Department of Food Processing Technology

B.Tech – Food Processing Technology

Curriculum 2017-18

ACADEMY OF MARITIME EDUCATION AND TRAINING
DEPARTMENT OF FOOD PROCESSING TECHNOLOGY

1. The Vision and Mission of AMET

Vision of the Institute

To sustain identity as a World Class Leader in Maritime Education and empower learners with wholesome knowledge through progressive innovation in training, research and development which will render students a unique learning experience and a transformation impact on the Global Society.

Mission of the Institute

AMET will strive continuously to

1. Impart value-based higher education and technical knowledge with uncompromising strides of an outstanding quality.
2. Emerge as a Centre of Excellence inculcating skill development in recent technologies in accordance with industrial trends.
3. Create World class research capabilities on par with the finest in the world and broaden student's horizons beyond classroom education.
4. Nurture talent and entrepreneurship and enable all round personality development in students.
5. Empower students from across socio economic strata.
6. Make a positive difference to society through technical education.

The Vision and Mission of the Department of Food Processing Technology

Vision of the Department

To become a Centre of excellence in Food Technology Education and Research, through the development of highly competent and Dynamic Food Technologist, for serving the society.

Mission of the Department

The Vision of the Department is accomplished by the following mission statements

1. To inculcate in-depth knowledge of Food Engineering and Technology with an ability to analyze, evaluate, design, discriminate, interpret, create and integrate existing and new knowledge.
2. To analyze technological problems and judge independently to create information for conducting research and think to conceptualize in the area of Food Engineering and Technology.
3. To develop strong research aptitude through research work to enable the students to opt for higher levels of learning in the field of Food Engineering and Technology.
4. To inculcate capabilities of students to analyze a problem, identify, formulate and solve technical problems using basic fundamental principles of food process engineering approach.
5. To acquaint and equip students with professional and intellectual integrity, ethics of research and scholarship and responsibilities to contribute positively in the sustainable development of society.
6. To enable the students to get engaged in lifelong learning independently with the vigor and zeal and become capable to start-up their own businesses.

Consistency of Institute and Departmental Vision

Institute Vision	Departmental Vision
To sustain identity as a World Class Leader in Maritime Education	To be a prime department and to carry out R&D in frontier areas of food engineering.
Empower learners with wholesome knowledge through progressive innovation in training, research and development.	To produce business leaders, develop competitive processes, technologies and practices in the area of food engineering, entrepreneurship and management
Impart value-based higher education and technical knowledge with uncompromising strides of an outstanding quality.	To offer continual training to the industry to enhance their skill and be updated on global trends in food research and technology by consultation with the stakeholders.
To produce world-class business leaders, develop globally competitive processes and technologies and international best practices, entrepreneurship and management	To develop World Class Managerial Talent coupled with advanced knowledge in Food Science and Technology.
To offer courses and training programmes of global standards with optimal mix of inputs management and entrepreneurship	To promote cooperation and networking among existing institutions within India and Abroad.
To produce competent technologist, scientist, researchers and entrepreneurs through quality education	To upgrade the scientific knowledge in the areas of food science, food processing and safety for the development of food products through quality research

2. PEOs, POs, and PSOs

PROGRAM EDUCATIONAL OBJECTIVES (PEOs) OF B.TECH FOOD PROCESSING TECHNOLOGY

PEO1:

Be efficient Food analysts with quality knowledge and essential skills as per the industry needs.

PEO2:

To provide the strong foundation in the areas of food engineering, post-harvest practices and value addition of food materials.

PEO3:

Graduates of the program must be able to competently work with professionals of related fields over the wide spectrum of practice in areas of processing and food engineering, post-harvest technology and value addition

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO	Statement
I	Apply the knowledge of Food Technology, investigate and solve the complex in food processing and nutrition to meet the specified needs with appropriate considerations for the society
II	Develop solutions for complex Engineering problems in the broad field of Food Engineering.
III	Analyze, design and integrate knowledge of Food processing techniques in food industries and create passion for life-long learning and research in advanced fields.

