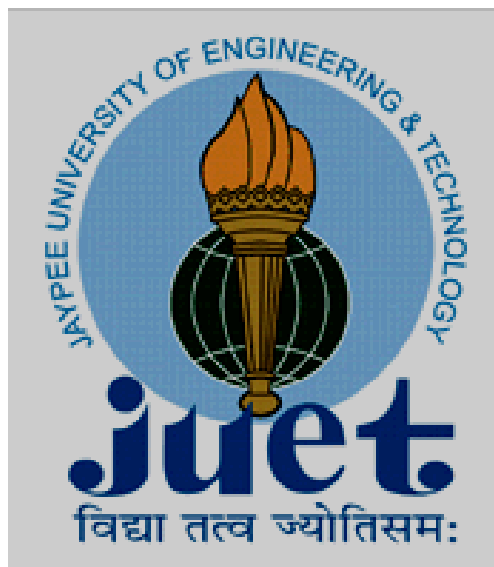


COURSE STRUCTURE
(w.e.f. 2023 batch onwards)

BACHELOR OF TECHNOLOGY
(CHEMICAL ENGINEERING)



Department of Chemical Engineering
Jaypee University of Engineering & Technology

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4 year B. Tech. (Chemical Engineering) Course Structure w.e.f. 2023-24 Batch

Proposed Course Structure of **160 Credits (w.e.f. July 2023)**

Minor Specialization Courses (Disciplinary)

- (i) Cement Technology
- (ii) Industrial Pollution Abatement

Minor Specialization Courses (Inter - Disciplinary)

- (i) Marketing
- (ii) Digital Marketing
- (iii) Financial Management
- (iv) Human Resource Management

FIRST SEMESTER

Sr. No.	Department	Course No.	Title	Contact Hours				Credits
				L	T	P	Total	
1.	Maths	MA102	Engineering Mathematics-I	3	1	-	4	4
2.	Physics	PH103	Engineering Physics	3	1	-	4	4
3.	CSE	CS101	Computer Programming	3	1	-	4	4
4.	HSS	HS101	English	2	-	2	4	3
5.	Physics	PH203	Engineering Physics Lab	-	-	2	2	1
6.	CSE	CS201	Computer Programming Lab	-	-	4	4	2
7.	MEC	ME201	Workshop Practices	-	-	3	3	1.5
8	HSS		Value added course-1	-	-	-	2	0
			TOTAL				27	19.5

SECOND SEMESTER

Sr. No.	Department	Course No.	Title	Contact Hours				Credits
				L	T	P	Total	
1.	HSS	HS104	Life Skills and Effective Communication	1	-	2	3	2
2.	Maths	MA103	Engineering Mathematics-2	3	1	-	4	4
3.	Chemistry	CH103	Engineering Chemistry	3	1	-	4	4
4.	ECE	EC102	Electrical Circuit Analysis	3	1	-	4	4
5.	MEC	ME101	Engineering Mechanics	3	1	-	4	4
6.	Chemistry	CH202	Engineering Chemistry Lab	-	-	2	2	1
7.	ECE	EC206	Electrical Circuit Analysis Lab	-	-	2	2	1
8.	MEC	ME202	Engineering Mechanics Lab	-	-	2	2	1
9.	MEC	ME203	Engineering Drawing and Design Lab	-	-	3	3	1.5
			TOTAL				30	22.5

Students may undergo optional Industrial Training during Summer Vacation after 2nd Semester.

THIRD SEMESTER

Sr. No.	Department	Course No.	Title	Contact Hours				Credits
				L	T	P	Total	
1.	CHE	CL101	Chemical Process Calculations	3	1	-	4	4
2.	CHE	CL102	Fluid and Fluid Particle Mechanics	3	1	-	4	4
3.	CHE	CH102	Organic Chemistry	3	1	-	4	4
4.	CHE	CH203	Organic Chemistry Lab	-	-	2	2	1
5.	CHE	CL201	Fluid Mechanics Lab	-	-	2	2	1
6.	CHE	CL202	Fluid Particle Mechanics Lab	-	-	2	2	1
7.	CHE	CL103	Chemical Engineering Thermodynamics	3	1	-	4	4
8.	HSS	HS102	Managerial Economics	2	1	-	3	3
9.	HSS	----	Value added course-2	-	-	-	2	0
10	CSE		Programming in Python	-	-	-	2	0
			TOTAL				29	22

