

UG-CRC Code	Course Code	Course Name	L-T-P	Credits	
<b>UG Course Structure for Chemical Engineering (2021-2022)</b>					
Cat.	Deviation	Programme Components	CHE	Recommended (IV Years)	
				Min	Max
HU	0	Humanities and Social Science	22	22	22
IS	0	Science	67	62	84
IE	0	Institute Requirement Engineering/ Pharmacy	57	41	60
EP	0	Engineering Drawing (Manual and Computer Aided), Manufacturing Practices and Practice course of Department/ School	18	18	24
LM	0	Language and Management	18	18	24
DC/ MC	0	Department/Programme Core (Includes Stream Courses)	167	105	175
DE/ BE	0	Department/Programme Elective (Includes Stream Courses)	45	30	75
OE	0	Open Elective (Interdisciplinary Stream courses from Science/ Engineering/Pharmacy)	36	35	80
DP	0	Project/ Industrial visit/ Training	30	20	50
DT	0	Dissertation	0	0	0
		Total	460	430	460
		All Semester Total (Hons.)	480	450	480

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#### Streams in Chemical Engineering

Stream	Stream Code	Stream Title			
DS	X1X	Design			
TP	X2X	Transfer Process			
EY	X3X	Energy			
PE	X4X	Pollution / Environment			
CRE	X5X	Catalysis and Reaction Engineering			
	X1X	Design			

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UG-CRC Code	Course Code	Course Name	L-T-P			Credits
IDD Pt. III(V Sem.)	CHE311	Corrosion Engineering	3	0	0	9
IDD Pt. III(VI Sem.)	CHE441	Safety and Hazard Analysis	3	0	0	9
IDD Pt. IV(VII Sem.)	CHE511	Chemical Process Design	3	0	0	9
IDD Pt. IV(VIII Sem.)	CHE502	Advanced Process Dynamics and Control	3	0	0	9
	<b>X2X</b>	<b>Transfer Process</b>				
IDD Pt. III(V Sem.)	CHE321	New Separation Process	3	0	0	9
IDD Pt. III(VI Sem.)	CHE322	Fluidization Engineering	3	0	0	9
IDD Pt. IV(VII Sem.)	BM421	Bio-transport Processes	3	0	0	9
IDD Pt. IV(VIII Sem.)	CHE517	Multicomponent Separation	3	0	0	9
	<b>X3X</b>	<b>Energy</b>				
IDD Pt. III(V Sem.)	CHE331	Petroleum Refinery Engineering	3	0	0	9
IDD Pt. III(VI Sem.)	CHE441	Safety and Hazard Analysis	3	0	0	9
IDD Pt. IV(VII Sem.)	CHE431	Solar Energy Engineering	3	0	0	9
IDD Pt. IV(VIII Sem.)	CHE528	Fuel Cell Technology	3	0	0	9
	<b>X4X</b>	<b>Pollution / Environment</b>				
IDD Pt. III(V Sem.)	CHE311	Corrosion Engineering	3	0	0	9
IDD Pt. III(VI Sem.)	CHE352	Biochemical Engineering	3	0	0	9
IDD Pt. IV(VII Sem.)	CHE516	Air Pollution Control Technology	3	0	0	9
IDD Pt. IV(VIII Sem.)	CHE526	Solid Waste Management and Utilization	3	0	0	9
	<b>X5X</b>	<b>Catalysis and Reaction Engineering</b>				
IDD Pt. III(V Sem.)	CHE351	Kinetics of Complex Reactions	3	0	0	9
IDD Pt. III(VI Sem.)	CHE352	Biochemical Engineering	3	0	0	9
IDD Pt. IV(VII Sem.)	CHE451	Heterogeneous Catalysis	3	0	0	9

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IDD Pt. IV(VIII Sem.)	CHE504	Chemical Reactor Design and Analysis	3	0	0	9

**UG Course Structure for Chemical Engineering (2021-2022)**

UG-CRC Code	Course Code	Course Name	L-T-P			Credits
<b>Chemical Engineering : 4 Year B.Tech. I-Semester</b>						
IH.H101.14	H101	Universal Human Values - I: Self and Family	2	0	0	6
GY.PE101.14	PE101	Elementary Physical Education	0	1	3	5
GY.CP101.14	CP101	Creative Practices #	0	1	3	5
		Total	2	2	6	16
LM.HL101.14	HL101	Basic English*	2	0	1	7
		Total	4	2	7	23

#Creative Practices course to be announced by Dean Academic Office

\*Basic English course to be taken by student as recommended after Diagnostic Test

<b>Chemical Engineering : 4 Year B.Tech. I-Semester</b>						
IS.PHY101.14	PHY101	Physics - I: Classical, Quantum & Relativistic Mechanics	3	1	2	13
IS.CY101.14	CY101	Chemistry - I	2	1	2	10
IS.MA102.14	MA102	Engineering Mathematics - II	3	1	0	11
IE.ME103.14	ME103	Engineering Thermodynamics	3	1	0	11
MC.CHO103.14	CHO103	Process Calculations	2	1	0	8
EP.ME105.14	ME105	Manufacturing Practice - I	0	0	3	3
		Total	13	5	7	56

