



## 2023 Batch Onwards

### Scheme of Courses for B.Tech. Chemical Engineering (3<sup>rd</sup> to 8<sup>th</sup> Semester)

**Table1: Overall credits for B. Tech and B. Tech Honours**

Programme	Credits	
	B-tech	B-tech (Honours)
1 <sup>st</sup> and 2 <sup>nd</sup> Sem.	42	42
3 <sup>rd</sup> to 8 <sup>th</sup> Sem.	118	138
<b>Total Credits</b>	<b>160</b>	<b>180</b>

**Table2: B. Tech courses credit distribution (3<sup>rd</sup> to 8<sup>th</sup> semester)**

S.No		No. of Courses	No. of Credits
1.	<b>Core Courses</b>	28 (19 theory + 9 labs)	66 (57 + 9)
2.	<b>Professional Electives</b>	8	24
3.	<b>Open Electives</b>	2	6
4.	<b>B. Tech Honours</b>	8 (6 theory + 2 labs)	20 (18 + 2)
5.	<b>Pre Project</b>	1	2
6.	<b>Project</b>	1	6
7.	<b>Seminar</b>	1	1
8.	<b>ITP</b>	1	1
9.	<b>Humanities</b>	2	6
10.	<b>Basic Science</b>	2	6

3 <sup>rd</sup> Semester						
S.No.	Course No.	Subjects	L	T	P	Credits
1.	CET-201	Chemical Process Calculations	2	1	0	3
2.	CET-202	Process Fluid Mechanics	2	1	0	3
3.	CET-203	Mechanical Operations	2	1	0	3
4.	CET-204	Process Instrumentation	2	1	0	3
5.	CET-205	Chemical Engineering Thermodynamics-I	2	1	0	3
6.	HST-201	Engineering Ethics	2	1	0	3
7.	MAT-201	Numerical Methods	2	1	0	3
8.	CEL-201	Mechanical Operations Laboratory	0	0	2	1
<b>Total</b>			<b>14</b>	<b>7</b>	<b>2</b>	<b>22</b>
4 <sup>th</sup> Semester						
S.No.	Course No.	Subjects	L	T	P	Credits
1.	CET-250	Chemical Reaction Engineering-I	2	1	0	3
2.	CET-251	Chemical Engineering Thermodynamics-II	2	1	0	3
3.	CET-252	Heat Transfer	2	1	0	3
4.	CET-253	Chemical Process Technology	2	1	0	3
5.	MAT-250	Chemical Engineering Mathematics	2	1	0	3
6.	HST-250	Engineering Economics and Management	2	1	0	3
7.	CEL-250	Energy Technology Laboratory	0	0	2	1
8.	CEL-251	Fluid Mechanics Laboratory	0	0	2	1
<b>Total</b>			<b>12</b>	<b>6</b>	<b>4</b>	<b>20</b>
5 <sup>th</sup> Semester						
S.No.	Course No.	Subjects	L	T	P	Credits
1.	CET-306	Process Equipment Design-I	2	1	0	3
2.	CET-307	Chemical Reaction Engineering-II	2	1	0	3
3.	CET-308	Mass Transfer -I	2	1	0	3
4.	CET-309	Biochemical Engineering	2	1	0	3
5.		Elective-I	2	1	0	3
6.		Institute Open Elective-I	2	1	0	3
7.	CEL-302	Heat Transfer Laboratory	0	0	2	1
8.	CEL-303	Computer Simulation Laboratory	0	0	2	1
<b>Total</b>			<b>12</b>	<b>6</b>	<b>4</b>	<b>20</b>
B. Tech Honours Elective-I						
9.	MAT-029	Applied Mathematics for Chemical Engineers	2	1	0	3
<b>Total</b>			<b>14</b>	<b>7</b>	<b>4</b>	<b>23</b>
6 <sup>th</sup> Semester						
S.No.	Course No.	Subjects	L	T	P	Credits
1.	CET-354	Process Equipment Design-II	2	1	0	3
2.	CET-355	Chemical Process Safety	2	1	0	3
3.	CET-356	Process Dynamics and Control	2	1	0	3
4.	CET-357	Mass Transfer -II	2	1	0	3
5.		Elective-II	2	1	0	3
6.		Institute Open Elective-II	2	1	0	3
7.	CEL-352	Chemical Reaction Engineering Laboratory	0	0	2	1
8.	CEL-353	Mass Transfer Laboratory	0	0	2	1
9.	CEI-350	Industrial/Research Training and Presentation	0	0	2	1
10.	CES-350	Seminar	0	0	2	1

