



MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(Deemed University)
(Declared Under Distinct Category by Ministry of Education, Government of India)



NAAC Accredited with A++ Grade

Department of Chemical Engineering

Semester-Wise General Scheme Structure & Important Guidelines for Flexible Curriculum

(Batch admitted in Academic Session 2024-25 onwards)

Abbreviations Used

L	Lecture
T	Tutorial
P	Practical
HSMC	Humanities and Social Sciences including Management Courses
BSC	Basic Science Courses
ESC	Engineering Science Courses
DC	Departmental Core
DE	Departmental Elective
SPC	Specialization Courses
OC	Open Category
DLC	Departmental Laboratory Courses
MOOC	Massive Open Online Course
MWS	Mandatory Workshop
SP	Semester Proficiency
SIP	Skill Internship Program
SLP	Self-learning Presentation
PDC	Professional Development Component
PBL	Project Based Learning
PC	Professional Certification
MAC	Mandatory Audit Course
NEC	Novel Engaging Course



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Department of Chemical Engineering

Scheme of Evaluation

B. Tech. I Semester (*Chemical Engineering*) (for batch admitted in academic session 2024-25)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode Of Major Exam.	Duration of Major Exam.
				Theory Block				Practical Block			L	T	P				
				Continuous Evaluation			Major Evaluation	Continuous Evaluation Lab Work & Sessional	Major Evaluation								
				Minor Evaluation I	Minor Evaluation II	Quiz/Assignment											
1.	17241101	DC	Chemical Process Calculations	20	20	30	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
2.	17241102	ESC	Computer Programming	20	20	30	30	-	-	100	2	-	-	2	Face to Face	MCQ	2 Hrs
3.	17241103	DC	Fluid Mechanics	20	20	30	30	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
4.	17241104	DC	Mechanical Operations	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
5.	17241105	ESC	Basic Electrical & Electronics Engineering	20	20	30	30	-	-	100	2	-	-	2	Face to Face	MCQ	2 Hrs
6.	17241106	DLC	Computer Programming Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
7.	17241107	DLC	Electrical & Electronics Engineering Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
8.	17241108	SP	Semester Proficiency [§]	-	-	-	-	50	-	50	-	-	2	1	Face to Face	SO	-
9.	17241109	PBL	Micro Project-I [#]	-	-	-	-	70	30	100	-	-	2	1	Experiential	SO	-
10.	17241110	ESC	Engineering Chemistry Lab ^{§§}	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
11.	NECXXXXX	NEC	Novel Engaging Course (Activity Based Learning)	-	-	-	-	50	-	50	-	1	-	1	Interactive	SO	-
Total				100	100	150	150	380	120	1000	11	03	10	19	-	-	-
12.	17241111	MAC	Universal Human Values & Professional Ethics (UHVPE)	20	20	30	30	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5 Hrs
13.	17241112	MWS	Mandatory Workshop on Indian Constitution and Traditional Knowledge at Department Level (Duration: Two Days)										GRADE	Interactive	MCQ	-	
Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations.																	
Skill Internship Program (Soft Skill): Minimum 45 hours duration: To be credited in II Semester.																	

[§]Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses.

MCQ: Multiple Choice Question AO: Assignment + Oral PP: Pen Paper SO: Submission + OralOB: Open Book

^{§§}This course will be distributed in the I Year Group wise among the programmes where ever required.

[#] Micro Project-I will be presented and evaluated through an interdisciplinary project evaluation committee.

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	3	3	0	0	0	2	1	1	0	0	0	1	1	1
Mode of Learning							Mode of Examination							Total Credits	
Theory		Proficiency		Lab			Theory				NEC		Lab		
Face to Face	Online	Face to Face	Interactive	Blended	Experiential	Experimental	PP	AO	MCQ	OB	SO	SO	AO		
13	-	1	1	-	1	3	6	-	7	-	1	2	3		19
68.42%	-	5.26%	5.26%	-	5.26%	15.79%	31.58%	-	21.05%	-	5.26%	15.79%	15.79%	Credits %	



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Department of Chemical Engineering Scheme of Evaluation