<b>Chemical Engineering : 4 Year B.Tech. II-Semester</b>						
IS.MA101.14	MA101	Engineering Mathematics – I	3	1	0	11
EP.ME104.14	ME104	Engineering Drawing	1	0	3	6
IE.CSO101.14	CSO101	Computer Programming	3	1	2	13
MC.CHE201.15	CHE201	Chemical Engineering Thermodynamics	3	1	0	11
EP.CHE101.14	CHE101	Chemical Engineering Practices	1	0	3	6

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UG-CRC Code	Course Code	Course Name	L-T-P			Credits
EP.ME106.14	ME106	Manufacturing Practices - II	0	0	3	3
IH.H103.14	H103	Development of Societies	2	1	0	8
IH.H104.14	H104	History and Civilization*				
<b>Total</b>			<b>13</b>	<b>4</b>	<b>11</b>	<b>58</b>

\* Student has to choose one course from H103 & H104.

**Chemical Engineering : 4 Year B.Tech. III-Semester**

IS.MA201.14	MA201	Numerical Techniques	3	1	0	11
IE.CHO101.14	CHO101	Heat and Mass Transfer	3	1	0	11
IE.CHO102.14	CHO102	Fluid Mechanics	3	1	0	11
MC.CHO201.15	CHO201	Chemical Reaction Engineering - I	2	1	0	8
DC.CHE202.15	CHE202	Fluid Flow and Mechanical Operations	2	1	0	8
DP.CHE291.15	CHE291	Exploratory Project	0	0	5	5
IH.H105.14	H105	Philosophy	2	1	0	8
IH.H106.14	H106	Education and Self #				
<b>Total</b>			<b>15</b>	<b>6</b>	<b>5</b>	<b>62</b>

# Student has to choose one course from H105 & H106.

**Chemical Engineering : 4 Year B.Tech. IV-Semester**

IE.MO201.14	MO201	Material Science	3	1	0	11
MC.CHO203.15	CHO203	Chemical Reaction Engineering - II	2	1	0	8
MC.CHO204.15	CHO204	Chemical Reaction Engineering Laboratory	0	0	2	2
DC.CHE203.14	CHE203	Heat Transfer Operations	2	1	0	8
DC.CHE204.14	CHE204	Mass Transfer Operations-I	3	1	0	11
		Flexi Core Course (Any one)*	3	0	0	9
DC.CHE205.14	CHE205	Fluid Flow and Mechanical Operations Lab	0	0	2	2

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UG-CRC Code	Course Code	Course Name	L-T-P			Credits
DC.CHE304.16	CHE304	Process Dynamics & Control	3	0	0	9
		<b>Total</b>	<b>16</b>	<b>4</b>	<b>4</b>	<b>60</b>
<b>*Flexi Core Courses</b>						
DC.CHE211.14	CHE211	Equipment Design	3	0	0	9
DC.CHE231.14	CHE231	Energy Resources and Utilization	3	0	0	9
DC.CHE241.14	CHE241	Industrial Pollution and Control	3	0	0	9
<b>Chemical Engineering : 4 Year B.Tech. V-Semester</b>						
MC.CHO301.15	CHO301	Chemical Technology	3	0	0	9
IS.CY103.14	CY103	Essentials of Biochemistry	3	1	0	11
		<b>Flexi Core Course (Any one)*</b>	3	0	0	9
DC.CHE302.15	CHE302	Heat Transfer Operations Lab	0	0	2	2
DC.CHE402.17	CHE402	Process Instrumentation	2	0	0	6
DC.CHE303.18	CHE303	Chemical Technology & Instrumental Analysis Laboratory	0	0	2	2
DE.CHE3XX.15	DE - 1	<b>Department Elective (DE) - 1</b>	3	0	0	9
OE - 1	OE - 1	Open Elective - 1	3	0	0	9
		<b>Total</b>	<b>17</b>	<b>1</b>	<b>4</b>	<b>57</b>
DP.CHE391.16	CHE391S	Stream Project (Hons.)	0	0	10	10
		<b>Total</b>	<b>17</b>	<b>1</b>	<b>14</b>	<b>67</b>
<b>*Flexi Core Courses</b>						
DC.CHE211.14	CHE211	Equipment Design	3	0	0	9
DC.CHE231.14	CHE231	Energy Resources and Utilization	3	0	0	9
DC.CHE241.14	CHE241	Industrial Pollution and Control	3	0	0	9
<b>List of Electives DE1</b>						
DE.CHE311.15	CHE311	Corrosion Engineering (Common for streams I and IV)	3	0	0	9
DE.CHE321.15	CHE321	New Separation Process	3	0	0	9

