Standard of Deviation Sheets for UG Courses

Chemical Engineering and Technology

B.Tech. Course Structure

(*without* Minor or Second Major 2025-26 onwards)

Category	B.Tech. with Internship Program Components	Proposed	Recommended	
			Minimum	Maximum
HLM	Humanities, Social Science, Language and Management	11	10	--
IS	Institute Science	24	22	--
IE	Institute Engineering	16	15	--
EP	Engineering Drawing (Manual and Computer Aided), Manufacturing Practices, and Practice courses of Department/ School	8	8	--
ϴDC+DE	Department/Program Core +Elective	75	68	--
OE	Open Electives	6	6	--
IndI/RI/SUE	Industrial/research internship/Start-up or Entrepreneurship	15	15	--
DP	Exploratory project	3	3	3
œ Total		**158**	**œ 147**	**œ 165**
*SP	*Stream Projects for B.Tech. Honours	10	10	10
		168	**œ 157**	**œ 175**

ΘDC+DE: The Department or Program Core (DC) should typically be between 50 to 70% of the total DC+DE credits

œ Shows the minimum and the maximum credit limits for a B.Tech. degree.

Chemical Engineering and Technology
Format of Semester-wise B.Tech. Course Structure

UG-CRC Code	Course Code	Course Name	L–T–P			Credits
Discipline_Name : 4-Year B.Tech. I-Semester						
IH.H101.14	HLM101	Universal Human Values	2	0	0	2
GY.PE101.14	PE101	Elementary Physical Education	0	1	3	2.5
GY.CP101.14	CP101	Creative Practices #	0	1	3	2.5
		Total	**2**	**2**	**6**	**7**
LM.HL101.14	HLM101	English	1	1	0	2
		Total	**3**	**3**	**6**	**9**
#Creative Practices course to be announced by Dean Academic Office						
*Basic English course to be taken by student as recommended after Diagnostic Test						

Note: 1. Per semester load should not exceed 22 credits.

Chemical Engineering : 4-Year B.Tech. I-Semester						
IS.PHY101.14	PHY101	Physics - I: Classical, Quantum & Relativistic Mechanics	3	1	2	5
IS.CY101.14	CY101	Chemistry - I	2	1	2	4
IS.MA101.14	MA101	Engineering Mathematics – I	3	1	0	4
DC.CHO101	CHO101	Process Calculations	2	1	0	3
EP.ME105.14	ME105	Manufacturing Practice - I	0	0	3	1.5
		Total	**10**	**4**	**7**	**17.5**
L: Lecture Hours, T: Tutorials Hours, P: Practical Or Laboratory Hours, C: Credits						
Chemical Engineering : 4-Year B.Tech. II-Semester						
IS.MA102.14	MA102	Engineering Mathematics - II	3	1	0	4
IE.MO101.14	EO101	Fundamentals of Electrical Engineering	3	1	0	4
IE.CSO101.14	CSO101	Computer Programing	3	1	2	5
EP.ME104.14	ME104	Engineering Drawing	1	0	3	2.5
EP.ME106.14	ME106	Manufacturing Practices - II	0	0	3	1.5
DC.CHE101.15	CHE101	Chemical Engineering Thermodynamics	3	1	0	4
		Total	**13**	**4**	**8**	**21**

Students can study one HLM course from the bouquet of HLM choices given.