B. Tech. II Semester (*Chemical Engineering*) (for batch admitted in academic session 2024-25)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode Of Major Exam.	Duration of Major Exam.
				Theory Block				Practical Block			L	T	P				
				Continuous Evaluation			Major Evaluation	Continuous Evaluation Lab Work & Sessional	Major Evaluation								
				Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment											
1.	17241201	DC	Organic Process Technology	20	20	30	30	-	-	100	3	-	-	3	Face to Face	MCQ	2 Hrs
2.	17241202	DC	Chemical Engineering Thermodynamics	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
3.	17241203	DC	Heat Transfer Operations	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
4.	17241204	DC	Mass Transfer Operations - I	20	20	30	30	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
5.	17241205	BSC	Matrices, Differential Equations & Vector Calculus	20	20	30	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
6.	17241206	DLC	Fluid Flow & Mechanical Operations Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
7.	17241207	DLC	Problem Solving through Python Programming	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
8.	17241208	SP	Semester Proficiency ⁵	-	-	-	-	50	-	50	-	-	2	1	Face to Face	SO	-
9.	17241209	PBL	Micro Project-II [#]	-	-	-	-	70	30	100	-	-	2	1	Experiential	SO	-
10.	17241210	ESC	Engineering Physics Lab ⁵⁵	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
11.	17241211	HSMC	Language Lab	-	-	-	-	70	30	100	-	-	2	1	Blended	AO	-
12.	NECXXXX	NEC	Novel Engaging Course (Activity Based Learning)	-	-	-	-	50	-	50	-	1	-	1	Interactive	SO	-
13.	SIPXXXX	SIP	Skill Internship Program (Soft Skill)	-	-	-	-	60	-	60	-	-	-	2**	Experiential	SO	-
Total				100	100	150	150	510	150	1160	12	04	12	24	-	-	-
14.	17241212	MAC	Sustainability & Environmental Science	20	20	30	30	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5 Hrs
15.	17241213	MWS	Mandatory Workshop on Indian Knowledge System at Department Level (Duration: Two Days)	-	-	-	-	-	-	-	-	-	-	GRADE	Interactive	MCQ	-

Summer Semester of six-eight weeks duration will be conducted for makeup of I & II semester examination.

⁵Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses

MCQ: Multiple Choice Question AO: Assignment + Oral PP: Pen Paper SO: Submission + Oral OB: Open Book

⁵⁵This course will be distributed in the I Year Group wise among the programmes where ever required.

** These credits will be transferred from Soft Skill Internship (Soft Skill).

[#]Micro Project-II will be presented and evaluated through an interdisciplinary project evaluation committee.

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS	
1	1	1	4	0	0	0	2	1	1	1	0	0	1	1	1	
Mode of Learning							Mode of Examination							Total Credits		
Theory		Proficiency		NEC			Lab		Theory			NEC			Lab	
Face to Face	Online	Face to Face	Interactive	Blended	Experiential	Experiential	PP	AO	MCQ	OB	SO	SO	AO			
15	-	1	1	1	3	3	6	-	9	-	1	4	4		24	
62.5%	-	4.17%	4.17%	4.17%	12.5%	12.5%	50%	-	37.5%	-	4.17%	29.17%	29.17%	Credits %		



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Department of Chemical Engineering Scheme of Evaluation

