

BIRLA INSTITUTE OF TECHNOLOGY MESRA, RANCHI
Proposed Course Structure for B.Tech. Programs (2024- 25 onwards)
Based on NEP-2020, CBCS & OBE model

(Food Engineering and Technology)

Sr. No.	Semester of Study (Recommended)	Category of course	Course Code	Subjects	Mode of delivery & credits <i>L-Lecture; T-Tutorial;P-Practicals</i>			Total Credits <i>C- Credits</i>	
					L <i>(Periods/week)</i>	T <i>(Periods/week)</i>	P <i>(Periods/week)</i>	C	
THEORY									
I.1	FIRST (Monsoon)	FS <i>(Foundation Sciences)</i>	MA 24101	Mathematics - I	3	1	0	4	
I.2			PH 24101	Physics	3	1	0	4	
I.3			BE 24101	Biological Sciences for Engineers	2	0	0	2	
I.4		GE <i>(General Engineering)</i>	CS 24101	Programming for Problem Solving	3	1	0	4	
I.5			EE 24101	Basics of Electrical Engineering	2	1	0	3	
LABORATORIES									
I.6		FS	PH 24102	Physics Lab	0	0	2	1	
I.7		GE	CS 24102	Programming for Problem Solving laboratories	0	0	2	1	
I.8			EE 24102	Electrical Engineering Lab	0	0	2	1	
I.9		HSS	HU 24132	Communication Skill - I	0	0	3	1.5	
I.10	MC (Mandatory Course)	MC 24 106/107/108/109/110	Choice of : NCC/NSS/PT & Games/ Creative Arts (CA)/Entrepreneurship	0	0	2	1		
TOTAL (Theory + Labs)								22.5	
THEORY									
II.1	SECOND (Spring)	FS	MA 24103	Mathematics - II	3	1	0	4	
II.2			CH 24101	Chemistry	3	1	0	4	
II.3		GE	EC 24101	Basic Electronics	2	1	0	3	
II.4			ME 24101	Basic of Mechanical Engineering	2	1	0	3	
II.5		FS	CE 24101	Environmental Sciences	2	0	0	2	
LABORATORIES									
II.6		FS	CH 24102	Chemistry Lab	0	0	2	1	
II.7		GE	EC 24102	Basic Electronics Lab	0	0	2	1	
II.8			ME 24102	Engineering Graphics	0	0	4	2	
II.9			PE 24101	Workshop Practice	0	0	2	1	
II.10	MC	MC 24 101/102/103/104/105	Choice of : NCC/NSS/PT & Games/ Creative Arts (CA)/Entrepreneurship	0	0	2	1		
TOTAL (Theory + Labs)								22	
GRAND TOTAL FOR FIRST YEAR								44.5	

Semester of Study (Recommended)	Category of course	Course Code	Subjects	Mode of delivery & credits <i>L-Lecture; T-Tutorial; P-Practicals</i>			Total Credits <i>C- Credits</i>
				L <i>(Periods/week)</i>	T <i>(Periods/week)</i>	P <i>(Periods/week)</i>	C
THEORY							
III.1	PC	CL24201	Thermodynamics	3	1	0	4
III.2		CL24203	Fluid Mechanics	3	1	0	4
III.3		CL24205	Chemical Process Calculations	2	1	0	3
		CL24207	Heat Transfer Operations	3	1	0	4
III.5	FS	MA24201	Numerical Methods	2	0	0	2
III.6	HSS	MT24131	UHV-II: Understanding Harmony	3	0	0	3
LABORATORIES							
III.7	FS	MA24202	Numerical Methods Lab	0	0	2	1
III.8	MC	MC24 201/202/203/204/205	Choice of : NCC/NSS/PT & Games/ Creative Arts (CA)/Entrepreneurship	0	0	2	1
TOTAL (Theory + Lab)							22
THEORY							
IV.1	PC	CL24209	Mechanical Operations	3	0	0	3
IV.2		FE 24201	Principle of Food Processing and Preservation	3	0	0	3
IV.3		FE 24203	Programming Language and Data Base Management System	3	0	0	3
IV.4		FE 24205	Biochemistry and Human Nutrition	3	0	0	3
IV.5	PE		Program Elective (PE-I)	3	0	0	3
IV.6	OE	XX24xxxx/MO24201	Open Elective (OE-I)/MOOC-I	3	0	0	3
IV.7		HU24211	Indian Knowledge System				0
LABORATORIES							
IV.8	MC	MC24 205/206/207/208	Choice of : NCC/NSS/PT & Games/ Creative Arts (CA)	0	0	2	1
	PC	FE 24204	Programming Language and Data Base Management System Lab	0	0	3	1.5
IV.9	PC	FE 24206	Food Process Engineering & Technology Lab	0	0	3	1.5
TOTAL (Theory + Lab)							22
GRAND TOTAL FOR SECOND YEAR							44

