

NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY



B. Tech.

in

Food Engineering and Technology

(Effective from 2026-27)

Department of Food Engineering and Technology

**NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY
UNDER THE MINISTRY OF EDUCATION, GOVERNMENT OF INDIA
(DEEMED TO BE UNIVERSITY U/S 3 OF THE UGC ACT, 1956)**

ARUNACHAL PRADESH: 791109



Department of Food Engineering and Technology

NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY

VISION

To produce professionals with competency for pursuing excellence in Science and Technology Education, Research, and Entrepreneurship with ethical values and social sensitivity for offering specialized services to society meeting the global requirements and standards in a multicultural environment.

MISSION

1. Creating a niche in the field of science and technology education and research through an innovative modular system.
2. Producing globally competitive technical and scientific manpower in different disciplines with high ethical values and with reference to the North Eastern region.
3. Inducing in engineers/technologists and trainees a mind-set full of creativity to pursue excellence with focus on stakeholders, accountability, environment and people.
4. Developing collaborations with world class R&D organizations, industries, and educational institutions in India and abroad for attaining excellence in teaching, research and consultancy practices.

Department of Food Engineering and Technology

VISION

To establish excellence in Food Engineering and Technology by fostering skilled professionals through education and research, dedicated to building a sustainable food system and promoting entrepreneurship, with a special focus on empowering youth from the North Eastern States and beyond through strong industry-academia collaboration.

MISSION

1. To build a vibrant ecosystem of education, research, and innovation in food engineering, fostering technological advancement, industrial collaboration, and global competitiveness in food processing.
2. To foster interdisciplinary research and innovation in food product and process development, addressing industrial challenges and contributing to evidence-based policymaking for the food sector.
3. To support inclusive development by delivering technological solutions and manpower training tailored to local agro-climatic and socio-economic conditions.
4. To promote entrepreneurship and empower local communities through skill development, incubation support, and value-added utilization of indigenous resources, thereby enhancing income generation and fostering self-reliance across the region.



Department of Food Engineering and Technology

Department of Food Engineering and Technology:

About the Department:

The Department of Food Engineering and Technology is established in 2025 and offering B.Tech. and Ph.D programmes in Food Engineering and Technology (FET) from the academic year 2026–27. The department focuses on advancing food science and technology by providing engineering-based solutions for better processing and preservation of food.

Its core activities include delivering high-quality education, research and development, capacity building, consultancy services, and fostering industry collaboration to address national challenges and support food security. The curriculum is designed with a balanced emphasis on theory, practical, and project-based learning. As part of academic exposure, students undertake visits to food processing industries and equipment manufacturing plants.

The department has a dedicated faculty with strong academic and research backgrounds, and national and international exposure. It also provides academic and research opportunities to students from the North-East region and across India, while actively engaging with industry to nurture future-ready professionals and foster innovation in the food sector.

List of Programs offered by the Department:

Name of the Program	Title of the Program
B.Tech.	Food Engineering and Technology
Ph.D.	Food Engineering and Technology

Note: Refer to the following weblink for Rules and Regulations of B.Tech. program:



PROGRAM EDUCATIONAL OBJECTIVES

PEO1	Provide students with a sound knowledge in mathematics, science and engineering science required to solve problems related to food processing.
PEO2	Effectively identify and design sustainable solutions to address issues and global opportunities
PEO3	Have successful professional careers in food industries, government organization, educational/ research/extension institute.
PEO4	Demonstrate strong leadership skills, ethical integrity, and professional engagement.
PEO5	Continue to learn to adapt in a world of evolving technology.

Program Articulation Matrix

Mapping of Mission statements with program educational objectives

Mission Statement	PEO1	PEO2	PEO3	PEO4	PEO5
MS1	2	3	3	1	2
MS2	3	1	2	2	2
MS3	1	2	1	2	3
MS4	2	3	2	3	2

1-Slightly, 2-Moderately, 3-Substantially.



Department of Food Engineering and Technology

Department of Food Engineering and Technology PROGRAM OUTCOMES

PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and IC design and technology concepts towards modelling and prototyping Integrated systems.
PO2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/development of solutions: Design methodology to offer hardware solutions to public health, safety and agriculture, consumer electronics along with cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO8	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
PO9	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO10	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply the set one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO11	Life-long learning: 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.