Programme Outcomes (PO's)

POs	Description
PO1	Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex technical problems
PO2	Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusion using first principles of mathematics, natural science and engineering science
PO3	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and the cultural, societal and environmental considerations
PO4	Use research –based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusion
PO5	Create, select, and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activates with an understanding of the limitations
PO6	Apply reasoning informed by the contextual knowledge to asses societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development
PO7	Understand the impact of the professional ethics and responsibilities and norms of the engineering practice.
PO8	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practices
PO9	Function effectively as an individual, and a member or leader in diverse teams, and in multidisciplinary setting
PO10	Communicate effectively on complex engineering activites with the engineering community and with society at large, such as being able to comprehend and write reports effectively and design documentation , make effective presentations and give and received clear instructions.
PO11	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Curriculum - 2017-18

SEMESTER I
COMMON TO ALL BRANCHES OF UG ENGINEERING & TECHNOLOGY

S. No	Course Code	Category	Course Title	L	T		P	C
			Theory					
1	UCLEC01	Humanities and Social Science including Management Courses	Technical English - I	2	0		0	2
2	UBMTC01	Basic Science course	Engineering Mathematics - I	3	1		0	4
3	UCPHC01	Basic Science course	Engineering Physics - I	3	0		0	3
4	UBCHC01	Basic Science course	Engineering Chemistry	3	0		0	3
5	UCITC01	Basic Science course	Introduction to programming in C and C++	3	0		0	3
			Practical					
6	UBMCCPA	Basic engineering lab course	Engineering Graphics	0	2		2	3
7	UCPHCPA	Basic Science lab course	Engineering Physics Laboratory	0	0		2	1
8	UBCHCPA	Basic Science lab course	Engineering Chemistry Laboratory	0	0		2	1
9	UBITCPA	Basic Science course	Programming in C and C++ Lab	0	0		2	1
10	UCLECPB	Humanities and Social Science including Management Courses	Spoken English - I	0	0		3	2
			Total	**14**	**3**		**11**	**23**

SEMESTER II

S. No	Course Code	Category	Course Title	L	T	P	C
Theory							
1	UCLEC02	Humanities And Social Science Including Management Courses	Technical English - II	2	0	0	2
2	UBMTC02	Basic Science course	Engineering Mathematics - II	3	1	0	4
3	UCPHC02	Basic Science	Engineering Physics - II	3	0	0	3
4	UBEEC01	Basic Engineering Course Science	Basics of Electrical and Electronics Engineering	3	0	0	3
5	UBBTC01	Mandatory Course	Environmental Studies	2	0	0	2
6	UBMCC03	Basic Engineering Course Science	Engineering Mechanics	3	1	0	4
7	UBMCC11	Basic Engineering Course Science	Thermodynamics	3	0	0	3
Practical							
8	UBEECPA	Basic Engineering Lab Course Science	Basics of Electrical and Electronics Engineering Laboratory	0	0	2	1
9	UBWSCPA	Basic Engineering Lab Course Science	Engineering Practices Laboratory	0	0	4	2
10	UCLECPC	Humanities and Social Science including Management Courses	Spoken English - II	0	0	3	2
			Total	19	2	9	26

SEMESTER III

S. No	Course Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1.	UCMT301	Basic Science Course	Transform and differential equations	4	3	1	0	4
2.	UCFP301	Engineering Science Course	Heat and Mass Transfer	3	3	1	0	3
3.	UCFP302	Professional Core Course 1	Food and Nutrition	4	3	1	0	4
4.	UCFP303	Professional Core Course 2	Unit Operations in Food Processing	4	3	1	0	4
5.	UCFP304	Professional Core Course 3	Food Microbiology	4	3	1	0	4
6	UCFP305	Professional Core Course 4	Food Chemistry	3	3	0	0	3
7	UCVCC01	Employment Opportunity Course	Value Added Training Program-1	0	0	0	0	0
8	UCVCC02	Industrial Visit	Industrial Visit – I	0	0	0	0	0
PRACTICAL								
9	UCLECPC	Humanities and Social Science including Management Courses	English Laboratory III	4	0	0	4	2
10	UCFP3PA	Professional Lab Course 1	Food Microbiology Lab	2	0	0	2	2
11	UCFP3PB	Professional Lab Course 2	Food Chemistry Lab	2	0	0	2	2
TOTAL				35	19	5	8	27

S. No	Course Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1.	UCBTC02	Basic Science Course	Biology for Engineers	4	3	1	0	4
2.	UCFP401	Professional Core Course 5	Post Harvest Technology of Horticultural Produce	4	3	1	0	4
3.	UCFP402	Professional Core Course 6	Principles of Food Processing & Preservation Technology	4	3	1	0	4
4.	UCFP403	Professional Core Course 7	Engineering Properties of Food	4	3	1	0	4
5	UCFP404	Professional Core Course 8	Cereals, Pulses Processing Technology	4	3	1	0	4
6		Open Elective Course 1-Language	OEC 1	3	3	0	0	3
7	UCVCC03	Employment Opportunity Course	Value Added Training Program-II	0	0	0	0	0
8	UCVCC04	Industrial Visit	Industrial Visit - II	0	0	0	0	0
PRACTICAL								
9	UCLECPD	Humanities and Social Science including Management Courses	English Laboratory IV	4	0	0	4	2
10	UCFP4PA	Professional Lab Course 3	Bioprocesses Engineering Lab	2	0	0	2	2
11	UCFP4PB	Professional Lab Course 4	Food Preservation Technology Lab	2	0	0	2	2
			TOTAL	31	18	4	8	29