		THEORY						
V.1	FIFTH (Monsoon)	PC	FE 24301	Food Microbiology	4	0	0	4
V.2			FE 24303	Food Quality Control , Laws, Standard and Regulation	4	0	0	4
V.3			FE 24305	Food Chemistry	3	0	0	3
V.4			CL 24305	Project Engineering and Economics	3	0	0	3
V.5		PE		Program Elective (PE-II)	3	0	0	3
V.6		OE	XX24xxxx/MO24301	Open Elective (OE-II)/MOOC-II	3	0	0	3
		LABORATORIES						
V.7		PC	FE 24302	Food Microbiology Lab	0	0	3	1.5
V.8			FE 24304	Food Chemistry and Quality Control Lab 1	0	0	3	1.5
V.9			FE 24300	Project-I				2
V.10	HSS	HU24133	Communication Skills - II	0	0	3	1.5	
	TOTAL (Theory + Lab)							26.5
		THEORY						
VI.1	SIXTH (Spring)	PC	CL24311	Process Control & Instrumentation	3	1	0	4
			FE 24311	Food Process Engineering	3	0	0	3
VI.2			FE 24313	Technology of Fruits, Vegetable,Spices and Plantation Crops Processing	3	0	0	3
VI.3		PE		Program Elective (PE-III)	3	0	0	3
VI.4		PE		Program Elective (PE-IV)	3	0	0	3
VI.5		OE	XX24xxxx/MO24303	Open Elective (OE-III)/MOOC-III	3	0	0	3
	LABORATORIES							
VI.6	PC	FE 24306	Food Chemistry and Quality Control Lab II	0	0	3	1.5	
VI.8		FE 24350	Project-II				2	
	TOTAL (Theory + Lab)							22.5
	GRAND TOTAL FOR THIRD YEAR							49

VII.1	SEVENTH (Monsoon)	PC	FE 24401	Cereal, Pulses and Oilseeds Processing Technology	3	0	0	3	
			FE 24403	Dairy and Animal Product Processing Technology	3	0	0	3	
VII.2		PE		Program Elective (PE-V)	3	0	0	3	
VII.3		PE		Program Elective (PE-VI)	3	0	0	3	
VII.4		OE	XX24xxxx/MO24401	Open Elective (OE-IV)/MOOC-IV	3	0	0	3	
VII.5		HSS	MT24204	Constitution of India	2	0	0	0	
		LABORATORIES							
VII.6				FE 24400	Project-III				3
VII.7				FE 24402	Food Process Engineering & Technology Lab -II	0	0	3	1.5
VII.8		PC		MC24300	Summer Training				4
	TOTAL (Theory + Lab)								23.5
VIII.1	EIGHTH (Spring)	PC	FE 24450/FE 24490	Project-IV/Industry Internship				6	
VIII.2		PC	FE 24498	Comprehensive Viva				1	
	TOTAL (Theory + Labs)								7
GRAND TOTAL FOR FOURTH YEAR								30.5	
GRAND TOTAL								168.0	

