SEMESTER WISE COURSE STRUCTURE
& EVALUATION SCHEME

for

B. TECH. DEGREE PROGRAMME

IN

CHEMICAL TECHNOLOGY
PLASTIC TECHNOLOGY

(Effective from the session 2019-20)

DEPARTMENT OF PLASTIC TECHNOLOGY
SCHOOL OF CHEMICAL TECHNOLOGY
HARCOURT BUTLER TECHNICAL UNIVERSITY
KANPUR-208002
UTTAR PRADESH

Department of Chemical Technology-Plastic Technology

Vision

"The department of chemical technology-plastic technology aspires to achieve excellence in technical knowledge and skill, research and innovation in Plastics and Allied areas"

Mission

The mission of the Department of Chemical Technology- Plastic Technology are:

- **M1 :** To develop state-of-the-art facilities to impart technical knowledge and skill to the graduate & post graduate students for plastic and allied industries and research organizations
- **M2 :** To be a center of research and innovation for betterment of society in sustainable manner.
- **M3 :** To develop state-of-the-art technologies for testing and consultancy for industry and society.
- **M4 :** To cultivate strong ethical values to be a successful professionals and to become life-long learners.

Program Educational Objectives (PEOs)

The Program Educational Objectives (PEOs) of B.Tech. Chemical Technology-Plastic Technology program are:

PEO1 : Graduates will be technically competent in the field of polymers, resins, processing and allied areas to cater the need of country.

PEO2 : Graduates will be able to innovate in designs, production of materials and processes for sustainable development of society.

PEO3 : Graduates will serve the industry to meet the challenges in terms of quality assurance and standardization to with stand the global competiveness.

PEO4 : Graduates will discharge duties with professional attitudes and ethics.

Program Specific Outcomes:

PSO1 : to apply practical skills, technical knowledge in major streams such as chemistry, manufacturing, processing, and applications areas of engineering and technology in plastic and allied industries

PSO2 : to take-up career in research organizations or to pursue higher studies in plastic technology and interdisciplinary programs with high regard for ethical values, environmental and social issues.

SEMESTER WISE COURSE STRUCTURE & EVALUATION SCHEME

B. TECH. CHEMICAL TECHNOLOGY- PLASTIC TECHNOLOGY

Semester-I

Sl. No.	Course Type	Course Title	Subject Code	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab.	Total		
1	BSC	Engineering Chemistry	BCY 151	4	3	0	2	15	20	15	50	50	100
2	BSC	Mathematics I	BMA 151	4	3	1	0	30	20	-	50	50	100
3	ESC	Electronics & Instrumentation Engineering	EET 151	3	3	0	0	30	20	-	50	50	100
4	ESC	Engineering Graphics	ECE 151	3	0	0	6	30	20	-	50	50	100
5	ESC	Computer Concepts & Programming	ECS 151	4	3	0	2	15	20	15	50	50	100
6	ESC	Workshop Practice	EWS 151	2	0	0	4	--	20	30	50	50	100
7	MC (Non Credit)	Environment & Ecology	ECE 153	0	2	0	0	30	20	-	50	50	100*
		Total Credits 20											**600**

*** 100 Marks will not be added as the course in non-Credit.**

Semester-II

Sl. No.	Course Type	Course Title	Subject Code	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	BSC	Physics	BPH 152	4	3	0	2	15	20	15	50	50	100
2	BSC	Mathematics II	BMA 152	4	3	1	0	30	20	-	50	50	100
3	ESC	Electrical Engineering	EEE 152	4	3	0	2	15	20	15	50	50	100
4	ESC	Engineering Mechanics	EME 152	3	3	0	0	30	20	-	50	50	100
5	HSMC	English Language & Composition	HHS 152	2	2	0	0	30	20	-	50	50	100
6	HSMC	Professional Communication	HHS 154	3	2	0	2	15	20	15	50	50	100
		Total Credits 20											**600**

Semester-III

Sl. No.	Course Type	Course Title	Subject Code	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	BSC	Mathematics III	BMA 251	4	3	1	0	30	20	-	50	50	100
2	PCC	Polymer Chemistry	TPL 251	4	3	1	0	30	20	-	50	50	100
3	PCC	Polymer Chemistry Lab	TPL 253	2	0	0	4	-	20	30	50	50	100
4	ESC	Fluid Mechanics and Mechanical operation	TPL 255	5	3	1	2	15	20	15	50	50	100
5	PCC	Materials & Energy Balance	TPL 257	4	3	1	0	30	20	-	50	50	100
	HSMC	Organizational Behaviour	HHS 253	3	3	0	0	30	20	-	50	50	100
7	MC (Non Credit)	Cyber Security	ECS 255	0	2	0	0	30	20	-	50	50	100*
	Total Credits 22												**600**

Semester IV

Sl. No.	Course Type	Course Title	Subject Code	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	BSC	Modern Analytical Techniques	BCY 252	4	3	0	2	15	20	15	50	50	100
2	ESC	Computer Oriented Numerical Methods	BMA 252	4	2	1	2	15	20	15	50	50	100
3	PCC	Polymerization Engineering I	TPL 252	5	3	1	2	15	20	15	50	50	100
4	PCC	Heat Transfer Operations	TPL 254	3	2	1	0	30	20	-	50	50	100
5	PCC	Chemical Engineering Thermodynamics	TPL 256	3	2	1	0	30	20	-	50	50	100
6	HSMC	Engg Economics & Management	HHS 252	3	3	0	0	30	20	-	50	50	100
7	MC (Non Credit)	Indian Constitution	HHS 256	0	2	0	0	30	20	-	50	50	100*
	Total Credits 22												**600**