B. Tech. III Semester (*Chemical Engineering*) (for batch admitted in academic session 2024-25)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode Of Major Exam.	Duration of Major Exam.
				Theory Block			Practical Block				L	T	P				
				Continuous Evaluation			Major Evaluation	Continuous Evaluation Lab Work & Sessional	Major Evaluation								
				Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment											
1.	17242101	BSC	Complex Analysis & Integral Transforms	20	20	30	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
2.	17242102	DC	Data Structures	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
3.	17242103	DC	Chemical Reaction Engineering – I	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
4.	17242104	DC	Mechanical Design of Process Equipment	20	20	30	30	-	-	100	2	1	-	3	Face to Face	OB	2 Hrs
5.	17242105	DC	Inorganic Process Technology	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
6.	17242106	DLC	Heat Transfer Operations Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
7.	17242107	DLC	Chemical Synthesis Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
8.	17242108	SP	Semester Proficiency [§]	-	-	-	-	50	-	50	-	-	2	1	Face to Face	SO	-
9.	17242109	PBL	Macro Project-I [#]	-	-	-	-	70	30	100	-	-	2	1	Experiential	SO	-
10.	17242110	SLP	Self-learning/Presentation ^{\$\$\$} (SWAYAM/NPTEL/MOOC)	-	-	-	-	40	-	40	-	-	2	1	Mentoring	SO	-
11.	NECXXXX	NEC	Novel Engaging Course (Activity Based Learning)	-	-	-	-	50	-	50	-	1	-	1	Interactive	SO	-
Total				100	100	150	150	350	90	940	11	05	10	21	-	-	-
12.	17242111	MAC	Cyber Security	20	20	30	30	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5 Hrs
13.	17242112	MWS	Mandatory Workshop on Internet of Things(IoT) at Department Level (Duration: Two Days)	-	-	-	-	-	-	-	-	-	-	GRADE	Interactive	MCQ	-

Skill Internship Program(Institute Level) (Qualifier): Minimum 30 hours duration: To be credited in IV Semester

[§]Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses

MCQ: Multiple Choice Question **AO:** Assignment + Oral **PP:** Pen Paper **SO:** Submission + Oral **OB:** Open Book

[#] Macro Project-I will be presented and evaluated through an interdisciplinary project evaluation committee.

^{\$\$\$} Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, evaluation through attendance and presentation.

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	1	0	4	0	0	0	2	1	1	0	1	0	1	1	1

Mode of Learning									Mode of Examination						Total Credits
Theory		Proficiency	NEC	Self Learning	Lab			Theory			NEC	Lab			
Face to Face	Online	Face to Face	Interactive	Mentoring	Blended	Experiential	Experimental	PP	AO	MCQ	OB	SO	SO	AO	
15	-	1	1	1	-	1	2	3	-	9	3	1	3	2	
71.43%	-	4.76%	4.76%	4.76%	-	4.76%	9.52%	14.29%	-	42.86%	14.29%	4.76%	14.29%	9.52%	
															Credits %



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Department of Chemical Engineering

Scheme of Evaluation

B. Tech. IV Semester (*Chemical Engineering*) (for batch admitted in academic session 2024-25)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted				Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode Of Major Exam.	Duration of Major Exam.		
				Theory Block			Practical Block		L	T	P						
				Continuous Evaluation			Major Evaluation									Continuous Evaluation Lab Work & Sessional	Major Evaluation
				Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment											
1.	17242201	DC	Mass Transfer Operations - II	20	20	30	30	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
2.	17242202	DC	Instrumentation & Process Control	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
3.	17242203	DC	Chemical Reaction Engineering - II	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
4.	17242204	DC	Computational Methods in Chemical Engineering	20	20	30	30	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
5.	17242205	DC	Process Engineering & Costing	20	20	30	30	-	-	100	3	-	-	3	Face to Face	MCQ	2 Hrs
6.	17242206	DLC	Mass Transfer Operations Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
7.	17242207	DLC	Process Control Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
8.	17242208	DLC	Reaction Engineering Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
9.	17242209	SP	Semester Proficiency [§]	-	-	-	-	50	-	50	-	-	2	1	Face to Face	SO	-
10.	17242210	PBL	Macro Project-II [#]	-	-	-	-	70	30	100	-	-	2	1	Experiential	SO	-
11.	17242211	PC	Professional Certification	-	-	-	-	50	-	50	-	-	2	1	Blended	SO	-
12.	NECXXXXX	NEC	Novel Engaging Course (Activity Based Learning)	-	-	-	-	50	-	50	-	1	-	1	Interactive	SO	-
13.	SIP3XXXXX	SIP	Skill Internship Program	-	-	-	-	60	-	60	-	-	-	2**	Experiential	SO	-
Total				100	100	150	150	490	120	1110	11	05	12	24	-	-	-
14.	17242212	MAC	Project Management, Economics & Financing	20	20	30	30	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5 Hrs
15.	17242213	MWS	Mandatory Workshop on Computer Vision at Department Level (Duration: Two Days)	-	-	-	-	-	-	-	-	-	-	GRADE	Interactive	MCQ	-
16.	17242214	MWS	Mandatory Workshop on Life Skills at Department Level (Duration: Two Days)	-	-	-	-	-	-	-	-	-	-	GRADE	Interactive	MCQ	-
Summer Semester of six-eight weeks duration will be conducted for makeup of previous semester examinations.																	
Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree																	

