

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 of Study (Recomended)	LEVEL	Category of course	Course Code	Courses	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
GRAND TOTAL FOR FIRST YEAR								43.5
THIRD Monsoon	THEORY							
	SECOND	FS	MA203	Numerical Methods	2	0	0	2
	FIRST		CE101	Environmental Sciences	2	0	0	2
	SECOND	PC	CL201	Thermodynamics	3	1	0	4
			CL203	Fluid Mechanics	3	0	0	3
			CL204	Chemical Process Calculations	2	1	0	3
			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	IC201/202/203/204	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
TOTAL								23
FOURTH Spring	THEORY							
	SECOND	GE	IT201	Basics of Intelligent Computing	3	0	0	3
	FIRST	FS	BE101	Biological Science for Engineers	2	0	0	2
	SECOND	PC	CL207	Process Technology & Economics - I	3	0	0	3
			CL208	Heat Transfer Operations	3	1	0	4
			CL209	Mass Transfer Operation - I	3	0	0	3
			CL214	Polymer Technology - I	3	0	0	3

	SECOND	OE		Open Elective (OE-I)	3	0	0	3
	LABORATORIES							
	FIRST	GE	EE102	Electrical Engineering Lab	0	0	3	1.5
	SECOND	MC	MC205/206/207/208	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
PC		CL212	Chemical Engineering Lab -I	0	0	4	2	
TOTAL								25.5
FIFTH Monsoon	THEORY							
	FIRST	HSS	MT123	Business Communications	2	0	2	3
	THIRD	PC	CL301	Mass Transfer Operation - II	3	1	0	4
			CL302	Chemical Reaction Engineering-I	3	1	0	4
			CL312	Polymer Processing	3	0	0	3
		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
			CL305	Chemical Engineering Lab -II	0	0	4	2
TOTAL								24
SIXTH Spring	THEORY							
	THIRD	PC	CL306	Chemical Reaction Engineering - II	3	0	0	3
			CL313	Polymer Technology - II	3	0	0	3
			CL308	Process Control & Instrumentation	3	0	0	3
			CL314	Elastomer Technology	3	0	0	3
		PE		Program Elective (PE-II)	3	0	0	3
		MC	MC300	Summer Training	N/A			3
LABORATORIES								
	THIRD	PC	CL315	Polymer Technology Lab - I	0	0	3	1.5
			CL311	Chemical Engineering Lab - III	0	0	4	2
TOTAL								21.5

	THEORY							
SEVENTH Monsoon	FOURTH	HSS	CL406	Professional Practice, Law and Ethics	2	0	0	2
		PE		Program Elective (PE-III)	3	0	0	3
				Program Elective (PE-IV)	3	0	0	3
		OE		Open Elective (OE-III)/MOOC-I	3	0	0	3
				Open Elective (OE-IV)/MOOC - II	3	0	0	3
	SECOND	MC	MT204	Constitution of India	2	0	0	NC
	LABORATORIES							
	FOURTH	PC	CL401	Polymer Technology Lab - II	0	0	3	1.5
			CL403	Plant Design	0	0	4	2
TOTAL								17.5
EIGHTH Spring	FOURTH	PC	CL 400	Research Project / Industry Internship	Total			12
GRAND TOTAL Minimum requirement 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	PE 1	CL321	Petroleum Refinery Engineering & Petrochemicals	CH101, PH101, CL209	3	0	0	3
3		CL322	Energy Engineering	CL201, CL311	3	0	0	3
3		CL323	Pollution Control Equipment Design	CL209, CL208, CL203	3	0	0	3
3		CL324	Analytical Instrumental Methods	CH101, PH101	3	0	0	3
3		CL325	Fibre Science and Technology	CH101, PH101				
3		CL326	Environment and Plastics	CH101, PH101	3	0	0	3
3		CL327	Introduction to Microelectronics Fabrication	CH101, PH101	3	0	0	3
3	PE 2	CL331	Process Modelling, Simulation & Optimization	CH101, PH101, MA103, CL210	3	0	0	3
3		CL332	Safety & Hazards in Process Industries	CL322, CH 101, PH101	3	0	0	3
3		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	PE 3	CL412	Colloid & Interfacial Science	CH101, PH101, CL209	3	0	0	3
4		CL413	Fundamentals of Molecular Simulation	CH101, PH101, CS101, MA117	3	0	0	3
4		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
** PROGRAMME ELECTIVES TO BE OPTED ONLY BY THE DEPARTMENT STUDENTS								

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	T	P	C
OE/4	CL422	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 ELECTIVES TO BE OPTED ONLY BY OTHER DEPARTMENT STUDENTS**