Department of Food Engineering and Technology

Program Specific Outcomes (PSOs)

PSO1	Identify and design sustainable solutions to solve food engineering problems applying the knowledge of basic and engineering sciences.
PSO2	Pursue successful professional career in food-industries, government organization, educational/ research/ extension institute adopting appropriate technology, resources and modelling.
PSO3	Adapt in a world of evolving technology with professional ethics and take lead roles in development of agricultural engineering and allied enterprises for betterment of society.

Mapping Program Outcomes with Program Educational Objectives

PEO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PEO1	3	2	3	3	1	1	1	1	1	2	2
PEO2	2	3	3	3	3	2	2	1	1	2	2
PEO3	1	3	2	2	2	3	3	3	3	3	2
PEO4	1	2	2	2	3	3	3	3	2	1	3
PEO5	3	2	2	2	1	2	1	1	1	3	3



Department of Food Engineering and Technology

Note:

Category Code	Course Category
BSC	Basic Science Courses
ESC	Engineering Science Courses including workshop, drawing, basics of electrical, mechanical, computer etc.
HSMC	Humanities and Social Sciences including Management courses (Ability enhancement and Value-added courses)
PCC	Professional Core Courses
PEC	Professional Elective Courses
OEC	Multidisciplinary Open Elective Courses
Project	Research project and Seminar
Internship	Summer internship



SCHEME OF INSTRUCTION
B.Tech. in Food Engineering and Technology - Course Structure

I – Year

I –Semester

S. No.	Course Code	Course Title	L	T	P	Course Credit	Course Category
Three Weeks Compulsory Student Induction Programme (UHV – I)							
1	FEPC101	Introduction to Food Engineering and Technology	2	1	0	3	PCC
2	FEPC102	Basic Food Microbiology	2	0	0	2	PCC
3	FEPC103	Basic Food Microbiology Lab	0	0	2	1	PCC
4	PHBS101	Engineering Physics	3	0	0	3	BSC
5	PHBS102	Engineering Physics Lab	0	0	2	1	BSC
6	MABS101	Mathematics – 1	3	0	0	3	BSC
7	EEES101	Basic Electrical Engineering	2	0	0	2	ESC
8	EEES102	Basic Electrical Engineering Lab	0	0	2	1	ESC
9	CEES102	Engineering Drawing	0	0	4	2	ESC
10	HSSM101	Communication Skills	2	0	0	2	HSMC
11	HSSM102	Communication Skills Lab	0	0	2	1	HSMC
12	HSAU101	Essence of Indian Knowledge and Tradition	2	0	0	0	MNC/AU
13	SNAU102	Sports/Yoga or NSS/NCC (Audit)	0	0	2	0	MNC/AU
Total			16	1	14	21	

Category	BSC	ESC	HSMC	PCC	PEC	OEC	Project	Internship	Total
Sem Credit	7	5	3	6	0	0	0	0	21
Cumulative Sum	7	5	3	6	0	0	0	0	21



SCHEME OF INSTRUCTION
B.Tech. in Food Engineering and Technology - Course Structure

I – Year

II –Semester

S. No.	Course Code	Course Title	L	T	P	Course Credit	Course Category
1	FEPC201	Thermodynamics in Food Processing	2	1	0	3	PCC
2	FEPC202	Fluid Mechanics	2	0	0	2	PCC
3	FEPC203	Fluid Mechanics Lab	0	0	2	1	PCC
4	CYBS201	Engineering Chemistry	3	0	0	3	BSC
5	CYBS202	Engineering Chemistry Lab	0	0	2	1	BSC
6	MABS201	Mathematics - II	3	0	0	3	BSC
7	CSES201	Programming for Problem Solving	2	0	0	2	ESC
8	CSES202	Programming for Problem Solving Lab	0	0	4	2	ESC
9	MEES202	Workshop Practices	0	0	4	2	ESC
10	UHVA201	Universal Human Values	2	1	0	3	HSMC
11	CEAU201	Environmental Science	2	0	0	0	MNC/AU
12	SNAU202	Sports/Yoga or NSS/NCC	0	0	2	0	MNC/AU
Total			16	2	16	22	

