BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI
NEWCOURSE STRUCTURE - To be effective from academic session 2018- 19
Based on CBCS & OBE model
Recommended scheme of study
(For BioEngg, Chemical, Chemical (Plastics and Polymer, Civil Mechanical & Production Engineering Branches)

Semester/ Session	Course	Category				f delivery & ure; T-Tutor Practicals		Total Credits C- Credits				
of Study (Recomended)	Level	of course	Course Code	Courses	L (Periods/ week)	T (Periods/ week)	P (Periods/ week)	С				
				THEORY		,						
		FS	MA103	Mathematics - I	3	1	0	4				
		Foundation Sciences	PH113	Physics	3	1	0	4				
	FIRST	GE General	EE101	Basics of Electrical Engineering	3	1	0	4				
		Engineering	CS101	Programming for Problem Solving	3	1	0	4				
FIRST Monsoon	LABORATORIES											
	FIRST	FS	PH114	Physics Lab	0	0	3	1.5				
		GE	CS102	Programming for Problem Solving Lab	0	0	3	1.5				
		GE	PE101	Workshop Practice	0	0	3	1.5				
		MC Mandatory Course	MC101/102/103/ 104	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1				
			тот	AL				21.5				
	THEORY											
	FIRST	FS	MA107	Mathematics - II	3	1	0	4				
		15	CH101	Chemistry	3	1	0	4				
		GE	ME101	Basics of Mechanical Engineering	3	1	0	4				
SECOND		GE.	EC101	Basics of Electronics & Communication Engineering	3	1	0	4				
Spring	LABORATORIES											
		FS	CH102	Chemistry Lab	0	0	3	1.5				
	FIRST	GE	EC102	Electronics & Communication Lab	0	0	3	1.5				
	r1K51		ME102	Engineering Graphics	0	0	4	2				
		МС	MC105/106/107/ 108	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1				
			тот	AL				22				
		0	GRAND TOTAL F	OR FIRST YEAR				43.5				

BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI NEWCOURSE STRUCTURE - To be effective from academic session 2018- 19 Based on CBCS & OBE model

(Chemical Engineering -Plastics and Polymer)

Semester/ Session	LEVEL	Category	Course Code		L-Lecti	delivery & ure; T-Tutos Practicals		Total Credits C- Credits			
of Study (Recomended)	LEVEL	of course		Courses	L (Periods/ week)	T (Periods/ week)	P (Periods/ week)	C			
			GRAND TOTAL	FOR FIRST YEAR				43.5			
				THEORY							
	SECOND	EC	MA203	Numerical Methods	2	0	0	2			
	FIRST	FS	CE101	Environmental Sciences	2	0	0	2			
	SECOND		CL201	Thermodynamics	3	1	0	4			
THIRD			CL203	Fluid Mechanics	3	0	0	3			
		PC	CL204	Chemical Process Calculations	2	1	0	3			
Monsoon			CL205	Mechanical Operations	3	0	0	3			
			CL213	Macromolecular Science	3	0	0	3			
	LABORATORIES										
	SECOND	GE	IT202	Basic IT Workshop	0	0	2	1			
		FS	MA204	Numerical Methods Lab	0	0	2	1			
		MC	IC201/202/203/20	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1			
			то	TAL	•	•		23			
				THEORY							
	SECOND	GE	IT201	Basics of Intelligent Computing	3	0	0	3			
	FIRST	FS	BE101	Biological Science for Engineers	2	0	0	2			
			CL207	Process Technology & Economics - I	3	0	0	3			
	SECOND	DC.	CL208	Heat Transfer Operations	3	1	0	4			
FOURTH	SECOND	PC	CL209	Mass Transfer Operation - I	3	0	0	3			
Spring			CL214	Polymer Technology - I	3	0	0	3			

