B.Tech in Chemical Engineering (2023-24 Batch)

1st Semester		Credit	2nd Semester		Credit
Classical Physics (3 1 0)	IS	11	Modern Physics (2 1 0)	IS	8
Organic and Hydrocarbon Chemistry (3 1 0)		11	Inorganic & Physical Chemistry (3 1 0)		11
Applied Mathematics-1 (3 1 0)		11	Applied Mathematics-2 (3 1 0)		11
Physics Lab (0 0 2/2)		1	Physics Lab (0 0 2/2)		1
Chemistry lab (0 0 2/2)		1	Chemistry lab (0 0 2/2)		1
Engineering Thermodynamics (3 1 0)	IE	11	Computer Programing (3 1 0)	IE	11
Workshop Practices (0 0 3)	EP	3	Computer Programing Lab (0 0 2)		2
Credit		49	Fluid Mechanics (3 1 0)		11
Universal Human Values (1 1 0)	HU	5	Chemical Engineering Practices (1 0 2)	EP	5
Total Credit		**54**	Engineering Graphics (0 0 3)		3
Basic English (1 2 0)	L	7	**Credit**		**64**
			Community Internship (1 1 0)	HU	5
			Total Credit		**69**

- Real analysis and calculus course is replaced by Applied Mathematics-1 in 1st semester
- Differential Equation course is replaced by Applied Mathematics-2 in 2nd semester
- All labs are separated from courses and will have individual credits

3rd Semester			4th Semester		
Applied Mathematics-3 (3 1 0)	IS	11	Materials Science and Strength of Materials (3 0 0)	IE	9
Fundamentals of Electronics Engg (3 1 0)	IE	11	Mass Transfer Operations-1 (3 1 0)	DC	11
Fundamentals of Electronics Engg Lab (0 0 2)		2	Petroleum Refining Engineering (3 0 0)		9
Chemical Engineering Thermodynamics (3 1 0)	DC	11	**Chemical Process Technology-01 (2 0 0)**		6
Mass & Energy Balances (2 1 0)		8	Heat Transfer Operations (3 1 0)		11
Fluid Flow Operations (2 1 0)		8	Chemical Reaction Engineering-1 (2 1 0)		8
Solid Fluid Mechanics and Mechanical Operations (2 1 0)		8	Chemical Reaction Engineering Lab (0 0 2)		2
Fluid Flow Operations Lab (0 0 2)		2	Heat Transfer Operation Lab (0 0 2)		2
			Professional Communication (2 1 0)	L	8
Total Credit		61	**Total Credit**		**66**
			Group Discussions	EP	2
			Total Credit		68

- Linear Algebra and complex analysis course (2 1 0) is replaced by Applied Mathematics-3 (3 1 0) in 3rd semester
- Material Science course (3 0 0) is revised and renamed as Material Science and Strength of Materials (3 0 0) in 4th Semester
- Mass Transfer Operations-1 (3 1 0) has been shifted from 5th semester to 4th semester.
- Chemical Reaction Engineering Lab (0 0 2) shifted from 5th semester to 4th semester.
- Fundamentals of Polymers and Petrochemicals (2 0 0) course is replaced by Chemical Process Technology-01 (2 0 0.

- Numerical methods (2 1 0) and Statistical Methods (2 1 0) course is discontinued and will be covered in Applied Mathematics 1, 2, 3.

5th Semester			6th Semester		
Mass Transfer Operations-2 (2 0 0)	DC	6	Process Dynamics and Control (3 1 0)	DC	11
Chemical Reaction Engineering-2 (2 1 0)		8	Plant Design and Economics (3 0 0)		9
Process Instrumentation (2 0 0)		6	Mass Transfer Operations-3 (2 0 0)		6
Energy Resources and Utilization (2 0 0)		6	Transport Phenomenon (2 0 0)		6
Chemical Process Technology-02 (2 0 0)		6	Corrosion Engineering (2 0 0)		6
Equipment Design: Mechanical Aspects (2 0 0)		6	Plant Design and Economics Lab (0 0 2)		2
Mass Transfer Operation Lab (0 0 2)		2	Process Dynamics and Control Lab (0 0 2)		2
Energy Resources Utilization Lab (0 0 2)		2	Refining: Natural Gas Processing (3 0 0)	DE	9
Chemical Engineering Software Lab (0 0 2)		2	**Credit**		**51**
Equipment Design: Mechanical Aspects Project (0 0 2)		2	B.Tech Project	DP	5
Refining: Refinery Process Design (3 0 0)	DE	9	**Total Credit**		**56**
Credit		**55**			
Seminar	EP	2	**Summer Internship**		**10**
B.Tech Project	DP	5			
Total Credit		**62**			

- Chemical Process Technology (3 0 0) course is replaced by Chemical Process Technology-02 (2 0 0).
- Equipment Design (3 0 2) course (2 0 0) has been shifted from 6th semester to 5th semester and will have separate project credit.
- Mass Transfer Operations-2 (2 0 0) shifted from 6th semester to 5th semester.
- Chemical Engineering Software Lab (0 0 2) has been shifted from 6th semester to 5th semester.

- Refinery Process Design (3 0 0) and Natural Gas Processing (3 0 0) are reshuffled from each other.
- Plant design and economics shifted from 7th semester to 6th semester.
- Corrosion engineering shifted from 8th semester to 6th semester.

7th Semester			**8th Semester**		
Industrial Pollution and Control (2 0 0)	DC	6	Modelling Simulation and Optimization (2 0 0)	DC	6
Process Equipment Design (2 0 0)		6	Fire, Safety and Hazard Analysis (2 0 0)		6
Industrial Pollution and Control Lab (0 0 2)		2	Modelling Simulation and Optimization Lab		2
Process Equipment Design Project (0 0 2)		2	DE: Lube Base Oil & Wax Processing (2 0 0)	DE	6
DE: (Fluidization Engg., Multicomponent Distillation, Thermal and catalytic cracking,...)	DE	9	Open Elective-2	OE	9
Open Elective-1	OE	9	Sociology of Industry and Work Culture (2 0 0)	HU	6
Organizational Psychology (2 0 0)	HU	6	Principles of Economics (3 0 0)	M	9
Foundations of Management (3 0 0)	M	9	**Total Credit**		**44**
Total Credit		**49**			

- Process Equipment Design (2 0 0) course introduces in 7th semester.
- Industrial Pollution control (2 0 0) shifted from 8th semester to 7th semester along with lab.

- Lube Base Oil & Wax Processing credit reduces to (2 0 0).
- Modelling Simulation and Optimization course credit change from (3 0 0) to (2 0 0).
- DE (Fluidization Engg., Multicomponent Distillation, Thermal and catalytic cracking, …) is introduced in 8th semester

Course matrix for Chemical Engineering (2023-24)

	Proposed B. Tech. Course Structure			
Category	**Programme Component**	**Without Minor**		
		Min	**Max**	**Recommended**
HU	Humanities and Social Science	22	22	22
IS	Science	70	90	72
IE	Institute Engineering	40	70	57
EP	Engineering Drawing, Workshop	18	24	15
L	Language and Management	18	24	26
DC	Departmental Core	145	190	204
DE	Departmental Elective	30	75	33
OE	Open Elective	15	20	18
DP	Project/Industrial Visit	20	50	20
	Total	**440**	**490**	467