S. No	Course Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1.	UCVCC05	Humanities and Social Science including Management Courses	Ethics and Values	3	3	0	0	3
2.	UCFP501	Professional Core Course 9	Meat, Poultry and Seafood Processing Technology	4	3	1	0	3
3.		Professional Elective Course 1	PEC1	3	3	0	0	3
4.		Professional Elective Course 2	PEC 2	3	3	0	0	3
5		Open Elective Course 2	OEC 2	3	3	0	0	3
6	UCVCC06	Mandatory Course - 3	Indian Constitution	2	2	0	0	0
7	UCVCC07	Employment Opportunity Course	Value Added Training Program-III	0	0	0	0	0
PRACTICAL								
8	UCFP5PA	Professional Lab Course 5	Food Analysis Lab	2	0	0	2	2
9	UCFP5PB	Professional Lab Course 6	Food Processing Lab - 1	2	0	0	2	2
10	UCFP5PB	Internship	Internship - 1	0	0	0	0	1
TOTAL				**22**	**17**	**1**	**4**	**21**

SEMESTER VI

S. No	Course Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1.	UCFP601	Professional Core Course 10	Dairy Technology	4	3	1	0	4
2.	UCFP602	Professional Core Course 11	Waste Management in Food Industries	4	3	0	0	4
3		Professional Elective Course 3	PEC 3	3	3	0	0	3
4		Professional Elective Course 4	PEC 4	3	3	0	0	3
5		Open Elective Course 3	OEC 3	3	3	0	0	3
6	UCVCC08	Mandatory Course 4	Essence of Indian Traditional knowledge	2	2	0	0	0
7	UCVCC09	Employment Opportunity Course	Finishing School Training I	0	0	0	0	0
8	UDVCC11	Industry Oriented Course	Food Production & quality control	2	2	0	0	2
PRACTICAL								
9	UCFP6PA	Professional Lab Course 7	Dairy products Lab	2	0	0	2	2
10	UCFP6PB	Professional Lab Course 8	Machine Design and CAD for Food Industry	2	0	0	2	2
11		Project	Mini project	4	0	0	4	2
TOTAL				**29**	**19**	**2**	**8**	**25**

S. No	Course Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1.	UCFP701	Professional Core Course 12	Food Safety Regulations and Laws	4	3	1	0	4
2.	UCFP702	Professional Core Course 13	Instruments and Techniques for Food Analysis	4	3	1	0	4
3.		Open Elective Course 4	OEC 4	3	3	0	0	3
4.		Open Elective Course 5	PEC 5	3	3	0	0	3
5.		Professional Elective Course 5	PEC 6	3	3	0	0	3
6	UCVCC12	Employment Opportunity Course	Finishing School Training II	0	0	0	0	0
PRACTICAL								
7	UCFP7PA	Project	Project Work - Phase 1	6	0	0	6	3
8	UCFP7PB	Internship	Internship - 2	0	0	0	0	1
	TOTAL			**23**	**15**	**2**	**6**	**21**

S. No	Course Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1.		Professional Elective Course 6	PEC 6	3	3	0	0	3
2		Open Elective Course 6	PEC 7	3	3	0	0	3
3	UCVCC13	Industrial Visit	Industrial Visit - IV	0	0	0	0	0
PRACTICAL								
4	UCFP8PA	Project	Project Work - Phase 2	16	0	0	16	8
TOTAL				**22**	**6**	**0**	**16**	**14**

Sl.No.	Course Code	Title of the PEC	Contact Hours	L	T	P	C
PEC1							
1	UCFPP01	Fruits, Vegetables Processing Technology	3	3	0	0	3
2	UCFPP02	Fermented Beverage Technology	3	3	0	0	3
3	UCFPP03	Non-fermented Beverage Technology	3	3	0	0	3
4	UCFPP04	Post Harvest Technology of Horticultural Produce	3	3	0	0	3
PEC2							
1	UCFPP05	Transport Process in Food Engineering	3	3	0	0	3
2	UCFPP06	Non thermal Preservation of Foods	3	3	0	0	3
3	UCFPP07	Cane Sugar Technology	3	3	0	0	3
4	UCFPP08	Millet Processing Technology	3	3	0	0	3
PEC3							
1	UCFPP09	Fat & Oilseed Processing Technology	3	3	0	0	3
2	UCFPP10	Flavours Technology	3	3	0	0	3
3	UCFPP11	Food Fermentation Technology	3	3	0	0	3
4	UCFPP12	Ready to Eat Food Processing Technology	3	3	0	0	3
PEC4							
1	UCFPP13	Post Harvest Technology of Agricultural Produce	3	3	0	0	3

