Apply domain-specific theoretical knowledge to solve real-time problems, enhancing technical and problem-solving competencies.	A	1,2,3,10
3	Demonstrate professional competencies such as workplace etiquette, communication skills, and teamwork in a collaborative work culture.	S	4,5,8,9
4	Build a professional portfolio by achieving practical outcomes and establishing credible industry references and credentials.	C	5,9,10
5	Cultivate reflective thinking, adaptability, and a lifelong learning mindset through structured and mentored work experience.	Ap	1,6,8,10
6	Transition smoothly from academic study to professional practice by developing job-specific skills and industry-aligned competencies.	S	2,3,5,10
*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)			

## CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	0	2	0	0	2	0	0	0	2
CO 2	1	2	1	0	0	0	0	2	0	2
CO 3	0	0	0	1	1	0	0	2	1	0
CO 4	0	0	0	0	2	0	0	0	0	1
CO 5	1	0	0	0	0	1	0	1	0	1
CO 6	0	1	1	0	2	0	0	0	0	1

Assessment Types	MODE OF ASSESSMENT															
	<b>A</b>	Internal Evaluation														
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;">Components</th> <th style="width: 20%;">Marks</th> </tr> </thead> <tbody> <tr> <td>Commitment, Punctuality &amp; Professional Conduct</td> <td style="text-align: center;">20</td> </tr> <tr> <td>Monthly Progress Reviews &amp; Logbook Maintenance</td> <td style="text-align: center;">25</td> </tr> <tr> <td>Skill Development &amp; Application</td> <td style="text-align: center;">25</td> </tr> <tr> <td>Interim Report</td> <td style="text-align: center;">20</td> </tr> <tr> <td><b>Total</b></td> <td style="text-align: center;"><b>90</b></td> </tr> </tbody> </table>	Components	Marks	Commitment, Punctuality & Professional Conduct	20	Monthly Progress Reviews & Logbook Maintenance	25	Skill Development & Application	25	Interim Report	20	<b>Total</b>	<b>90</b>		
	Components	Marks														
	Commitment, Punctuality & Professional Conduct	20														
	Monthly Progress Reviews & Logbook Maintenance	25														
	Skill Development & Application	25														
	Interim Report	20														
	<b>Total</b>	<b>90</b>														
	<b>B</b>	External Evaluation														
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	Components	Marks														
	Feedback & Evaluation Report from Host Organization	50														
	Skill Demonstration / Summary of Work Exposure	40														
Final Report / Learning Portfolio	40															
Domain Knowledge and Experience Communication (Presentation)	40															
Viva Voce	40															
<b>Total</b>	<b>210</b>															

**Note:**

This assessment framework is intended as a guiding structure for evaluating apprenticeship performance. However, in order to remain responsive to the evolving needs of industry and society, the evaluation criteria may be revised from time to time. Such changes aim to enhance the relevance, effectiveness, and fairness of the assessment process.



**MGU-B.VOC. (HONOURS)**

# Syllabus



**RESEARCH INTERNSHIP**

MGU-B.VOC. (HONOURS)

*Syllabus*

<b>Course Name</b>	<b>Research Internship</b>				
<b>Type of Course</b>	<b>RIN</b>				
<b>Course Code</b>	MG7RINAFP400				
<b>Summary</b>	<p>As an integral requirement of the B.Voc. Honours with Research degree programme, the Research Internship is designed to provide students with hands-on exposure to real-world research practices in their designated skill domain. This component carries 20 academic credits and extends over a duration of 200 days. The internship must be undertaken in collaboration with a research organization, industry, or university department, under the mentorship of a qualified research guide.</p> <p>The primary aim of this internship is to engage students in industry-linked research projects that allow them to apply theoretical knowledge to practical, domain-specific problems. Students are expected to work on meaningful research inquiries, contribute to data collection and analysis, develop critical thinking and problem-solving skills, and enhance their communication and documentation abilities. In addition to the research internship, students must earn 8 credits through Skill Development Courses (SDCs), specifically chosen for their research orientation, thereby reinforcing their academic and practical foundation.</p> <p>This component not only contributes significantly to the academic rigor of the Honours with Research degree but also ensures a seamless transition from classroom learning to workplace research, preparing students for advanced studies or professional roles in their respective domains.</p>				
<b>Semester</b>	<b>7&amp;8</b>	<b>Duration</b>	<b>200 days</b>	<b>Credits</b>	<b>20</b>