[§]Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses

MCQ: Multiple Choice Question AO: Assignment + Oral PP: Pen Paper SO: Submission + Oral OB: Open Book

[#] Macro Project-II will be presented and evaluated through an interdisciplinary project evaluation committee.

** These credits will be transferred from Skill Internship Project.

PC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS			
1	0	0	5	0	0	0	3	1	1	1	0	0	1	1	2			
Mode of Learning								Mode of Examination								Total Credits		
Theory		Proficiency		NEC		Certification		Lab				Theory		NEC			Lab	
Face to Face	Online	Face to Face	Interactive	Blended	Blended	Experiential	Experiential	PP	AO	MCQ	OB	SO	SO	AO				
15	-	1	1	1	-	3	3	6	-	9	-	1	4	4	24			
62.5%	-	4.17%	4.17%	4.17%	-	12.5%	12.5%	50%	-	37.5%	-	4.17%	16.67%	29.17%	Credits %			



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Department of Chemical Engineering

-Scheme of Evaluation

B. Tech. V Semester (*Chemical Engineering*)

(for batch admitted in academic session 2024-25)



S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted								Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode Of Major Exam.	Duration of Major Exam.
				Theory Block				Practical Block		MOOCs			L	T	P				
				Continuous Evaluation			Major Evaluation	Continuous Evaluation	Major Evaluation	Assignment	Exam								
				Minor Evaluation I	Minor Evaluation II	Quiz/Assignment													
1.	17243101	DC	Process Modeling & Simulation	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
2.	17243102	DC	Process Equipment Design	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	OB	2 Hrs
3.	17243103	DC	Data Science	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	MCQ	2Hrs
4.	172431XX	DE	Departmental Elective* (DE-1)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
5.	172431XX	SPC	Specialization Course (SPC-1)	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
6.	17243104	DLC	Modeling & Simulation Lab	-	-	-	-	70	30	-	-	100	-	-	2	1	Experimental	AO	-
7.	17243105	DLC	Data Science Lab	-	-	-	-	70	30	-	-	100	-	-	2	1	Experimental	AO	-
8.	17243106	SP	Semester Proficiency [§]	-	-	-	-	50	-	-	-	50	-	-	2	1	Face to Face	SO	-
9.	17243107	PBL	Cornerstone Project	-	-	-	-	70	30	-	-	100	-	-	4	2	Experiential	SO	-
Total				80	80	120	120	260	90	25	75	850	11	04	10	20	-	-	-
10.	17243108	MAC	Supply Chain Management	20	20	30	30	-	-	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5 Hrs
11.	17243109	MWS	Mandatory Workshop on Blockchain at Department Level (Duration: Two Days)	-	-	-	-	-	-	-	-	-	-	-	-	GRADE	Interactive	MCQ	-

Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree

[§]Semester Proficiency- includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses

MCQ: Multiple Choice Question **AO:** Assignment + Oral **PP:** Pen Paper **SO:** Submission + Oral **OB:** Open Book

* Course run through SWAYAM/NPTEL/ MOOC Learning Based Platform

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	0	3	1	1	0	2	0	1	0	0	0	1	1	1

Mode of Learning						Mode of Examination						Total Credits
Theory		Proficiency		Lab		Theory			Lab			
Face to Face	Online	Face to Face	Blended	Experiential	Experimental	PP	AO	MCQ	OB	SO	AO	
15	-	1	-	2	2	3	-	9	3	3	2	20
75%	-	5%	-	10%	10%	15%	-	45%	15%	15%	10%	Credits %



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Department of Chemical Engineering Scheme of Evaluation