	SECOND	OE		Open Elective (OE-I)	3	0	0	3
	SECOND	JE .		LABORATORIES		0		,
	FIDET	CE	EE102			0	2	1.5
	FIRST	GE MC	EE102	Electrical Engineering Lab Choice of: NCC/NSS/	0	0	3	1.5
	SECOND -		1C205/206/207/20	PT & Games/ Creative Arts (CA)	0	0	2	1
		PC	CL212	Chemical Engineering Lab -I	0	0	4	2
			то	OTAL				25.5
				THEORY		1		
	FIRST	HSS	MT123	Business Communications	2	0	2	3
			CL301	Mass Transfer Operation - II	3	1	0	4
		PC	CL302	Chemical Reaction Engineering-I	3	1	0	4
FIFTH	THIRD		CL312	Polymer Processing	3	0	0	3
Monsoon		PE		Program Elective (PE-I)	3	0	0	3
		OE		Open Elective (OE-II)	3	0	0	3
	LABORATORIES							
	THIRD	PC	CL304	Computer Aided Process Engineering Lab.	0	0	4	2
	THIRD	rc	CL305	Chemical Engineering Lab -II	0	0	4	2
			то	OTAL				24
				THEORY				
			CL306	Chemical Reaction Engineering - II	3	0	0	3
			CL313	Polymer Technology - II	3	0	0	3
SIXTH Spring		PC	CL308	Process Control & Instrumentation	3	0	0	3
Spring	THIRD		CL314	Elastomer Technology	3	0	0	3
		PE		Program Elective (PE-II)	3	0	0	3
		MC	MC300	Summer Training		N/A		3
				LABORATORIES				
	типъ	D.C.	CL315	Polymer Technology Lab - I	0	0	3	1.5
	THIRD	PC	CL311	Chemical Engineering Lab - III	0	0	4	2

				THEORY				
		HSS	CL406	Professional Practice, Law and Ethics	2	0	0	2
		PE		Program Elective (PE-III)	3	0	0	3
SEVENTH	FOURTH	T.E.		Program Elective (PE-IV)	3	0	0	3
Monsoon		OE		Open Elective (OE-III)/MOOC-I	3	0	0	3
				Open Elective (OE-IV)/MOOC - II	3	0	0	3
	SECOND	МС	MT204	Constitution of India	2	0	0	NC
				LABORATORIES				
	- FOURTH	D.C.	CL401	Plolymer Technology Lab - II	0	0	3	1.5
	FOURTH	PC	CL403	Plant Design	0	0	4	2
			Т	OTAL				17.5
EIGTH Spring	FOURTH PC CL 400 Research Project / Industry Internship Total						12	
		М	_	ND TOTAL ment for Degree award				167

DEPARTMENT OF CHEMICAL ENGINEERING - PLASTICS & POLYMER 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
3		CL321	Petroleum Refinery Engineering & Petrochemicals	CH101, PH101, CL209	3	0	0	3
3		CL322	Energy Engineering	CL201, CL311	3	0	0	3
3	PE 1	CL323	Pollution Control Equipment Design	CL209, CL208, CL203	3	0	0	3
3	PE I	CL324	Analytical Instrumental Methods	CH101, PH101	3	0	0	3
3		CL325	Fibre Science and Technology CH101, PH101			U	U	3
3		CL326	Environment and Plastics	CH101, PH101	3	0	0	3
3		CL327	Introduction to Microelectronics Fabrication	CH101, PH101	3	0	0	3
3	CL331		Process Modelling, Simulation & Optimization	CH101, PH101,MA103, CL210	3	0	0	3
3	PE 2	CL332	Safety & Hazards in Process Industries	CL322 ,CH 101, PH101	3	0	0	3
3	re 2	CL333	Fluid-Solid Operation	CH101 PH101,CL205, CL203	3	0	0	3
3		CL334	Reservoir Engineering	CL203	3	0	0	3
3		CL335	Biomaterials	CH101, PH101	3	0	0	3
3		CL336	Rubber Product Technology	CH101, PH101	3	0	0	3
4		CL411	Polymer Technology	CH101, PH101	3	0	0	3
4		CL412	Colloid & Interfacial Science	CH101, PH101,CL209	3	0	0	3
4	PE 3	CL413	Fundamentals of Molecular Simulation	CH101,PH101, CS101,MA117	3	0	0	3
4	PE 3	CL414	Fertilizer Technology	CH101, PH101	3	0	0	3
4		CL415	Polymer Blends and Alloys	CH101, PH101	3	0	0	3
4		CL416	Paints and Surface Coating Technology	CH101, PH101	3	0	0	3
4		CL421	Fine Chemicals	CH101, PH101	3	0	0	3
4		CL422	Polymer Composite	CH101, PH101	3	0	0	3
4	PE 4	CL423	Membrane Science & Technology	CH101, PH101, CL209, CL203	3	0	0	3
4	CL424		Microfluidics	CL203	3	0	0	3
4		CL425	Plastic Packaging Technology	CH101, PH101	3	0	0	3
DDOCDAMA	E EL ECTIVES	TO DE OPT	ED ONLY DV THE DEDARTMENT	r cylinenyrc				
PKOGRAMM	E ELECTIVES	TO BE OPT	ED ONLY BY THE DEPARTMENT	I STUDENTS			1	