Category	BSC	ESC	HSMC	PCC	PEC	OEC	Project	Internship	Total
Sem Credit	7	6	3	6	0	0	0	0	22
Cumulative Sum	14	11	6	12	0	0	0	0	43



SCHEME OF INSTRUCTION
B.Tech. in Food Engineering and Technology - Course Structure

II – Year

III –Semester

S. No.	Course Code	Course Title	L	T	P	Course Credit	Course Category
1.	FEPC301	Transport Phenomena in Food Processing	2	1	0	3	PCC
2.	FEPC302	Food Engineering Operations-I	2	0	0	2	PCC
3.	FEPC303	Food Engineering Operations-I Lab	0	0	2	1	PCC
4.	FEPC304	Food Chemistry	3	0	0	3	PCC
5.	FEPC305	Food Chemistry Lab	0	0	2	1	PCC
6.	FEPC306	Principles of Food Processing and Preservation	3	0	0	3	PCC
7.	MABS301	Mathematics -III	3	0	0	3	BSC
8.	FRBS301	Biology for Engineers	2	1	0	3	BSC
9.	ECES301	Basic Electronics Engineering	3	0	0	3	ESC
10.	ECES302	Basic Electronics Engineering Lab	0	0	2	1	ESC
Total			18	2	6	23	

Category	BSC	ESC	HSMC	PCC	PEC	OEC	Project	Internship	Total
Sem Credit	6	4	0	13	0	0	0	0	23
Cumulative Sum	20	15	6	25	0	0	0	0	66



SCHEME OF INSTRUCTION
B.Tech. in Food Engineering and Technology - Course Structure

II – Year

IV –Semester

S. No.	Course Code	Course Title	L	T	P	Course Credit	Course Category
1	FEPC401	Food Engineering Operations-II	2	0	0	2	PCC
2	FEPC402	Food Engineering Operations-II Lab	0	0	2	1	PCC
3	FEPC403	Engineering Properties of Food Materials	2	0	0	2	PCC
4	FEPC404	Engineering Properties of Food Materials Lab	0	0	2	1	PCC
5	FEPC405	Instrumentation and process control in food industry	2	1	0	3	PCC
6	FEPC406	Food Biochemistry and Nutrition	2	0	0	2	PCC
7	FEPC407	Food Biochemistry and Nutrition Lab	0	0	2	1	PCC
8	FEPC408	Processing Technology of Fruits and Vegetables	2	0	0	2	PCC
9	FEPC409	Processing Technology of Fruits and Vegetables Lab	0	0	2	1	PCC
10	HSSM401	Entrepreneurship and Startups	3	0	0	3	HSMC
11	HSAU401	Indian Constitution	2	0	0	0	MNC/AU
			15	1	8	18	

Category	BSC	ESC	HSMC	PCC	PEC	OEC	Project	Internship	Total
Sem Credit	0	0	3	15	0	0	0	0	18
Cumulative Sum	20	15	9	40	0	0	0	0	84



SCHEME OF INSTRUCTION
B.Tech. in Food Engineering and Technology - Course Structure

III – Year

V –Semester

S. No.	Course Code	Course Title	L	T	P	Course Credit	Course Category
1	FEPC501	Food Packaging and Storage Engineering	2	0	0	2	PCC
2	FEPC502	Food Packaging and Storage Engineering Lab	0	0	2	1	PCC
3	FEPC503	Food Refrigeration and Cold Chain Management	2	1	0	3	PCC
4	FEPC504	Biochemical Engineering	2	0	0	2	PCC
5	FEPC505	Biochemical Engineering Lab	0	0	2	1	PCC
6	FEPC506	Food Safety and Quality Assurance	2	1	0	3	PCC
7	FEPC507	Processing Technology of Milk and Milk Products	2	0	0	2	PCC
8	FEPC508	Processing Technology of Milk and Milk Products Lab	0	0	2	1	PCC
9	FEPC509	Processing Technology of Cereal, Pulses and Oilseeds	2	0	0	2	PCC
10	FEPC510	Processing Technology of Cereal, Pulses and Oilseeds Lab	0	0	2	1	PCC
11	HSSM501	Principles of Economics	3	0	0	3	HSMC
Total			15	2	8	21	