FOURTH SEMESTER

Sr. No.	Department	Course No.	Title	Contact Hours				Credits
				L	T	P	Total	
1.	HSS		HSS Elective - 1	-	-	-	3	3
2.	Maths	MA105	Numerical Methods	3	1	-	4	4
3.	CHE	CL104	Heat Transfer Operations	3	1	-	4	4
4.	CHE	CL105	Mass Transfer Operations	3	1	-	4	4
5.	CHE	G001	Environmental Science	2	-	-	2	0
6.	CHE	CL203	Heat Transfer Operations Lab - 1	-	-	2	2	1
7.	CHE	CL204	Mass Transfer Operations Lab-1	-	-	2	2	1
			TOTAL				21	17

Students will undergo 4 weeks Industrial Training during Summer Vacation after 4th Semester.

FIFTH SEMESTER

Sr. No.	Department	Course No.	Title	Contact Hours				Credits
				L	T	P	Total	
1.	HSS	----	HSS Elective-2	-	-	-	3	3
2.	CHE	CL106	Chemical Reaction Engineering-I	3	1	-	4	4
3.	CHE	----	Discipline Elective -1	3	-	-	3	3
4.		----	Science Elective	3	-	-	3	3
5.	CHE	CL205	Minor Project-1	-	-	4	4	2
6.	CHE	CL206	Chemical Reaction Engineering Lab	-	-	2	2	1
7.	CHE	CL207	Instrumentation and Process Control Lab	-	-	2	2	1
8.	CHE	CL208	Heat Transfer Operations Lab-2	-	-	2	2	1
9.	CHE	CL107	Instrumentation and Process Control	3	1	-	4	4
10	CHE	CL209	Process Modeling and Simulation Lab	-	-	2	2	1
			TOTAL				31	23

SIXTH SEMESTER

Sr. No.	Department	Course No.	Title	Contact Hours				Credits
				L	T	P	Total	
1.	CHE	CL108	Design of Separation Processes	3	-	-	3	3
2.	CHE	----	Discipline Elective – 2	3	-	-	3	3
3.	CHE	----	Discipline Elective - 3	3	-	-	3	3
4.	CHE	CL109	Chemical Reaction Engineering-II	3	-	-	3	3
5.	CHE	CL210	Mass Transfer Operations Lab-2	-	-	2	2	1
6.	CHE	CL211	Minor Project-2	-	-	6	6	3
7.	CHE	CL110	Environmental Engineering	3	-	-	3	3
8.	CHE	CL212	Environmental Engineering Lab	-	-	2	2	1
9.	HSS	----	HSS Elective - 3	-	-	-	3	3
			Value Added Course-3					
			TOTAL				28	23

Note:

1. All students will undergo Value Added Course; however it will not count for CGPA calculations and will not be reflected in transcript of those students who fail to qualify.
2. Students will undergo 6 weeks Industrial Training during Summer Vacation after 6th Semester.

SEVENTH SEMESTER

Sr. No.	Department	Course No.	Title	Contact Hours				Credits
				L	T	P	Total	
1.	CHE	----	Discipline Elective – 4	3			3	3
2.	CHE	----	Discipline Elective – 5	3			3	3
3.	CHE	----	Discipline Elective - 6	3	-	-	3	3
4.	HSS	----	Open Elective – 1	3		-	3	3
5.	CHE	CL213	Major Project Part-1	-	-	8	8	4
6	CHE	CL001	Summer Training Viva	-	-	-	-	Qualifying
			Value Added Course-4					
			TOTAL				20	16