DEPARTMENT OF CHEMICAL ENGINEERING - PLASTICS & POLYMER OPEN ELECTIVES (OE)* OFFERED FOR LEVEL 1-4

OE / LEVEL	Code no.	Name of the PE courses	Pre-requisites	L	Т	P	C
OE/4	CL422	Polymer Composite	Polymer Composite NIL 3 0		0	3	
OE/3	CL322	Energy Engineering	NIL	3	0	0	3
OE/4	CL421	Fine Chemicals	NIL	3	0	0	3
OE/4	CL411	Polymer Technology	NIL	3	0	0	3
OE/3	CL332	Safety & Hazards in Process Industries	NIL	3	0	0	3
OE/3	CL335	Biomaterials	NIL	3	0	0	3
OE/3	CL327	Introduction to Microelectronics Fabrication	NIL	3	0	0	3
* OPEN ELECTIV	ES TO BE OPTI	ED ONLY BY OTHER DEPARTM	IENT STUDENTS				•

NEW COURSE STRUCTURE - To be effective from academic session 2018-2019 Based on CBCS & OBE model

Recommended scheme of study for

In-depth Specialization in Process Engineering, Modelling and Optimization

Students who have registered for **B. Tech in Chemical Engineering** should complete 20 credits opting courses listed below. The credits shall be over and above minimum requirement for degree award. Courses shall be selected from single specialization area only.

Semester/Session	Course Level	Category of course	Course Code	Courses	Mode of deliv Lecture;	ery & credits T-Tutorial; P		Total Credits C - Credits
of Study (Recomended)					L	T	P	C
(Recomenacu)				ТНЕО	RY			
		DS	CL361	Multiphase flow	3	0	0	3
FIFTH	Third		CL363	Advanced Molecular Simulation	3	0	0	3
Monsoon	Time			LABORA	TORY	•		
		DS	CL364	Chemical Technology Lab	0	0	3	1.5
				TOTAL				7.5
				THEO	RY		•	
SIXTH	Third	DS	CL507	Advanced Process Modelling, Simulation & Optimization	3	0	0	3
Spring		rd	CL514	Computational Fluid Dynamics	3	0	0	3
		LABORATORY						
		DS	CL365	Energy Engineering Lab	0	0	3	1.5
				TOTAL				7.5
				THEO	RY			
SEVENTH		DS	CL614	Process Integration	3	0	0	3
Monsoon	Fourth			LABORA	TORY		_	_
		DS	CL426	Mini Project	0	0	4	2
				TOTAL				5
		Mini		AND TOTAL t for in-depth specialization award				20

NEW COURSE STRUCTURE - To be effective from academic session 2018-2019

Based on CBCS & OBE model

Recommended scheme of study for

In-depth Specialization in Polymer Processing

Students who have registered for *B. Tech in Chemical Engineering* should complete 20 credits opting courses listed below. The credits shall be over and above minimum requirement for degree award. Courses shall be selected from single specialization area only.