Chemical Engineering : 4-Year B.Tech. III-Semester						
IS.MA201.14	MA201	Mathematical Methods	3	1	0	4
IE.CHO103.14	CHO201	Fluid Mechanics	3	1	0	4
IE.MO201.14	MO201	Material Science	3	0	0	3
DC.CHO102.14	CHE202	Fluid Particle Mechanics	2	0	0	2
DC.CHE214.15	CHE203	Chemical Reaction Engineering	3	0	0	3
DC.CHE204.14	CHE204	Heat Transfer Operations	3	0	0	3
DP.CHE291.15	CHE291	Exploratory Project	0	0	6	3
		Total	**17**	**2**	**6**	**22**
# CHO102 and CHO103 will be offered for other departments in even semester						
Chemical Engineering : 4-Year B.Tech. IV-Semester**						
IS.MA203.YY	MA203	Numerical Techniques	3	0	0	3
DC.CHE213.14	CHE211	Mass Transfer Operations I	3	0	0	3
DC.CHE314.15	CHE212	Chemical Technology	2	0	0	2
DC.CHE216.16	CHE213	Process Dynamics & Control	3	0	0	3
DC.CHE221.14	CHE214	Industrial Pollution and Control	3	0	0	3
EP.CHE205.25	CHE205	Computational Chemical Engineering	1	0	3	2.5
DC.CHE281.14	CHE281	Fluid Particle Mechanics Lab	0	0	2	1
DC.CHE282.15	CHE282	Chemical Reaction Engineering Lab	0	0	2	1
	DE - 1	Departmental Elective (DE) - 1	0	0	0	0
		Total	**15**	**0**	**7**	**18.5**
**CHO208 Heat and Mass Transfer for other departments as IE						
Chemical Engineering : 4-Year B.Tech. V-Semester						
DC.CHE311.14	CHE311	Mass Transfer Operations II	3	0	0	3
DC.CHE312.15	CHE312	Transport Phenomena	3	0	0	3
DC.CHE313.14	CHE313	Process Instrumentation	2	0	0	2
DC.CHE314.14	CHE 314	Energy Resource Utilization	3	0	0	3

Format of Semester-wise B.Tech. Course Structure

DC.CHE381.14	CHE381	Heat Transfer Operations Lab	0	0	2	1
DC.CHE382.14	CHE382	Instrumentation and Process Control Lab	0	0	2	1
DC.CHE383.14	CHE 383	Industrial Pollution and Control Lab	0	0	2	1
DC.CHE384.14	CHE384	Energy Resource Utilization Lab	0	0	2	1
	OE - 1	Open Elective - 1	3	0	0	3
		Total	**14**	**0**	**8**	**18**
Chemical Engineering : 4-Year B.Tech. VI-Semester						
II.CHE391 /RI.CHE392/SE.CHE		Internship	0	0	30	15
	DE - 2	DE2 (SWAYAM/NPTEL)	3	0	0	3
		Total	**3**	**0**	**30**	**18**
Chemical Engineering : 4-Year B.Tech. VII-Semester						
DC.CHE481.15	CHE481	Mass Transfer Operaions Lab	0	0	2	1
DC.CHE482.18	CHE482	Chemical Technology & Instrumental Analysis Lab	0	0	2	1
	DE - 3	Departmental Elective (DE) - 3	3	0	0	3
	DE - 4	Departmental Elective (DE) - 4	3	0	0	3
	DE - 4	Departmental Elective (DE) - 5	3	0	0	3
	OE - 2	Open Elective - 2	3	0	0	3
	HLM	HLM-2	2	1	0	3
	HLM	HLM-3	3	0	0	3
		Total	**17**	**1**	**4**	**20**
		Stream Project	0	0	10	5
		Total	**17**	**1**	**14**	**25**
Chemical Engineering : 4-Year B.Tech. VIII-Semester						
DC.CHE412.14	CHE411	Process Equipment Design	2	0	2	3
DC.CHE315.15	CHE412	Process Plant Design & Economics	2	0	2	3
	DE - 6	Departmental Elective (DE) - 6	3	0	0	3
	DE - 7	Departmental Elective (DE) - 7	3	0	0	3
	DE - 8	Departmental Elective (DE) - 8	3	0	0	3
HLM	HLM	HLM-4	3	0	0	3
		Total	**16**	**0**	**4**	**18**
		Stream Project	0	0	10	5
		Total	**16**	**0**	**14**	**23**