EIGHTH SEMESTER

Sr. No.	Department	CourseNo.	Title	Contact Hours				Credits
				L	T	P	Total	
1.	CHE	----	Discipline Elective – 7	3			3	3
2.	CHE	----	Discipline Elective - 8	3			3	3
3.	(Engg. Only)	----	Open Elective -2	3		-	3	3
4.	CHE	CL214	Major Project Part-2	-	-	16	16	8
			TOTAL				25	17

Total Credits for B. Tech. –160

Value Added Courses

Course No.	Title	Contact Hours				Credits
		L	T	P	Total	
HS001	Human Values and Professional Ethics	2	-	-	2	-
HS002	Professional Communication Practice	2	-	-	2	-
HS003	Concept of Project Management	-	-	2	2	-
HS004	Indian Constitution & Traditional Knowledge	2	-	-	2	-

LIST OF ELECTIVES

List of HSS Electives

Course No.	Title	Contact Hours				Credits
		L	T	P	Total	
HS304	Concepts of Digital Marketing	3	-	-	3	3
HS302	Concepts of Financial Management	2	1	-	3	3

HS305	Logical & Quantitative Technique	3	-	-	3	3
HS303	Knowledge management	3	-	-	3	3

List of Science Electives:

From Department with Science name or Physics or Chemistry or Maths with science code.

1. CH301 Chemistry of Cement
2. CH302 Surface Science
3. ME301 Material Science

List of Discipline Electives:

	DISCIPLINE ELECTIVE 1
CL301	1. Process Modelling and Simulation
CL302	2. Transport Phenomena
	DISCIPLINE ELECTIVE 2
CL303	1. Chemical Processes
CL304	2. Industrial organic Synthesis
	DISCIPLINE ELECTIVE 3
CL305	1. Equipment Design and Drawing
CL306	2. Solid and Hazardous Waste Management
	DISCIPLINE ELECTIVE 4
CL307	1. Energy Sources and Energy Conservation
CL308	2. Polymer Engineering
	DISCIPLINE ELECTIVE 5
CL309	1. Petroleum Refining
CL310	2. Multiphase Reactor Design
	DISCIPLINE ELECTIVE 6
CL311	1. Industrial Catalysis
CL312	2. Advanced Process Control
	DISCIPLINE ELECTIVE 7
CL313	1. Fertilizer Technology
CL314	2. Petrochemical Technology
CL327	3. Piping Engineering
	DISCIPLINE ELECTIVE 8
CL315	1. Plant Utilities and Energy Systems
CL316	2. Co-generation
CL328	3. Cement Technology

Note: List of electives and value added courses can be updated time to time.

MINOR SPECIALIZATIONS OFFERED BY CHE (20 credits each)

MINOR SPECIALIZATION-I (CEMENT TECHNOLOGY)

FOURTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL317	Introduction to Cement	3	0	0	3	3

FIFTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL318	Mining, Raw Materials and Raw Mix Design	3	0	0	3	3

SIXTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL319	Size Reduction and Material Handling in Cement Industries	3	0	0	3	3
2.	CL401	Fuel Testing Lab	0	0	2	2	1

SEVENTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL320	Pyro-processing and Clinker Formation	3	1	0	4	4
2.	CL402	Chemical Testing of Cement Lab	0	0	2	2	1

EIGHTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL321	Quality Control in Cement	3	1	0	4	4
2.	CL403	Physical Testing of Cement Lab	0	0	2	2	1

MINOR SPECIALIZATION-II (INDUSTRIAL POLLUTION ABATEMENT)

FOURTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL322	Environmental Chemistry	3	1	0	4	4

FIFTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL323	Air Pollution Control & Monitoring	3	1	-	4	4
2.	CL404	Air Pollution Control & Monitoring Lab	-	-	2	2	1

SIXTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL324	Waste Water Treatment Processes	3	1	-	4	4
2.	CL405	Waste Water Treatment Processes Lab	-	-	2	2	1

SEVENTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL325	Treatment and Management of Hazardous Waste	3	-	-	3	3

EIGHTH SEMESTER

Sr. No.	Course Code	Course Title	Contact Hours				Credits
			L	T	P	Total	
1.	CL326	Environmental Impact Assessment	3	-	-	3	3