Semester/Session	Course Level	Category of course	Course Code	Courses	Mode of deliv Lecture;	ery & credits T-Tutorial; P	L- -Practical	Total Credits C - Credits	
of Study (Recomended)					L	T	P	C	
(Recomended)			•	THEO	RY	•			
			CL632	Polymer Physics	3	0	0	3	
FIFTH Monsoon	Third	DS	CL633	Polymer Product Manufacturing Technology	3	0	0	3	
Monsoon				LABORA	TORY				
		DS	CL374	Polymer Rheology Lab	0	0	3	1.5	
				TOTAL				7.5	
		THEORY							
SIXTH	Third	DS	CL373	Adhesive Technology	3	0	0	3	
Spring		LABORATORY							
		DS	CL375	Polymer Synthesis Lab	0	0	3	1.5	
				TOTAL				4.5	
				THEO	RY			•	
SEVENTH		DS	CL634	Polymer Rheology	3	0	0	3	
Monsoon	Fourth	DS	CL635	Die and Mould Design	3	0	0	3	
MOUSOOII	rourui			LABORA	TORY				
		DS	CL427	Mini Project	0	0	4	2	
	•	•	•	TOTAL				8	
		Mini		RAND TOTAL tt for in-depth specialization award		<u> </u>		20	

NEW COURSE STRUCTURE - To be effective from academic session 2018-2019

Based on CBCS & OBE model

Recommended scheme of study for

Minor in Chemical Engineering

(Offered ONLY to OTHER department students)

Students who have registered for *B. Tech Minor in Chemical Engineering* should complete 20 credits and shall opt for courses listed below. Courses shall be selected from single specialisation area only.

Semester/Session	Course Level	Category of course	Course Code	Courses	Mode of deliv Lecture;	ery & credits T-Tutorial; P-	L- Practical	Total Credits C - Credits		
of Study (Recomended)					L	T	P	C		
(Recomended)		THEORY								
	Second	PC	CL216	Unit Operation-I	3	0	0	3		
FIFTH		PE*	CL321	P- Datus als amicals	3	0	0	3		
Monsoon	Third		CL322	Energy Engineering	3	0	0	3		
Wollsoon				Pollution Control Equipment Design	3	0	0	3		
			•	TOTAL	-	•	•	9		
		THEORY								
SIXTH	Second	PC	CL217	Unit Operation-II	3	1	0	4		
Spring	Third	PE	CL332	Safety & Hazards in Process Industries	3	0	0	3		
				TOTAL				7		
SEVENTH				THEO	RY					
Monsoon	Second	PC	CL218	Unit Operation-III	3	1	0	4		
				TOTAL				4		
				AAND TOTAL ement for minor degree award				20		

^{*} Two courses out of three are compulsory.

NEW COURSE STRUCTURE - To be effective from academic session 2018-2019

Based on CBCS & OBE model

Recommended scheme of study for

Minor in Polymer Engineering

(Offered ONLY to OTHER department students)

Students who have registered for **B.** Tech Minor in Polymer Engineering should complete 20 credits and shall opt for courses listed below. Courses shall be selected from single specialisation area only.

Semester/Session	Course Level	Category of course	Course Code Courses		very & credits T-Tutorial; P	L- -Practical	Total Credits C - Credits				
of Study (Recomended)					L	T	P	C			
(Recomended)			THEORY								
FIFTH	Third		CL312	Polymer Processing	4	0	0	4			
Monsoon	Second	PC	CL219	Polymer Synthesis and Reaction Engineering	3	0	0	3			
	TOTAL										
SIXTH			THEORY								
Spring	Third		PE	CL335	Biomaterials	3	0	0	3		
Spring	Tilliu	1 E	CL336	Rubber Product Technology	3	0	0	3			
				TOTAL				6			
				THEO	ORY						
SEVENTH		PE	CL411	Polymer Technology	4	0	0	4			
Monsoon	Fourth		CL415	Polymer Blends and Alloys	3	0	0	3			
MOUSOOII	rourin	PE*	CL422	Polymer Composite	3	0	0	3			
			CL425	Plastic Packaging Technology	3	0	0	3			
		•	•	TOTAL	•	•		7			
				RAND TOTAL mement for minor degree award				20			

st One course out of three are compulsory.