Pool for DE-3, DE-4, and DE-5						
DE.CHE531.17	CHE531	Solar Energy Engineering	3	0	0	3
DE.CHE431.15	CHE431	New Separation Processes	3	0	0	3
DE.CHE432.15	CHE432	Petroleum Refinery Engineering	3	0	0	3
DE.CHE433.15	CHE433	Kinetics of Complex Reactions	3	0	0	3
DE.CHE434.15	CHE434	Corosion Engineering	3	0	0	3
DE.CHE532.25	CHE532	Advanced Chemical Reaction Engineering	3	0	0	3
DE.CHE533.17	CHE533	Safety and Hazard Analysis	3	0	0	3
DE.CHE534.15	CHE534	Fluidization Engineering	3	0	0	3
DE.CHE535.15	CHE535	Biochemical Engineering	3	0	0	3
DE.CHE536.15	CHE 536	Chemical Process Design	3	0	0	3
DE.CHE537	CHE 537	Membrane Separation Processes	3	0	0	3
DE.CHE538	CHE 538	Applied Biochemical Engineering	3	0	0	3
DE.CHE539	CHE 539	Advanced Fluidization Engineering	3	0	0	3
DE.CHE541	CHE 541	Renewable Energy Technology	3	0	0	3
DE.CHE542.18	CHE 542	Air Pollution Control Technology	3	0	0	3
DE.CHE543.15	CHE 543	Multi Component Separation	3	0	0	3
DE.CHE544	CHE 544	Polymer Rheology	3	0	0	3

DE.CHE531.24	CHE545	Fundamentals of Microfluidics	3	0	0	3
DE.CHE533.24	CHE546	Multi-phase Flow	3	0	0	3
DE.CHE532.24	CHE547	Molecular Simulations	3	0	0	3
DE.CHE565	CHE565	Bio Transport Processes	3	0	0	3
	CY441	Waste Management Technology	3	0	0	3
	CY442	Green Chemistry	3	0	0	3
	CY511	Bioinspired Energy Conversion	3	0	0	3
	CY532	Statistical Thermidynamics	3	0	0	3

Pool for DE-1, DE-6, DE-7, and DE-8						
DE.CHE514.14	CHE514	Advanced Process Dynamics and Control	3	0	0	3
DE.CHE513.17	CHE513	Modeling, Simulation and Optimization	3	0	0	3
DE.CHE548.15	CHE 548	Multi Component Separation	3	0	0	3
DE.CHE549.16	CHE549	Fuel Cell Technology	3	0	0	3
DE.CHE551.17	CHE551	Solid Waste Management and Utilization	3	0	0	3
DE.CHE552.18	CHE552	Chemical Reactor Design and Analysis	3	0	0	3
DE.CHE553.18	CHE553	Nanoscience and Technology	3	0	0	3
DE.CHE554.19	CHE554	Water Pollution Control Technology	3	0	0	3
DE.CHE555.17	CHE555	Polymer Science & Technology	3	0	0	3
DE.CHE556.17	CHE556	Computational Fluid Dynamics	3	0	0	3
DE.CHE557.20	CHE557	Electrochemical Engineering	3	0	0	3
DE.CHE558.17	CHE558	Artificial Intelligence in Chemical Engineering	3	0	0	3
DE.CHE559.XX	CHE 559	Reliability and Risk Analysis in Process Industries	3	0	0	3
DE.CHE561.XX	CHE 561	Design and Development of Heterogeneous Catalysts	3	0	0	3
DE.CHE562.XX	CHE 562	Instrumental Analysis and Analytical Techniques	3	0	0	3
DE.CHE563.XX	CHE 563	Research Methodology	3	0	0	3
DE.CHE564.XX	CHE 564	Design and Analysis of Bioreactor	3	0	0	3
	CY438	Electrochemistry and Surface Phenomena	3	0	0	3
	CY447	Instrumental Methods of Chemical Analysis	3	0	0	3
	CY449	Environmental Impact and Risk Assessment	3	0	0	3