### Chemical Engineering Department: Implemented for Batch 2023 and onwards Total Required Credits: Minimum = 160 (1st + 2nd Semester = 42)

Semester	Course-1	Course-2	Course-3	Course-4	Course-5	Course-6	Course-7	Course-8	Course-9	Course-10	Course-11	Total Credits
III	Chemical Process Calculations	Process Fluid Mechanics	Mechanical Operations	Process Instrumentation	Chemical Engineering Thermodynamics-I	Engineering Ethics	Numerical Methods	Mechanical Operations Laboratory				
""	3	3	3	3	3	3	3	1				22
	CET-201	CET-202	CET-203	CET-204	CET-205	HST-201	MAT-201	CEL-201				
IV	Chemical Reaction Engineering-I	Chemical Engineering Thermodynamics-II	Heat Transfer	Chemical Process Technology	Chemical Engineering Mathematics	Engineering Economics and Management	Energy Technology Laboratory	Fluid Mechanics Laboratory				
	3	3	3	3	3	3	1	1				20
	CET-250	CET-251	CET-252	CET-253	MAT-250	HST-250	CEL-250	CEL-251				
v	Process Equipment Design-I	Chemical Reaction Engineering-II	Mass Transfer-I	Biochemical Engineering	Elective-I	Institute Open Elective-I	Heat Transfer Laboratory	Computer Simulation Laboratory				
'	3	3	3	3	3	3	1	1				20
	CET-306	CET-307	CET-308	CET-309		CET-0##	CEL-302	CEL-303				
VI	Process Equipment Design-II	Chemical Process Safety	Process Dynamics and Control	Mass Transfer-II	Elective-II	Institute Open Elective-II	Chemical Reaction Engineering Laboratory	Mass Transfer Laboratory	Industrial / Research Training and Presentation	Seminar		
	3	3	3	3	3	3	1	1	1	1		22
	CET-354	CET-355	CET-356	CET-357	CET-0##	CET-0##	CEL-352	CEL-353	CEI-350	CES-350		
VII	Transport Phenomena	Process Economics and Plant Design	Elective-III	Elective-IV	Elective-V	Process Dynamics and Control Laboratory	Biochemical Engineering Laboratory	Pre-Project Work				
	3	3	3	3	3	1	1	2				19
	CET-410	CET-411	CET-0##	CET-0##	CET-0##	CEL-404	CEL-405	CEP-401				
VIII	Elective-VI	Elective-VII	Elective-VIII	Project Work								
VIII	3	3	3	6								15
	CET-0##	CET-0##	CET-0##	CEP-450								
												160

### Chemical Engineering Department: Implemented for Batch 2023 and onwards Total Required Credits: Minimum = 180 (1st + 2nd Semester = 42)

Semester	Course-1	Course-2	Course-3	Course-4	Course-5	Course-6	Course-7	Course-8	Course-9	Course-10	Course-11	Total Credits
	Chemical Process Calculations	Process Fluid Mechanics	Mechanical Operations	Process Instrumentation	Chemical Engineering Thermodynamics-I	Engineering Ethics	Numerical Methods	Mechanical Operations Laboratory				
III	3	3	3	3	3	3	3	1				22
	CET-201	CET-202	CET-203	CET-204	CET-205	HST-201	MAT-201	CEL-201				
IV	Chemical Reaction Engineering-I	Chemical Engineering Thermodynamics-II	Heat Transfer	Chemical Process Technology	Chemical Engineering Mathematics	Engineering Economics and Management	Energy Technology Laboratory	Fluid Mechanics Laboratory				
	3	3	3	3	3	3	1	1				20
	CET-250	CET-251	CET-252	CET-253	MAT-250	HST-250	CEL-250	CEL-251				
	Process Equipment Design-I	Chemical Reaction Engineering-II	Mass Transfer-I	Biochemical Engineering	Elective-I	Institute Open Elective-I	Heat Transfer Laboratory	Computer Simulation Laboratory	Honors Elective-I			
V	3	3	3	3	3	3	1	1	3			23
	CET-306	CET-307	CET-308	CET-309		CET-0##	CEL-302	CEL-303	MAT-029			
	Process Equipment Design-II	Chemical Process Safety	Process Dynamics and Control	Mass Transfer-II	Elective-II	Institute Open Elective-II	Chemical Reaction Engineering Laboratory	Mass Transfer Laboratory	Industrial / Research Training and Presentation	Seminar	Honors Elective-II	
VI	3	3	3	3	3	3	1	1	1	1	3	25
	CET-354	CET-355	CET-356	CET-357	CET-0##	CET-0##	CEL-352	CEL-353	CEI-350	CES-350	CET-030	
	Transport Phenomena	Process Economics and Plant Design	Elective-III	Elective-IV	Elective-V	Process Dynamics and Control Laboratory	Biochemical Engineering Laboratory	Pre-Project Work	Honors Elective-III	Honors Elective-IV		
VII	3	3	3	3	3	1	1	2	3	3		25
	CET-410	CET-411	CET-0##	CET-0##	CET-0##	CEL-404	CEL-405	CEP-401	CET-031	HST-032		
****	Elective-VI	Elective-VII	Elective-VIII	Project Work	Honors Elective-V	Honors Elective-VI	Honors Elective-VII	Honors Elective-VIII				
VIII	3	3	3	6	3	3	1	1				23
	CET-0##	CET-0##	CET-0##	CEP-450	CET-033	CET-034	CET-035	CET-036				
												180