B. Tech. VI Semester (*Chemical Engineering*)

(for batch admitted in academic session 2024-25)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted								Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode Of Major Exam.	Duration of Major Exam.
				Theory Block				Practical Block		MOOCs			L	T	P				
				Continuous Evaluation			Major Evaluation	Continuous Evaluation	Major Evaluation	Assignment	Exam								
				Minor Evaluation I	Minor Evaluation II	Quiz/Assignment													
1.	17243201	DC	Transport Phenomena	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
2.	17243202	DC	Artificial Intelligence & Machine Learning	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	MCQ	2Hrs
3.	172432XX	DE	Departmental Elective* (DE-2)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
4.	172432XX	OC	Open Category Course (OC-1)	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
5.	172432XX	SPC	Specialization Course (SPC-2)	20	20	30	30	-	-	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
6.	17243203	DLC	Process Computation & Calculations Lab	-	-	-	-	70	30	-	-	100	-	-	2	1	Experimental	AO	-
7.	17243204	DLC	Artificial Intelligence & Machine Learning Lab	-	-	-	-	70	30	-	-	100	-	-	2	1	Experimental	AO	-
8.	17243205	SP	Semester Proficiency [§]	-	-	-	-	50	-	-	-	50	-	-	2	1	Face to Face	SO	-
9.	17243206	PBL	Capstone Project	-	-	-	-	70	30	-	-	100	-	-	4	2	Experiential	SO	-
Total				80	80	120	120	260	90	25	75	850	12	03	10	20	-	-	-
10.	17243207	MAC	Disaster Management	20	20	30	30	-	-	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5 Hrs
11.	17243208	MWS	Mandatory Workshop on Intellectual Property Rights at Department Level (Duration: Two Days)													GRADE	Interactive	MCQ	-
Skill Enhancement Program/Research Internship/On Job Training for Four weeks duration																			
Summer Semester of six-eight weeks duration will be conducted for makeup of previous semester examination.																			
Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree																			

[§]Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses

MCQ: Multiple Choice Question **AO:** Assignment + Oral **PP:** Pen Paper **SO:** Submission + Oral **OB:** Open Book

* Course run through SWAYAM/NPTEL/ MOOC Learning Based Platform.

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	0	2	1	1	1	2	0	1	0	0	0	1	1	1

Mode of Learning						Mode of Examination						Total Credits
Theory		Proficiency		Lab		Theory			Lab			
Face to Face	Online	Face to Face	Blended	Experiential	Experimental	PP	AO	MCQ	OB	SO	AO	
12	3	1	-	2	2	6	-	6	-	3	2	20
60%	15%	5%	-	10%	10%	30%	-	30%	-	15%	10%	Credits %



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Department of Chemical Engineering

Scheme of Evaluation

B. Tech. VII Semester (*Chemical Engineering*)

(for batch admitted in academic session 2024-25)



S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted								Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode Of Major Exam.	Duration of Major Exam.
				Theory Block				Practical Block		MOOCs			L	T	P				
				Continuous Evaluation			Major Evaluation	Continuous Evaluation Lab Work & Sessional	Major Evaluation	Assignment	Exam								
				Minor Evaluation I	Minor Evaluation II	Quiz/Assignment													
1.	172441XX	DE	Departmental Elective # (DE-3)	20	20	30	30	-	-	-	-	100	3	-	-	3	Blended	PP	2 Hrs
2.	172441XX	DE	Departmental Elective* (DE-4)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
3.	172441XX	OC	Open Category Course (OC-2)	-	-	-	-	-	-	25	75	100	2	1	-	3	Online	MCQ	3 Hrs
4.	172441XX	SPC	Specialization Course # (SPC-3)	20	20	30	30	-	-	-	-	100	2	1	-	3	Blended	MCQ	2Hrs
5.	17244101	SEP	Skill Enhancement Program/Research Internship/ On Job Training	-	-	-	-	-	50	-	-	50	-	-	2	1	Experiential	SO	-
6.	17244102	DLC	Creative Problem Solving	-	-	-	-	-	50	-	-	100	-	-	2	1	Experiential	SO	-
Total				60	60	90	90	-	100	25	75	550	10	02	04	14	-	-	-

Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree

\$Semester Proficiency- includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses.