Category	BSC	ESC	HSMC	PCC	PEC	OEC	Project	Internship	Total
Sem Credit	0	0	3	18	0	0	0	0	21
Cumulative Sum	20	15	12	58	0	0	0	0	105



SCHEME OF INSTRUCTION
B.Tech. in Food Engineering and Technology - Course Structure

III – Year

VI–Semester

S. No.	Course Code	Course Title	L	T	P	Course Credit	Course Category
1	FEPC601	Marketing Management and International Trade	2	1	0	3	PCC
2	FEPC602	Instrumental Techniques in Food Analysis	2	0	0	2	PCC
3	FEPC603	Instrumental Techniques in Food Analysis Lab	0	0	2	1	PCC
4	FEPC604	Technology for Bakery and Confectionery	2	0	0	2	PCC
5	FEPC605	Technology for Bakery and Confectionery Lab	0	0	2	1	PCC
6	FEPC606	Food Process & Equipment design	2	1	0	3	PCC
7	FEPC607	Food Plant Utilities	2	0	0	2	PCC
8	FEPE6X/XP E6XX/ MOPE6XX	Professional Elective Course -1 (Dept/Other Dept/MOOC)	3	0	0	3	PEC
9	MOOE601	Multidisciplinary Open Elective Course -1 (Only MOOC)	3	0	0	3	OEC
Total			16	2	4	20	

(*): Students are permitted to take (*) marked courses from MOOC and credit transfer will take place.

Category	BSC	ESC	HSMC	PCC	PEC	OEC	Project	Internship	Total
Sem Credit	0	0	0	14	3	3	0	0	20
Cumulative Sum	20	15	12	72	3	3	0	0	125



SCHEME OF INSTRUCTION
B.Tech. in Food Engineering and Technology - Course Structure

IV – Year

VII –Semester

S. No.	Course Code	Course Title	L	T	P	Course Credit	Course Category
1	FEPC701	AI in Food Processing	2	1	0	3	PCC
2	FEPC702	Statistical Methods in Food and Consumer Research	2	1	0	3	PCC
3	FEPC703	Processing Technology of Meat, Fish and Poultry	2	0	0	2	PCC
4	FEPC704	Processing Technology of Meat, Fish and Poultry Lab	0	0	2	1	PCC
5	FEE7XX /XXPE7XX /MOPE701	Professional Elective Course - 2 (Dept. /Other Dept/ MOOC)	3	0	0	3	PEC
6	FEIN701	Summer Internship (1 Month) (#)	0	0	0	2	Internship
7	FEPR701	Final year project- I / Internship	0	0	0	6	Project
Total			9	2	2	20	

(#): The grade of Summer internship taken up during summer after VI semester, will be reflected in the grade sheet of VII semester.

Note: If students undergo for 6 month internship in 7th Semester, they will be allowed to do self-study and appear in the Exam directly.

Category	BSC	ESC	HSMC	PCC	PEC	OEC	Project	Internship	Total
Sem Credit	0	0	0	9	3	0	6	2	20
Cumulative Sum	20	15	12	81	6	3	6	2	145



SCHEME OF INSTRUCTION
B.Tech. in Food Engineering and Technology - Course Structure

IV – Year

VIII –Semester

S. No.	Course Code	Course Title	L	T	P	Course Credit	Course Category
1	FEPE8XX/X XPE8XX MOPE801	Professional Elective Course - 3 (Dept. /Other Dept/ MOOC) (**)	3	0	0	3	PEC
2	FEPE8XX/X XPE8XX/M OPE803	Professional Elective Course - 4 (Dept. /Other Dept./ MOOC) (**)	3	0	0	3	PEC
3	MOOE801	Multidisciplinary Open Elective Course - 2 (Only MOOC)	3	0	0	3	OEC
4	XXOE8XX/ MOOE802	Multidisciplinary Open Elective Course - 3 (Other Dept. as well as MOOC) (**)	3	0	0	3	OEC
5	FEEA802	Co/Extra-curricular Activities/Hackathon/NCC/NS S/Technical Events	0	0	0	2	HSMC
6	FEPR801	Final year project- II/ Internship	0	0	0	8	Project
Total			12	0	0	22	

(**): Students are permitted to take (**) marked courses from MOOC in 8th Semester only if they undergo 6-months internship.