## **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

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

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.	Core Courses	28	66
		(19  theory + 9  labs)	(57 + 9)
2.	<b>Professional Electives</b>	8	24
3.	Open Electives	2	6
4.	B. Tech Honours	8	20
		(6  theory + 2  labs)	(18 + 2)
5.	Pre Project	1	2
6.	Project	1	6
7.	Seminar	1	1
8.	ITP	1	1
9.	Humanities	2	6
10.	Basic Science	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
		Total	14	7	2	22
	T	4 <sup>th</sup> Semester			1	T
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
		Total	12	6	4	20
		5 <sup>th</sup> Semester	1		1	1
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.	CEL 202	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 4	1
		B. Tech Honours Elective-I	12	6	4	20
9.	MAT-029	Applied Mathematics for Chemical Engineers	2	1	0	3
<i></i>	11111 025	Total		7	4	23
		6 <sup>th</sup> Semester				
					Ъ	Credits
S.No.	Course No.	Subjects	T.	$\mathbf{T}$	P	
<b>S.No.</b>	Course No.	Subjects Process Equipment Design-II	L 2	T 1	<b>P</b> 0	
1.	CET-354	Process Equipment Design-II	2	1	0	3
1. 2.	CET-354 CET-355	Process Equipment Design-II Chemical Process Safety	2 2	1	0	3
1. 2. 3.	CET-354 CET-355 CET-356	Process Equipment Design-II Chemical Process Safety Process Dynamics and Control	2 2 2	1	0 0 0	3 3 3
1. 2. 3. 4.	CET-354 CET-355	Process Equipment Design-II Chemical Process Safety Process Dynamics and Control Mass Transfer -II	2 2	1 1 1	0	3 3 3
1. 2. 3. 4. 5.	CET-354 CET-355 CET-356	Process Equipment Design-II Chemical Process Safety Process Dynamics and Control Mass Transfer -II Elective-II	2 2 2 2 2	1 1 1	0 0 0 0	3 3 3 3
1. 2. 3. 4. 5. 6.	CET-354 CET-355 CET-356 CET-357	Process Equipment Design-II Chemical Process Safety Process Dynamics and Control Mass Transfer -II Elective-II Institute Open Elective-II	2 2 2 2	1 1 1 1	0 0 0 0	3 3 3
1. 2. 3. 4. 5.	CET-354 CET-355 CET-356	Process Equipment Design-II Chemical Process Safety Process Dynamics and Control Mass Transfer -II Elective-II Institute Open Elective-II Chemical Reaction Engineering Laboratory	2 2 2 2 2 2 2	1 1 1 1 1	0 0 0 0 0	3 3 3 3 3 3
1. 2. 3. 4. 5. 6. 7.	CET-354 CET-355 CET-356 CET-357	Process Equipment Design-II Chemical Process Safety Process Dynamics and Control Mass Transfer -II Elective-II Institute Open Elective-II	2 2 2 2 2 2 2 0	1 1 1 1 1 1 0	0 0 0 0 0 0 0	3 3 3 3 3 1

			Total	12	6	8	22
		B. Tech Honours Elective-II		I	ı		
11.	CET-030	Membrane Science and Engineering		2	1	0	3
	•		Total	14	7	8	25
		7 <sup>th</sup> Semester					
S. No.		Subjects		L	T	P	Credits
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
	•		Total	10	5	8	19
		B. Tech Honours Elective-III			•		
10.	CET-031	Risk Analysis and Hazards		2	1	0	3
		B. Tech Honours Elective-IV			•		
11.	HST-032	Innovation Management		2	1	0	3
	•		Total	14	7	8	25
		8 <sup>th</sup> Semester					
S. No.		Subjects		L	T	P	Credits
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
	•		Total	6	3	12	15
		B. Tech Honours Elective-V					
5.	CET-033	Multi-Component Distillation		2	1	0	3
	•	B. Tech Honours Elective-VI					
6.	CET-034	Heterogeneous Catalysis		2	1	0	3
	-	B. Tech Honours Elective-VII					
7.	CEL-035	Advanced Computational Laboratory		0	0	2	1
	-	B. Tech Honours Elective-VIII					
8.	CEL-036	Instrumentation Laboratory		0	0	2	1
	•		Total	10	5	16	23
	Total Credits						18 (138)

### **ELECTIVE COURSES**

	ELECTIVE COURSES		1	1	
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 (5th 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 (6th 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	2	1	0	3
	Process Systems				
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.