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DE.CHE331.15	CHE331	Petroleum Refinery Engineering	3	0	0	9
DE.CHE351.15	CHE351	Kinetics of Complex Reactions	3	0	0	9
<b>Chemical Engineering : 4 Year B.Tech. VI-Semester</b>						
DC.CHE305.16	CHE305	Mass Transfer Operations-II	3	0	0	9
DC.CHE303.15	CHE303	Mass Transfer Operations Lab	0	0	2	2
		Flexi Core Course (Any one)*	3	0	0	9
DE.CHE3XX.16	DE - 2	Department Elective (DE) - 2	3	0	0	9
OE - 2	OE - 2	Open Elective - 2	3	0	0	9
DC.CHE401.17	CHE401	Transport Phenomena	3	0	0	9
DC.CHE307.18	CHE307	Industrial Pollution Control Laboratory	0	0	2	2
DC.CHE308.19	CHE308	Energy Resources Laboratory	0	0	2	2
DP.CHE392/S.16	CHE392 CHE392S	UG or Stream Project	0	0	10	10
		<b>Total</b>	<b>15</b>	<b>0</b>	<b>16</b>	<b>61</b>
<b>*Flexi Core Courses</b>						
DC.CHE211.14	CHE211	Equipment Design	3	0	0	9
DC.CHE231.14	CHE231	Energy Resources and Utilization	3	0	0	9
DC.CHE241.14	CHE241	Industrial Pollution and Control	3	0	0	9
<b>*VI Semester Elective / Stream DE - 2 Courses</b>						
DE.CHE441.17	CHE441	Safety and Hazard Analysis	3	0	0	9
DE.CHE322.15	CHE322	Fluidization Engineering	3	0	0	9
DE.CHE352.15	CHE352	Biochemical Engineering (Common for streams IV and V)	3	0	0	9
<b>Chemical Engineering: 4-Year B.Tech. Summer Term</b>						
DP.EC393.15	EC393	Project / Industrial Project / Industrial Training	0	0	5	5

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			Total	0	0	5	5

**Chemical Engineering: 4-Year B.Tech. VII - Semester**

DC.CHE312.15	CHE312	Process Engineering and Plant Design	3	0	0	9
DC.CHE403.17	CHE403	Instrumentation & Process Control Laboratory	0	0	2	2
DE.CHE4XX.17	DE - 3	Departmental Elective (DE) - 3	3	0	0	9
OE - 3	OE - 3	Open Elective - 3	3	0	0	9
LM	LM	Language and management Course	3	0	0	9
DP.CHE491/S.17	CHE491/ CHE491S	UG or Stream Project	0	0	10	10
		Total	12	0	12	48

**VII Semester Elective / Stream DE-3 Courses**

DE.CHE511.15	CHE511	Chemical Process Design	3	0	0	9
DE.BM421.16	BM 421	Bio transport Processes	3	0	0	9
DE.CHE431.17	CHE431	Solar Energy Engineering	3	0	0	9
DE.CHE516.17	CHE451	Heterogeneous Catalysis	3	0	0	9
DE.CHE451.18	CHE 516	Air Pollution Control Technology	3	0	0	9

**Chemical Engineering : 4 Year B.Tech. VIII-Semester**

DC.CHE405.17	CHE405	Modelling, Simulation and Optimization	3	0	0	9
DC.CHE404.17	CHE404	CAD and Simulation Laboratory	0	0	2	2
DE.CHE4XX.17	DE - 4	Departmental Elective (DE) - 4	3	0	0	9
DE.CHE4XX.17	DE - 5	Departmental Elective (DE) - 5	3	0	0	9
OE - 4	OE - 4	Open Elective - 4	3	0	0	9

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LM	LM	Language and management Course	3	0	0	9
		<b>Total</b>	15	0	2	47
DP.CHE492S.17	CHE492S	Stream Project (Hons.)	0	0	10	10
		<b>Total</b>	15	0	12	57
<b>VIII Semester Elective / Stream DE - 4 Courses</b>						
DE.CHE502.14	CHE502	Advanced Process Dynamics and Control	3	0	0	9
DE.CHE517.15	CHE 517	Multi Component Separation	3	0	0	9
DE.CHE528.16	CHE528	Fuel Cell Technology	3	0	0	9
DE.CHE526.17	CHE526	Solid Waste Management and Utilization	3	0	0	9
DE.CHE504.18	CHE504	Chemical Reactor Design and Analysis	3	0	0	9
<b>VIII Semester Elective / Stream DE - 5 Courses</b>						
DE.CHE461.17	CHE461	Polymer Science & Technology	3	0	0	9
DE.CHE462.17	CHE462	Computational Fluid Dynamics	3	0	0	9
DE.CHE529.18	CHE529	Nanoscience and Technology	3	0	0	9
DE.CHE523.19	CHE523	Water Pollution Control Technology	3	0	0	9
DE.CHE462.20	CHE432	Electrochemical Engineering	3	0	0	9
DE.CHE464.17	CHE464	Artificial Intelligence in Chemical Engineering	3	0	0	9