MCQ: Multiple Choice Question **AO:** Assignment + Oral **PP:** Pen Paper **SO:** Submission + Oral **OB:** Open Book

* Course run through SWAYAM/NPTEL/ MOOC Learning Based Platform.

Course run through MITS - MOOCs

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	0	0	2	1	1	1	0	1	0	0	0	0	0	1

Mode of Learning							Mode of Examination					Total Credits
Theory		SEP		Lab			Theory				Lab	
Face to Face	Online	Blended	Face to Face	Blended	Experiential	Experimental	PP	AO	MCQ	OB	SO	
-	6	6	-	-	2	-	6	-	6	-	2	14
-	42.86%	42.86%	-	-	14.29%	-	42.86%	-	42.86%	-	14.29%	Credits %



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Department of Chemical Engineering

Scheme of Evaluation

B. Tech. VIII Semester (*Chemical Engineering*)

(for batch admitted in academic session 2024-25)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted								Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode Of Major Exam.	Duration of Major Exam.
				Theory Block				Practical Block		MOOCs			L	T	P				
				Continuous Evaluation			Major Evaluation	Continuous Evaluation	Major Evaluation	Assignment	Exam								
				Minor Evaluation I	Minor Evaluation II	Quiz/Assignment													
1.	172442XX	DE	Departmental Elective* (DE-5)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
2.	172442XX	OC	Open Category Course* (OC-3)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
3.	17244201	PBL	Industry Internship/Research Internship/ Innovation & Start-up	-	-	-	-	280	120	-	-	400	-	-	20	10	Experiential	SO	-
4.	17244202	PDC	Professional Development ^{##}	-	-	-	-	-	50	-	-	50	-	-	4	2	Interactive	SO	-
Total				-	-	-	-	280	170	50	150	650	06	-	24	18	-	-	-

Summer Semester of six-eight weeks duration will be conducted to complete any backlog courses.

Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree

MCQ: Multiple Choice Question **AO:** Assignment + Oral **PP:** Pen Paper **SO:** Submission + Oral **OB:** Open Book

*Course run through SWAYAM/NPTEL/ MOOC Learning Based Platform

^{##} Evaluation will be based on participation/laurels brought by the students to the institution in national/state level technical and other events during the complete tenure of the UG programme (participation in professional chapter activities, club activities, cultural events, sports, personality development activities, collaborative events, MOOCs, technical events, institute/department committees, etc.)

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	0

Mode of Learning						Mode of Examination					Total Credits
Theory		Professional Development	Lab			Theory				Lab	
Face to Face	Online	Interactive	Blended	Experiential	Experimental	PP	AO	MCQ	OB	SO	
-	6	2	-	10	-	-	-	6	-	12	18
-	33.33%	11.11%	-	55.56%	-	-	-	33.33%	-	66.67%	Credits %



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Proposed List of Open Category (OC) & Departmental Elective (DE) Courses:

Open Category Courses

1. Fuels and Combustion
2. Industrial Safety & Hazards
3. Rocket Propulsion & Explosives
4. Energy Storage Systems

Departmental Electives

1. Optimization Techniques
2. Equilibrium Staged Operations
3. Multi-Component Distillation
4. Fluidization Engineering
5. Hydrogen Fuel Cells: Technology & Applications in Vehicles
6. Fundamentals of CFD
7. Fuel Cells & Flow Batteries
8. Electrochemical Conversion & Storage Devices
9. Pollution Control in Process Industries
10. CO₂ Capture & Utilization
11. Micro-Chemical Systems
12. Hydrogen Energy: Production, Handling, Storage & Transportation



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Department of Chemical Engineering

Specialization in Nanotechnology

Description	This module will help in developing thorough understanding of field of nanotechnology, its applications, synthesis of Nanomaterials & their characterization methods. It will also impart technical knowhow related to micro & nano scaled systems, lab on chip technology and carbon nanotubes & applications					
Courses and Credits required	3 courses and 9 credits					
Course Category	Course ID	Course Title	Contact Hours per week			
			L	T	P	
SPC-1 (Core)	172431XX	Nanomaterials & Thin films	3	-	-	
SPC-2 (Core)	172432XX	Synthesis & Characterization of Nanomaterials	3	-	-	
SPC-3	Elective-1	172441XX	Micro & Nano Fluidics	2	1	-
	Elective-2	172441XX	Carbon Nanostructures	2	1	-