Semester-V

Sl. No.	Course Type	Course Title	Subject Code	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	PCC	Polymer Processing I	TPL 351	5	3	1	2	15	20	15	50	50	100
2	PCC	Rheology and Testing of Polymers	TPL 353	4	3	1	0	30	20	-	50	50	100
3	PCC	Polymer Testing Lab	TPL 355	2	0	0	4	-	20	30	50	50	100
4	PCC	Mass Transfer Operations	TPL 357	4	3	1	0	30	20	-	50	50	100
5	PCC	Chemical Reaction Engineering	TPL 359	4	3	1	0	30	20	-	50	50	100
6	OEC (Humanities)	Open Elective Course -I	HHS 341	3	3	0	0	30	20	-	50	50	100
	Total Credits 22												**600**

Semester-VI

Sl. No.	Course Type	Course Title	Subject Code	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab.	Total		
1	PCC	Polymer Processing II	TPL 352	3	2	0	2	15	20	15	50	50	100
2	PCC	Structure & Property of Polymers	TPL 354	3	2	1	0	30	20	-	50	50	100
3	PCC	Polymerization Engineering II	TPL 356	4	3	0	2	15	20	15	50	50	100
4	PCC	Plastic Product and Mold Design	TPL 358	3	2	1	0	30	20	0	50	50	100
5	PCC	Polymer Composite	TPL 360	3	3	0	0	30	20	0	50	50	100
6	PCC	Instrumentation & Process Control	TPL 362	3	2	1	0	30	20	-	-	50	100
7	OEC (Maths)	Open Elective Course -II	BMA 342	3	3	0	0	30	20	-	50	50	100
		Total Credits 22											**700**

Semester-VII

Sl. No.	Course Type	Course Title	Subject Code	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	ESE	TA	Lab	Total		
1	PCC	Technology Of Elastomers	TPL 451	2	2	0	0	30	20	-	50	50	100
2	PCC	Advanced Polymeric Materials	TPL 453	3	2	0	2	15	20	15	50	50	100
3	PEC	Programme Elective Course I (Polymer Blends & Alloys OR Plastic Product Technology)	TPL 455 OR TPL 457	3	3	0	0	30	20	-	50	50	100
4	PEC	Programme Elective Course II (Polymer Adhesives and Foams OR Polymer Nanocomposite)	TPL 459 OR TPL 461	3	3	0	0	30	20	-	50	50	100
5	OEC (Plastic Tech.)	Open Elective Course -III (Introduction to Polymer Science)	TPL 491	3	3	0	0	30	20	-	50	50	100
6		Industrial Training	TPL 493	2	0	0	4	-	50	-	50	50	100
7		Seminar	TPL 495	2	0	0	4	-	50	-	50	50	100
8		Project	TPL 497	4	0	0	8	-	50	-	50	50	100
	Total Credits 22												**800**

Semester-VIII

Sl. No.	Course Type	Course Title	Subject Code	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	PEC	*Programme Elective Course III (Plastic Packaging & Waste Management OR Polymer Coating Technology)	TPL 452 OR TPL 454	4	3	1	0	30	20	-	50	50	100
2	PEC	*Programme Elective Course IV (Process Modeling & Simulation Or Computer aided Equipment Design)	TPL 456 OR TPL 458	4	3	1	0	30	20	-	50	50	100
3	OEC (Plastic Tech.)	*Open Elective Course –IV (Basics of Polymer Processing)	TPL 492	4	3	1	0	30	20	-	50	50	100
4		Project	TPL 498	10	0	0	20	-	50	-	50	50	100
		Total Credits 22											**400**

*** Online Courses**

List of Programme Elective Courses

S. No.	PEC Names	Subject Name	Subject Code	C (L-T-P)
1.	Programme Elective Course I	Polymer Blends & Alloys	TPL 455	3 (3-0-0)
		Polymer Product Technology	TPL 457	
2.	Programme Elective Course II	Polymeric Adhesives & Foams	TPL 459	3 (3-0-0)
		Polymer Nanocomposites	TPL 461	
3.	Programme Elective Course III	Plastic Packaging & Waste Management	TPL 452	4 (3-1-0)
		Polymer Coating Technology	TPL 454	
4.	Programme Elective Course IV	Process Modeling & Simulation	TPL 456	4 (3-1-0)
		Computer Aided Equipment Design	TPL 458	

List of Open Elective Courses

S. No.	OEC Names	Subject Name	Subject Code	C (L-T-P)
1.	Open Elective Course II (Humanities)	Entrepreneurship Development	HHS 341	3 (3-0-0)
2.	Open Elective Course II (Maths)	Operations Research	BMA 342	3 (3-0-0)
3.	Open Elective Course III (Plastic Technology)	Introduction to Polymer Science	TPL 491	3 (3-0-0)
4.	Open Elective Course IV (Plastic Tech.)	Basics of Polymer Processing	TPL 492	4 (3-1-0)