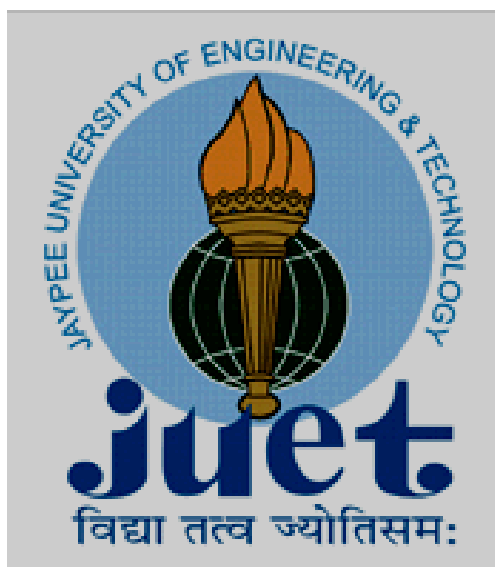


COURSE STRUCTURE
(w.e.f. 2023 batch onwards)

BACHELOR OF TECHNOLOGY
(CHEMICAL ENGINEERING)



Department of Chemical Engineering
Jaypee University of Engineering & Technology

A.B. Road, Raghogarh, Dist-Guna (M.P.) - 473226, INDIA

Ph No: 07544 -267051, 267310 - 314, Fax: 267011

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

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 | HS001 | Value Added Course (Human Values and Professional Ethics) | 2 | 0 | 0 | 2 | 2 (Audit) Qualifying |
| | | | 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 |
| 10. | | | Value Added Course | 2 | 0 | 0 | 2 | 2(Audit) |
| | | | TOTAL | | | | 30 | 22.5 |

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 | 2 (Audit) |
| 10. | CSE | | Programming in Python | - | - | - | 2 | 2 (Audit) |
| 11. | CHE | | Internship/Summer Training (4 weeks - 160-180 hours) | - | - | - | - | 4 (Audit, Optional) |
| | | | 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 | 2 (Audit) Qualifying |
| 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 |

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 |
| 11. | CHE | | Internship/Summer Training (4 weeks - 160-180 hours) | - | - | - | - | 4 (Audit)Qualifying |
| | | | TOTAL | | | | 29 | 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 |
| 10. | HSS | HSS004 | Value Added Course (Indian Constitution and Traditional Knowledge) | 2 | - | - | 2 | 2 (Audit) Qualifying |
| | | | TOTAL | | | | 30 | 23 |

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 | Internship/Summer Training (6 weeks - 240-270 hours) | - | - | - | - | 6 (Audit) Qualifying |
| 7. | | | Value Added Course | 2 | - | - | 2 | 2(Audit) |
| | | | TOTAL | | | | 22 | 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 (Audit courses) will not count for CGPA calculations.

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 | - |
| G001 | Environmental Science | 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.