



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

KAKINADA – 533 003, Andhra Pradesh, India

**SCHOOL OF FOOD TECHNOLOGY
B. Tech-FOOD ENGINEERING**

COURSE STRUCTURE

For UG – R20

B. TECH - FOOD ENGINEERING

(Applicable for batches admitted from 2020-2021)



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UNIVERSITY KAKINADA**

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COURSE STRUCTURE

I YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Mathematics-M1	3	0	0	3
2		Fundamental Chemistry	3	0	0	3
3		Programming for Problem Solving using C	3	0	0	3
4		Communicative English	3	0	0	3
5		Engineering Drawing	1	0	4	3
6		Fundamental Chemistry Lab	0	0	3	1.5
7		Programming for Problem Solving using C Lab	0	0	3	1.5
8		English Communication Skills Laboratory	0	0	3	1.5
9		Environmental Science	3	0	0	0
Total Credits						19.5

I YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Mathematics-M2	3	0	0	3
2		Engineering Physics	3	0	0	3
3		Engineering Mechanics	3	0	0	3
4		Basic Electrical & Electronics Engineering	3	0	0	3
5		Computer Aided Engineering Drawing	2	0	2	3
6		Workshop Practice Laboratory	0	0	3	1.5
7		Engineering Physics Laboratory	0	0	3	1.5
8		Basic Electrical & Electronics Engineering Laboratory	0	0	3	1.5
9		Constitution of India	2	0	0	0
Total Credits						19.5



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II YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Probability and Statistics	3	0	0	3
2		Principles of Food Engineering -I	3	0	0	3
3		Mechanical Operations in Food Processing	3	0	0	3
4		Fluid Mechanics in Food Processing	3	0	0	3
5		Food Microbiology	3	0	0	3
6		Mechanical Operations in Food Processing Lab	0	0	3	1.5
7		Fluid Mechanics in Food Processing Lab	0	0	3	1.5
8		Food Microbiology Lab	0	0	3	1.5
9		Food Handling & Storage Engineering	2	0	0	2
10		Professional Ethics & Human Values	2	0	0	0
Total Credits						21.5

II YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Python Programming	3	0	0	3
2		Principles of Food Engineering - II	3	0	0	3
3		Food Chemistry	3	0	0	3
4		Processing of Cereals, Pulses and Oilseeds	3	0	0	3
5		Managerial Economics & Financial Analysis	3	0	0	3
6		Python Programming Lab	0	0	3	1.5
7		Food Chemistry Lab	0	0	3	1.5
8		Processing of Cereals, Pulses and Oilseeds Lab	0	0	3	1.5
9		Instrumentation & Process Control	1	0	2	2
	Industrial/Research Internship (Mandatory) 2 Months... to be evaluated in III year I semester					
Total Credits						21.5



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III YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Heat Transfer in Food Processing	3	0	0	3
2		Processing of Fruits, Vegetables, Spices and Plantation Crops	3	0	0	3
3		Food Plant Design and Process Economics	3	0	0	3
4		Open Elective Course/Job Oriented Elective	2	0	2	3
5		Professional Elective Courses	3	0	0	3
6		Heat Transfer in Food Processing Lab	0	0	3	1.5
7		Processing of Fruits, Vegetables, Spices and Plantation Crops (LAB)	0	0	3	1.5
8		Food Extrusion Processing*	1	0	2	2
9		Mandatory Course (AICTE suggested)	2	0	0	0
Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester)						1.5
Total Credits						21.5
Honors/Minor			4	0	0	4

III YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Mass Transfer in Food Processing	3	0	0	3
2		Processing of Milk, Meat and Marine Products	3	0	0	3
3		Food Packaging Technologies	3	0	0	3
4		Professional Elective Courses	3	0	0	3
5		Open Elective Course/Job Oriented Elective	2	0	2	3
6		Mass Transfer in Food Processing (LAB)	0	0	3	1.5
7		Processing of Milk, Meat and Marine Products (LAB)	0	0	3	1.5
8		Food Packaging Technologies (LAB)	0	0	3	1.5
9		Retort Process Engineering*	1	0	2	2
10		Mandatory Course (AICTE)	2	0	0	0
Industrial/Research Internship (Mandatory) 2 Months... to be evaluated in IV year I semester						
Total Credits						21.5
Honors/Minor			4	0	0	4

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IV YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Professional Elective Courses	3	0	0	3
2		Professional Elective Courses	3	0	0	3
3		Professional Elective Courses	3	0	0	3
4		Open Elective Courses/ Job Oriented Elective	2	0	2	3
5		Open Elective Courses/ Job Oriented Elective	2	0	2	3
6		Humanities and Social Science Elective	3	0	0	3
7		Food Safety and Quality Certification*	1	0	2	2
Summer Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester)						3
Total Credits						23
Honors/Minor			4	0	0	4

S. No.	Code	Course Title	Category	Hours per week			Credits
1		Project work, Seminar, and Internship in industry	PROJECT	0	0	0	12
	INTERNSHIP (6 MONTHS)						
Total Credits							12



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LIST OF PROFESSIONAL ELECTIVE COURSES