			<b>Total</b>	<b>12</b>	<b>6</b>	<b>8</b>	<b>22</b>
<b>B. Tech Honours Elective-II</b>							
11.	CET-030	Membrane Science and Engineering	2	1	0	3	
			<b>Total</b>	<b>14</b>	<b>7</b>	<b>8</b>	<b>25</b>
<b>7<sup>th</sup> Semester</b>							
<b>S. No.</b>		<b>Subjects</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>	
1.	CEP-401	Pre-project work	0	0	4	2	
2.	CET-410	Transport Phenomena	2	1	0	3	
3.	CET-411	Process Economics and Plant Design	2	1	0	3	
4.		Elective-III	2	1	0	3	
5.		Elective-IV	2	1	0	3	
6.		Elective-V	2	1	0	3	
7.	CEL-404	Process Dynamics and Control Laboratory	0	0	2	1	
8.	CEL-405	Biochemical Engineering Laboratory	0	0	2	1	
			<b>Total</b>	<b>10</b>	<b>5</b>	<b>8</b>	<b>19</b>
<b>B. Tech Honours Elective-III</b>							
10.	CET-031	Risk Analysis and Hazards	2	1	0	3	
<b>B. Tech Honours Elective-IV</b>							
11.	HST-032	Innovation Management	2	1	0	3	
			<b>Total</b>	<b>14</b>	<b>7</b>	<b>8</b>	<b>25</b>
<b>8<sup>th</sup> Semester</b>							
<b>S. No.</b>		<b>Subjects</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>	
1.	CEP-450	Project Work	0	0	12	6	
2.		Elective- VI	2	1	0	3	
3.		Elective- VII	2	1	0	3	
4.		Elective - VIII	2	1	0	3	
			<b>Total</b>	<b>6</b>	<b>3</b>	<b>12</b>	<b>15</b>
<b>B. Tech Honours Elective-V</b>							
5.	CET-033	Multi-Component Distillation	2	1	0	3	
<b>B. Tech Honours Elective-VI</b>							
6.	CET-034	Heterogeneous Catalysis	2	1	0	3	
<b>B. Tech Honours Elective-VII</b>							
7.	CEL-035	Advanced Computational Laboratory	0	0	2	1	
<b>B. Tech Honours Elective-VIII</b>							
8.	CEL-036	Instrumentation Laboratory	0	0	2	1	
			<b>Total</b>	<b>10</b>	<b>5</b>	<b>16</b>	<b>23</b>
			<b>Total Credits</b>	<b>118 (138)</b>			

## ELECTIVE COURSES

Course. No.	5th Semester Elective Courses	L	T	P	Credit
MAT-001	Operation Research	2	1	0	3
CET-002	Material Science and Technology	2	1	0	3
CET-003	Cement Technology	2	1	0	3
CET-004	Swayam Online Course1				3
CET-005	Swayam Online Course2				3
Course. No.	Institute Open Elective-I (5 <sup>th</sup> Semester)	L	T	P	Credit
CET B1 901	Energy Technology	2	1	0	3
CET B2 902	Membrane Science and Engineering	2	1	0	3
Course. No.	6 <sup>th</sup> Semester Elective Courses	L	T	P	Credit
CET-008	Industrial Pollution Abatement	2	1	0	3
CET-009	Instrumental Methods of Analysis	2	1	0	3
CET-010	Clean Technology in Process Industries	2	1	0	3
CET-011	Swayam Online Course1				3
CET-012	Swayam Online Course2				3
Course. No.	Institute Open Elective-II (6 <sup>th</sup> Semester)	L	T	P	Credit
CET B1 951	Petroleum Refining	2	1	0	3
CET B2 952	Waste Management	2	1	0	3
Course. No.	7 <sup>th</sup> Semester Elective Courses	L	T	P	Credit
CET-015	Nano-Science and Technology	2	1	0	3
CET-016	Microfluidics	2	1	0	3
CET-017	Advanced Separation Processes	2	1	0	3
CET-018	Process Heat Integration	2	1	0	3
CET-019	Polymer Science and Engineering	2	1	0	3
CET-020	Energy Technology	2	1	0	3
CET-021	Swayam Online Course				3
Course. No.	8 <sup>th</sup> Semester Elective Courses	L	T	P	Credit
CET-022	Environmental Engineering	2	1	0	3
CET-023	Computational Fluid Dynamics	2	1	0	3
CET-024	Modeling and Simulation of Chemical Process Systems	2	1	0	3
CET-025	Bioresource Technology	2	1	0	3
CET-026	Fuel Cell Technology	2	1	0	3
CET-027	Petroleum Refining	2	1	0	3
CET-028	Swayam Online Course				3

Nomenclature

CE	Chemical Engineering subject
MA	Mathematics Department subject
HS	Humanities and Social Sciences Department subject
T	Theory
L	Lab course
P	Project/Dissertation
S	Seminar
I	Industrial Training & Presentation

- The first numeral indicates the year of the course, except for elective courses, which are assigned a '0' (zero).
- The second and third numerals represent the unique course number for even semester courses, starting from 01 to 49, and odd semester courses, starting from 50 to 99.
- Online courses, such as those on SWAYAM/NPTEL, will be offered before the start of the semester and will be managed by a faculty mentor.