Category	BSC	ESC	HSMC	PCC	PEC	OEC	Project	Internship	Total
Sem Credit	0	0	2	0	6	6	8	0	22
Cumulative Sum	20	15	14	81	12	9	14	2	167



Semester wise Curriculum Components

Category Code	Course Category	Credit				
		First	Second	Third	Fourth	Total
BSC	Basic Science Courses	14	6	0	0	20
ESC	Engineering Science Courses including workshop, drawing, basics of electrical, mechanical, computer etc.	11	4	0	0	15
HSMC	Humanities and Social Sciences including Management courses (Ability enhancement and Value-added courses)	6	3	3	2	14
PCC	Professional Core Courses	12	28	32	9	81
PEC	Professional Elective Courses	0	0	3	9	12
OEC	Multidisciplinary Open Elective Courses	0	0	3	6	9
Project	Research project, Seminar and Case Study	0	0	0	14	14
Internship	Summer internship	0	0	0	2	2
Total		43	41	41	42	167



Professional Elective Courses

Course Code	Course Title	L	T	P	Course Credit	Sem	Elect. No
FEPE601	Food Process Calculation	3	0	0	3	VI	E1
FEPE602	Processing of Spices and Plantation Crops	3	0	0	3	VI	E1
FEPE603	Food Regulations & Safety Management System	3	0	0	3	VI	E1
FEPE701	Functional Foods and Nutraceuticals	3	0	0	3	VII	E2
FEPE702	Food Plant Sanitation	3	0	0	3	VII	E2
FEPE703	Principles of Food Product Development	3	0	0	3	VII	E2
FEPE801	Waste and By-product Utilization	3	0	0	3	VIII	E3
FEPE802	Renewable Energy in Food Processing	3	0	0	3	VIII	E3
FEPE803	Operations Research and Management	3	0	0	3	VIII	E3
FEPE804	Food Plant Design and Layout	3	0	0	3	VIII	E4
FEPC805	Process Modeling and Simulation	3	0	0	3	VIII	E4
FEPC806	Food Business Management and Entrepreneurship Development	3	0	0	3	VIII	E4
FEPC807	Emerging Technologies in Food Processing	3	0	0	3	VIII	E4

Exit Courses

After First year to exit with UG Certificate (Total 6 Credits)							
Course Code	Course Title	L	T	P	Course Credit		
FEEX201	Food Supply Chain Management	3	0	0	3		
FEEX202	Operation and Maintenance of Food Processing Equipment	3	0	0	3		
FEEX203	Unit Operations in Food Processing	3	0	0	3		
FEIN201	Internship (Six weeks)	0	0	0	6		
After Second year to exit with UG Diploma (Total 6 Credits)							
FEEX401	Bakery and Confectionary Products	3	0	0	3		
FEEX402	Food Enterprise Development	3	0	0	3		
FEIN401	Internship (Six weeks)	0	0	0	6		
After Third year to exit with B. Voc. (Total 6 Credits)							
FEEX601	Primary Processing, Value Addition and Cold Chain Logistics	3	0	0	3		
FEEX602	Processing Technology of Beverages	3	0	0	3		
FEIN601	Internship (Six weeks)	0	0	0	6		



Exit Courses (From MOOC in case of Planned Exit)

Course Code	Based on choice of student	No. of Weeks	Course Credit
MOEX201	From Dept. in the Jan-May Semester/MOOC	12	3
MOEX203		12	3
MOEX401	From Dept. in the Jan-May Semester/MOOC	12	3
MOEX403		12	3
MOEX601	From Dept. in the Jan-May Semester/MOOC	12	3
MOEX603		12	3

Note: Basket of Exit courses for UG Certificate, UG Diploma and BVoC from MOOC will be prepared at the end of November and students (**for planned exit**) can clear any two 12-week courses from the basket during January-April.

Open Elective Courses (For students of other Departments)

Course Code	Course Title	L	T	P	Course Credit	Department	Elect. No
FEOE701	Development of Processed Food Products Lab	0	0	6	3	AE	OE1
FEOE801	Food Packaging Technology	2	1	0	3	AE	OE2