### COURSE OUTCOMES (CO)

<b>CO No:</b>	<b>Expected Course Outcome</b>	<b>Learning Domain</b>	<b>PO No:</b>
	Upon the successful completion of the course, the student will be able to		
<b>1</b>	Demonstrate research aptitude and inquiry-based learning by actively engaging in real-time research	S	1,2,10

	projects.		
<b>2</b>	Apply academic knowledge in a professional research environment to bridge the gap between theory and real-world research practices.	A	2,3,6,10
<b>3</b>	Strengthen domain-specific knowledge and technical competencies through systematic investigation and practical application.	S	1,2,3
<b>4</b>	Address real-world research problems using problem-solving, analytical, and critical thinking skills.	S	1,2,6
<b>5</b>	Communicate scientific ideas and findings effectively through research reports, documentation, and presentations.	S	4,8,10
<b>6</b>	Collaborate with researchers and peer groups to gain exposure to interdisciplinary perspectives and collaborative learning practices.	S	2,3,5,10
<b>7</b>	Demonstrate professional growth and readiness for higher education, entrepreneurship, or research-oriented careers.	I	5,9,10
*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)			

### CO-PO ARTICULATION MATRIX

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
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CO 4	1	2	0	0	0	2	0	0	0	0
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CO 6	0	1	1	0	2	0	0	0	0	1
CO 7	0	0	0	0	1	0	0	0	2	1

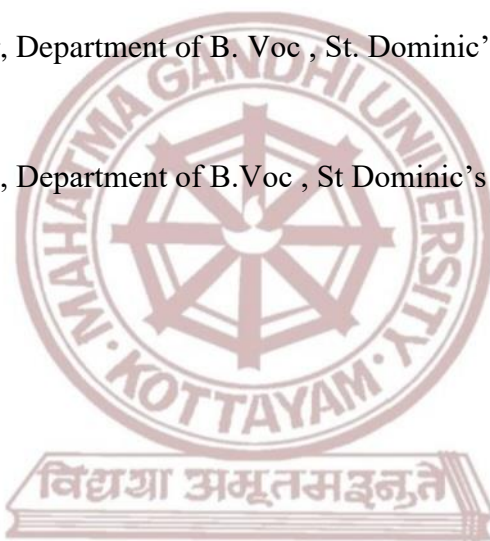
Assessment Types	MODE OF ASSESSMENT														
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	Components	Marks													
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	<b>Total</b>	<b>60</b>													
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Components	Marks														
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Skill Demonstration / Summary of Work Exposure	20														
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Domain Knowledge and Experience Communication (Presentation)	25														
Viva Voce. (HONOURS)	30														
<b>Total</b>	<b>140</b>														

**Note:**

This assessment framework serves as a guiding structure for evaluating research internship performance. However, to remain responsive to the evolving needs of industry, academia, and society, the evaluation criteria may be revised periodically. Such revisions aim to enhance the relevance, effectiveness, and fairness of the overall assessment process.

## Syllabus Revision Workshop Participants

1. Ms. Nithya Krishna  
HOD, Department of B.Voc, St. Dominic's College, Kanjirapally
2. Ms.Mareena Sebastian  
Assistant Professor , Department of B.Voc , St. Dominic's College , Kanjirapally
3. Ms. Aswathy Biju  
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4. Ms. Nithymol Sunny  
Assistant Professor, Department of B. Voc , St. Dominic's College , Kanjirapally
5. Ms.Vrindha Vinoj  
Assistant Professor , Department of B.Voc , St Dominic's College , Knajirapally



MGU-B.VOC. (HONOURS)

Syllabus



**MGU-B.VOC. (HONOURS)**

# Syllabus