2	UCFPP14	Food Plant Layout & Design	3	3	0	0	3
3	UCFPP15	Food business trade	3	3	0	0	3
4	UCFPP16	Food Quality Control & Assurance	3	3	0	0	3
PEC5							
1	UCFPP17	Total Quality Management in Food Industries	3	3	0	0	3
2	UCFPP18	Tea Processing Technology	3	3	0	0	3
3	UCFPP19	Coffee Processing Technology	3	3	0	0	3
PEC 6							
1	UCFPP20	Protein Technology	3	3	0	0	3
2	UCFPP21	Food Additives	3	3	0	0	3
3	UCFPP22	Cocoa Processing Technology	3	3	0	0	3

		PEC 7					
1	UCFPP23	Cheese and Ice cream Manufacturing Technology	3	3	0	0	3
2	**UCFPP24**	**Commercial products from Fish waste**	3	3	0	0	3
3	UCFPP25	Food Safety & Hygiene	3	3	0	0	3
		PEC 8					
1	UCFPP26	Introduction to Food Laws and Standards	3	3	0	0	3
2	UCFPP27	Cold chain Management	3	3	0	0	3
3	**UCFPP28**	**Traditional Foods and Processing Technologies**	3	3	0	0	3

PEC 7 and 8 has been modified

List of open elective courses (OEC) offered by all Departments

Note:
Each department is requested to provide minimum of 4 open electives per semester

V Semester

Sl.No.	Course Code	Title of the OEC2	Contact Hours	L	T	P	C
1	UCFPO01	Food Packaging Technology	3	3	0	0	3
2	UCFPO02	Fast Food Chain Operations	3	3	0	0	3
3	UCFPO03	Food Marketing	3	3	0	0	3
4	UCFPO04	Food Industry Management	3	3	0	0	3

VI Semester

Sl.No.	Course Code	Title of the OEC3	Contact Hours	L	T	P	C
1	UCFPO05	*Spices* & Plantation Processing Technology	3	3	0	0	3
2	UCFPO06	Bioprocess Engineering of Foods	3	3	0	0	3
3	UCFPO07	Sensory Analysis of Food _ Instrumental	3	3	0	0	3
4	UCFPO08	Food Industry By-product Processing	3	3	0	0	3
5.	UDFPO14	Food and Diet for Sea farers	3	3	0	0	3
6.	UDFPO15	Introduction to fruits and vegetables	3	3	0	0	3

VII Semester

Sl.No.	Course Code	Title of the OEC4	Contact Hours	L	T	P	C
1	UCFPO09	Nutraceuticals and Functional Foods	3	3	0	0	3
2	UCFPO10	Sensory Analysis of Food – Manual	3	3	0	0	3
3	UCFPO11	Marine Food Product Processing	3	3	0	0	3
4	UCFPO12	Quality Evaluation & Safety aspects of Marine Food Products	3	3	0	0	3

S. No.	Category	Suggested Breakup of Credits(Total 160)
1	Humanities and Social Sciences including Management courses	12*
2	Basic Science courses	25*
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	24*
4	Professional core courses	48*
5	Professional Elective courses relevant to chosen specialization/branch	18*
6	Open subjects – Electives from other technical and /or emerging subjects	18*
7	Project work, seminar and internship in industry or elsewhere	15*
8	Mandatory Courses [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Traditional Knowledge]	(non-credit)
	Total	160*

Minor variation is allowed as per need of the respective disciplines.

COMMON FRAMEWORK FOR CURRICULUM DEVELOPMENT

AMET CURRICULUM –CREDIT SHARE

Semester	Contact Hours	Lecture	Tutorial	Practical	Credits
Semester 1	27	14	3	4	23
Semester 2	25	19	2	9	26
Semester 3	35	19	5	8	27
Semester 4	31	18	4	8	29
Semester 5	22	17	1	4	21
Semester 6	29	19	2	8	25
Semester 7	23	15	2	6	21
Semester 8	22	6	0	16	14
Total	214	127	19	63	186

Humanities	Basic Science	Engineering Science	Professional Core	Professional Elective	Open Elective	Project /Internship	Total
11	**27**	**17**	**64**	**18**	**18**	**17**	**186**