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Department of Chemical Engineering

Specialization in Pharmaceutical Technology

Description							This module will help in developing knowledge about different types of drugs and ways to administer them. It also focuses on manufacture of drugs in the form of tablets, capsules & liquid dosage. In addition, it covers the course of action of drugs in human body, drug delivery and important drugs obtained from biological sources.						
Courses and Credits required							3 courses and 9 credits						
Course Category		Course ID	Course Title	Contact Hours per week									
				L	T	P							
SPC-1 (Core)		172431XX	Pharmaceutical Formulation Technology	3	-	-							
SPC-2 (Core)		172432XX	Biopharmaceutics & Pharmacokinetics	3	-	-							
SPC-3	Elective-1	172441XX	Drug Delivery Technology	2	1	-							
	Elective-2	172441XX	Pharmaceutical Biotechnology	2	1	-							



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Specialization in Oil & Natural Gas

Description		This module will help in developing understanding & skills related to petroleum production & processing techniques. It also discusses about the natural gas reserves, its different forms and production. In addition, it imparts in depth knowledge about the Enhanced Oil Recovery methods employed to increase the crude oil production.				
Courses and Credits required		3 courses and 9 credits				
Course Category	Course ID	Course Title	Contact Hours per week			
			L	T	P	
SPC-1 (Core)	172431XX	Petroleum Exploration & Production Engineering	3	-	-	
SPC-2 (Core)	172432XX	Petroleum Processing Technology	3	-	-	
SPC-3	Elective-1	172441XX	Natural Gas Engineering	2	1	-
	Elective-2	172441XX	Enhanced Oil Recovery Methods	2	1	-



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Specialization in Material Science

Description		This module will help in developing knowledge and understanding about different engineering materials, their properties and applications & characterization methods employed. It also focuses on material composites & polymers. In addition, it also gives deep understanding about biomaterials compatible with human tissues & organs for various applications.				
Courses and Credits required		3 courses and 9 credits				
Course Category	Course ID	Course Title	Contact Hours per week			
			L	T	P	
SPC-1 (Core)	172431XX	Engineering Materials	3	-	-	
SPC-2 (Core)	172432XX	Materials Characterization	3	-	-	
SPC-3	Elective-1	172441XX	Composites & Polymers	2	1	-
	Elective-2	172441XX	Biomaterials	2	1	-



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Department of Chemical Engineering

Specialization in Cosmetic Technology

Description	This module will help in familiarizing with the fundamental know how of cosmetic formulation and related process engineering aspects. It also enables one to understand the microbiological factors associated with cosmetics. In addition, the module also focuses on packaging, preservation, quality control & assurance in the cosmetic industry.					
Courses and Credits required	3 courses and 9 credits					
Course Category	Course ID	Course Title	Contact Hours per week			
			L	T	P	
SPC-1 (Core)	172431XX	Cosmetic Formulation Science and Process Engineering	3	-	-	
SPC-2 (Core)	172432XX	Cosmetic Microbiology	3	-	-	
SPC-3	Elective-1	172441XX	Packaging and Preservation of Cosmetics	2	1	-
	Elective-2	172441XX	Quality Control and Assurance of Cosmetics	2	1	-



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Specialization in Food Technology						
Description	This module will help in getting fundamental knowledge about processing & preservation of food. It also gives thorough understanding of the thermal operations and separation processes involved in the food industry. In addition, it also emphasizes on analysis, quality control & packaging of food.					
Courses and Credits required	3 courses and 9 credits					
Course Category	Course ID	Course Title	Contact Hours per week			
			L	T	P	
SPC-1 (Core)	172431XX	Principles of Food Processing & Preservation	3	-	-	
SPC-2 (Core)	172432XX	Thermal Operations & Separation Techniques in Food Processing	3	-	-	
SPC-3	Elective-1	172441XX	Food Analysis & Quality Control	2	1	-
	Elective-2	172441XX	Food Packaging Technology	2	1	-