S. No.	Course Name	L-T-P	Credits
PROFESSIONAL ELECTIVE – 1			
1	Transport Phenomena in Food Engineering	3-0-0	3
2	Statistical Methods in Food Engineering	3-0-0	3
3	Process Modeling and Simulation	3-0-0	3
PROFESSIONAL ELECTIVE – 2			
1	Separation Techniques in Food Processing	3-0-0	3
2	Thermal Operations in Food Processing	3-0-0	3
3	Automation in Food Industry	3-0-0	3
PROFESSIONAL ELECTIVE – 3			
1	Advances in Drying and Dehydration	3-0-0	3
2	Process Kinetics in Food Engineering	3-0-0	3
3	Non-Thermal Operations in Food Processing	3-0-0	3
PROFESSIONAL ELECTIVE – 4			
1	Food Process Equipment Design	3-0-0	3
2	Sensors in Food Processing	3-0-0	3
3	New Product Development	3-0-0	3
PROFESSIONAL ELECTIVE – 5			
1	Entrepreneurship in Food Industries	3-0-0	3
2	Food Supply Chain Management	3-0-0	3
3	Food Business Management and Economics	3-0-0	3



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LIST OF OPEN ELECTIVES

S. No.	Course Name	L-T-P	Credits
OPEN ELECTIVE- 1			
1	Food Material Science and Engineering	3-0-0	3
2	Biochemical Engineering	3-0-0	3
3	Food Thermodynamics	3-0-0	3
OPEN ELECTIVE- 2			
1	Membrane Technology in Food Engineering	3-0-0	3
2	Renewable Energy Systems	3-0-0	3
3	TQM in Food Industry	3-0-0	3
OPEN ELECTIVE- 3			
1	Food Sanitation, Management and Hygiene	3-0-0	3
2	Energy Conservation and Audit	3-0-0	3
3	Food Waste Management	3-0-0	3
OPEN ELECTIVE- 4			
1	Food Refrigeration and Cold Chain	3-0-0	3
2	Food Plant Operations and Maintenance	3-0-0	3
3	ICT Applications in Food Processing	3-0-0	3
MOOCs programme will be notified by HOD at the beginning of the semester with minimum 12 weeks in duration to earn the 3 credits.			



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HONORS PROGRAM

S. No.	Course Name	L-T-P	Credits
POOL – 1			
1	Bakery and Confectionery Technology	3-1-0	4
2	Fermentation Technology	3-1-0	4
3	Fats and Oil Technology	3-1-0	4
POOL – 2			
1	Beverage Technology	3-1-0	4
2	Food Nanotechnology	3-1-0	4
3	Enzyme Technology	3-1-0	4
POOL – 3			
1	Specialty Foods: Nutraceuticals and Functional Foods	3-1-0	4
2	Food Rheology and Microstructures	3-1-0	4
3	Food Additives and Preservatives	3-1-0	4
POOL – 4			
1	Food Fortification and Technology	3-1-0	4
2	Traditional Foods	3-1-0	4
3	Future Foods	3-1-0	4
MOOCs programme will be notified by HOD at the beginning of the semester with minimum 8/12 weeks in duration to earn the 2 credits.			

Professional electives which are not studied, in any form during the program can also be selected for Honors Program



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MINOR PROGRAM GENERAL TRACK

S. No.	Subject	L-T-P	Credits
1	Food Processing Operations - I	3-1-0	4
2	Food Processing Operations - II	3-1-0	4
3	Current Trends in Food Packaging	3-1-0	4
4	Food Plant Design & Economics	3-1-0	4

MINOR PROGRAM SPECIALIZED TRACKS

S. No.	Course Name	L-T-P	Credits
TRACK 1- FOOD SCIENCE			
1	Food Nutrition	3-1-0	4
2	Food Preservation Technology	3-1-0	4
3	Food Biochemistry	3-1-0	4
4	Industrial Microbiology	3-1-0	4
TRACK 2- FOOD TECHNOLOGY			
1	Process Technology for Convenience and RTE Foods	3-1-0	4
2	Flavor Technology	3-1-0	4
3	Brewing Technology	3-1-0	4
4	Advances in Milling Technology	3-1-0	4
TRACK 3- FOOD PLANT OPERATIONS			
1	Effluent Treatment in Food Processing	3-1-0	4
2	Food Plant Maintenance	3-1-0	4
3	Energy Management in Food Industries	3-1-0	4
4	Food Plant Utilities and Services	3-1-0	4
TRACK 4 - FOOD SAFETY AND QUALITY			
1	Emerging Technologies in Food Safety and Quality	3-1-0	4
2	Food Licensing and Registration System	3-1-0	4
3	Food Safety and Quality Standards	3-1-0	4
4	Traceability and Recall in Food System	3-1-0	4
TRACK 5 – IT APPLICATIONS IN FOOD PROCESSING			
1	Computer Applications in Food Processing	3-1-0	4
2	Robotics and Computer Controlled Machines	3-1-0	4
3	Computations in Food Engineering	3-1-0	4
4	IT in Food Processing	3-1-0	4
MOOCs programme will be notified by HOD at the beginning of the semester with minimum 8/12 weeks in duration to earn the 2 credits.			