CENTRE FOR FOOD ENGINEERING AND TECHNOLOGY
PROGRAMME ELECTIVES (PE)**
OFFERED FOR LEVEL 1-4

PE / LEVEL		Code no.	Name of the PE courses	Prerequisites courses with code	L	T	P	C
2	PE 1 (IV Sem)	FE 24231	Applied Statistics for Food Engineering Technology	MA24101, MA24103	3	0	0	3
		FE 24233	Statistical Machine Learning I	MA24101, MA24103	3	0	0	3
		FE 24235	Algorithms For Big Data I	MA24101, MA24103	3	0	0	3
		FE 24237	Enterpreneurship Development	FE 24203, FE 24207	3	0	0	3
		FE 24239	Food Buiseness Management	HU 24132	3	0	0	3
		CL 24237	Waste Management	CH24101, PH24101	3	0	0	3
3	PE 2 (V Sem)	FE 24331	Regression Techniques	MA24101, MA24103	3	0	0	3
		FE 24333	Statistical Machine Learning II	FE 24233	3	0	0	3
		FE 24335	Nutraceutical & Functional Foods	FE 24203, FE 24207	3	0	0	3
		FE 24337	Food Additives & Ingredients	FE 24203, FE 24207	3	0	0	3
		CL24341	Analytical Instrumental Methods	CH24101, PH24101	3	0	0	3
3	PE 3(VI Sem)	FE 24347	Big Data Analytics	FE 24233, FE 24333	3	0	0	3
		FE 24349	Data Mining and Data Visualization	MA24101, MA24103	3	0	0	3
		FE 24351	Engineering Properties of Foods	CL 203, CL 207, FE 24203, FE 24207	3	0	0	3
		FE 24353	Food Supply Chain Management	FE 24203, FE 24207	3	0	0	3
		CL 24353	Design and Analysis of Experiments	CH24101, PH24101	3	0	0	3
3	PE 4 (VI Sem)	FE 24363	Food Packaging and Safety Management	FE 24201, FE 24203, FE 24207	3	0	0	3
		FE 24365	Modern Food Packaging Technologies and Regulatory Aspects	FE 24201, FE 24203, FE 24207	3	0	0	3
		FE 24367	Novel Techniques in Food Processing and Packging	FE 24201, FE 24203, FE 24207	3	0	0	3
		FE 24369	Food Packaging Technology	FE 24201, FE 24203, FE 24207	3	0	0	3

4	PE 5 (VII Sem)	FE 24431	Fats and Oil Processing Technology	FE 24201, FE 24203, FE 24207, FE 24305	3	0	0	3
		FE 24433	Flavor Technology	FE 24201, FE 24203, FE 24207, FE 24305	3	0	0	3
		FE 24435	Food Product Development and Consumer Science	FE 24201, FE 24203, FE 24207, FE 24305	3	0	0	3
		FE 24437	Enzyme Technology	FE 24201, FE 24203, FE 24207, FE 24305	3	0	0	3
		FE 24439	Bakery and Confectionary Technology	FE 24201, FE 24203, FE 24207, FE 24305	3	0	0	3
		CL24435	Microfluidics	CL24203	3	0	0	3
4	PE 6 (VII Sem)	FE 24423	Refrigeration and Air Conditioning Engineering	CL24201, CL 203, CL 207, FE 24203, FE 24207	3	0	0	3
		FE 24425	Biochemical Engineering	CL 203, CL 207, FE 24203, FE 24207, FE	3	0	0	3
		FE 24427	Post Harvest Engineering	CL 207, FE 24203, FE 24207, FE 24301	3	0	0	3
		FE 24421	Energy Utilization of Food Industries	CL 203, CL 207, FE 24203, FE 24207, FE 24301	3	0	0	3
		FE 24429	Food Processing Plant Engineering & Layout	CL 203, CL 207, FE 24203, FE 24207, FE 24301	3	0	0	3
		FE 24441	Food Processing Equipment Design	CL 203, CL 207, FE 24203, FE 24207, FE 24301	3	0	0	3
** PROGRAMME ELECTIVES TO BE OPTED ONLY BY THE DEPARTMENT STUDENTS								

CENTRE FOR FOOD ENGINEERING AND TECHNOLOGY
OPEN ELECTIVES (OE)*
OFFERED FOR LEVEL 1-4

OE / LEVEL	Code no.	Name of the PE courses	Prerequisites courses with code	L	T	P	C
OE1	FE 24239	Food Buiseness Management	NIL	3	0	0	3
OE2	FE 24335	Nutraceutical & Functional Foods	NIL	3	0	0	3
OE3	FE 24353	Food Supply Chain Management	NIL	3	0	0	3
OE4	FE 24435	Food Product Development and Consumer Science	NIL	3	0	0	3
* OPEN ELECTIVES TO BE OPTED ONLY BY OTHER DEPARTMENT STUDENTS							