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 of Study (Recommended)	Course Level	Category of course	Course Code	Courses	Mode of delivery & credits L- Lecture; T-Tutorial; P-Practical			Total Credits C - Credits
					L	T	P	
			THEORY					
FIFTH Monsoon	Third	DS	CL361	Multiphase flow	3	0	0	3
			CL363	Advanced Molecular Simulation	3	0	0	3
		LABORATORY						
		DS	CL364	Chemical Technology Lab	0	0	3	1.5
TOTAL								7.5
SIXTH Spring		THEORY						
	Third	DS	CL507	Advanced Process Modelling, Simulation & Optimization	3	0	0	3
			CL514	Computational Fluid Dynamics	3	0	0	3
		LABORATORY						
	DS	CL365	Energy Engineering Lab	0	0	3	1.5	
TOTAL								7.5
SEVENTH Monsoon		THEORY						
	Fourth	DS	CL614	Process Integration	3	0	0	3
		LABORATORY						
		DS	CL426	Mini Project	0	0	4	2
TOTAL								5
GRAND TOTAL								20
Minimum requirement for in-depth specialization award								

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 of Study (Recommended)	Course Level	Category of course	Course Code	Courses	Mode of delivery & credits L- Lecture; T-Tutorial; P-Practical			Total Credits C - Credits	
					L	T	P		
		THEORY							
FIFTH Monsoon	Third	DS	CL632	Polymer Physics	3	0	0	3	
			CL633	Polymer Product Manufacturing Technology	3	0	0	3	
		LABORATORY							
		DS	CL374	Polymer Rheology Lab	0	0	3	1.5	
TOTAL								7.5	
SIXTH Spring	Third	THEORY							
		DS	CL373	Adhesive Technology	3	0	0	3	
		LABORATORY							
		DS	CL375	Polymer Synthesis Lab	0	0	3	1.5	
TOTAL								4.5	
SEVENTH Monsoon	Fourth	THEORY							
		DS	CL634	Polymer Rheology	3	0	0	3	
			CL635	Die and Mould Design	3	0	0	3	
		LABORATORY							
		DS	CL427	Mini Project	0	0	4	2	
TOTAL								8	
GRAND TOTAL								20	
Minimum requirement for in-depth specialization award									

BIRLA INSTITUTE OF TECHNOLOGY - MESRA, RANCHI
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 of Study (Recommended)	Course Level	Category of course	Course Code	Courses	Mode of delivery & credits Lecture; T-Tutorial; P-Practical			Total Credits C - Credits
					L	T	P	
				THEORY				
FIFTH Monsoon	Second	PC	CL216	Unit Operation-I	3	0	0	3
	Third	PE*	CL321	Petroleum Refinery Engineering & Petrochemicals	3	0	0	3
			CL322	Energy Engineering	3	0	0	3
			CL323	Pollution Control Equipment Design	3	0	0	3
TOTAL								9
SIXTH Spring		THEORY						
	Second	PC	CL217	Unit Operation-II	3	1	0	4
	Third	PE	CL332	Safety & Hazards in Process Industries	3	0	0	3
TOTAL								7
SEVENTH Monsoon		THEORY						
	Second	PC	CL218	Unit Operation-III	3	1	0	4
TOTAL								4
GRAND TOTAL								20
Minimum requirement for minor degree award								

* Two courses out of three are compulsory.

BIRLA INSTITUTE OF TECHNOLOGY - MESRA, RANCHI
NEW COURSE STRUCTURE - To be effective from academic session 2018-2019
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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 of Study (Recommended)	Course Level	Category of course	Course Code	Courses	Mode of delivery & credits L- Lecture; T-Tutorial; P-Practical			Total Credits C - Credits
					L	T	P	
			THEORY					
FIFTH Monsoon	Third	PC	CL312	Polymer Processing	4	0	0	4
	Second		CL219	Polymer Synthesis and Reaction Engineering	3	0	0	3
TOTAL								7
SIXTH Spring		THEORY						
	Third	PE	CL335	Biomaterials	3	0	0	3
			CL336	Rubber Product Technology	3	0	0	3
TOTAL								6
SEVENTH Monsoon		THEORY						
	Fourth	PE	CL411	Polymer Technology	4	0	0	4
		PE*	CL415	Polymer Blends and Alloys	3	0	0	3
			CL422	Polymer Composite	3	0	0	3
			CL425	Plastic Packaging Technology	3	0	0	3
TOTAL								7
GRAND TOTAL								20
Minimum requirement for minor degree award								

* One course out of three are compulsory.