Department of Chemical Engineering

B. Tech. 1st Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	IDC1	NMCI101	Engineering Mathematics - I	3-0-0	Theory	3
2	DSC1	NCHC101	Introduction to Chemical Engineering	3-0-0	Theory	3
3	DSC2	NCHC102	Unit Operations Lab	0-0-2	Practical	1
4	ESC1	NFME101	Introduction to Materials Science & Engineering	3-0-0	Theory	3
5	AEC1	NHSA103	Understanding Human Behaviour	2-1-0	Theory	3
6	SEC1	NMES101	Manufacturing Process	2-0-3	Practical	3.5
7	VAC1	NCSV101	Computer Programming	3-0-0	Theory	3
8	VAC2	NCSV102	Computer Programming Lab	0-0-2	Practical	1
						20.5

B. Tech. 2nd Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	IDC2	NCYI101	Engineering Chemistry	3-0-0	Theory	3
2	IDC3	NCYI102	Engineering Chemistry Lab	0-0-2	Practical	1
3	IDC4	NMCI102	Engineering Mathematics - II	3-0-0	Theory	3
4	DSC3	NCHC103	Chemical Process Calculations	3-0-0	Theory	3
5	DSC4	NCHC104	Computational Tools for Chemical Engineers Lab	0-0-2	Practical	1
6	ESC2	NMEE102	Basic Mechanical Engineering	3-0-0	Theory	3
7	AEC2	NHSA101	Communication Skills	1-0-0	Theory	1
8	AEC3	NHSA102	Communication Skills Lab	0-0-2	Practical	1
9	SEC2	NCES101	Engineering Graphics	1-0-3	Theory	2.5
10	VAC3	NESV101	Environmental Science	3-0-0	Theory	3
						21.5

B. Tech. 3rd Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC3	NCHC201	Fluid Mechanics	3-1-0	Theory	4
2	DC4	NCHC202	Heat Transfer	3-1-0	Theory	4
3	DC5	NCHC203	Introduction to Engineering Thermodynamics	3-1-0	Theory	4
4	DP3	NCHC204	Fluid and Particle Mechanics Laboratory	0-0-2	Practical	1
5	DP4	NCHC205	Heat Transfer Laboratory	0-0-2	Practical	1
6	ESC3	NCHE201	Chemical Process Technology	3-0-0	Theory	3
7	AEC4	NCHA201	Mechanical Operations	3-0-0	Theory	3
						20

B. Tech. 4th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC6	NCHC206	Chemical Engineering Thermodynamics	3-1-0	Theory	4
2	DC7	NCHC207	Mass Transfer - I	3-1-0	Theory	4
3	DC8	NCHC208	Process Dynamics and Control	3-1-0	Theory	4
4	DP5	NCHC209	Analytical Instrumental Laboratory	0-0-2	Practical	1
5	DP6	NCHC210	Process Control Laboratory	0-0-2	Practical	1
6	ESC4	NCHE202	Transport Phenomena	3-0-0	Theory	3
7	SEC4	NCHS201	Chemical Plant Design and Economics	3-0-0	Theory	3
						20

B. Tech. 5th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC9	NCHC301	Mass Transfer - II	3-1-0	Theory	4
2	DC10	NCHC302	Chemical Kinetics and Reaction Engineering	3-1-0	Theory	4
3	DE1		*To be chosen from the pool.*	3-0-0	Theory	3
4	DP7	NCHC303	Mass Transfer Laboratory	0-0-2	Practical	1
5	DP8	NCHC304	Chemical Kinetics and Reaction Engineering Laboratory	0-0-2	Practical	1
6	HSSE1		*To be chosen from the HSS pool. HSS department to contribute courses to the pool below.*	3-0-0	Theory	3
7	DC1 (Minor)/ DC1 (Hons)			3-1-0	Theory	4
8	SDC1 (Minor)/ DP1 (Hons)			0-0-3	Practical	1.5
						21.5

B. Tech. 6th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC11	NCHC305	Chemical Process Equipment Design	3-1-0	Theory	4
2	DC12	NCHC306	Process Modeling and Simulation	3-1-0	Theory	4
3	DE2		*To be chosen from the pool.*	3-0-0	Theory	3
4	DP9	NCHC307	Chemical Process Equipment Design Laboratory	0-0-2	Practical	1
5	HSSE2		*To be chosen from the HSS pool. HSS department to contribute courses to the pool below.*	3-0-0	Theory	3
6	DC2 (Minor)/ DC2 (Hons)			3-1-0	Theory	4
7	SDC2 (Minor)/ DP2 (Hons)			0-0-3	Practical	1.5
						20.5

B. Tech. 7th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DE3		*To be chosen from the pool.*	3-0-0	Theory	3
2	DE4		*To be chosen from the pool.*	3-0-0	Theory	3
3	DC3 (Minor)/ DC3 (Hons)			3-1-0	Theory	4
4	SDC3 (Minor)/ DP3 (Hons)			0-0-3	Practical	1.5
5	Project	NCHC401	Project - I	8-0-0	Project	8
6	Internship	NCHS401	Internship	0-0-0	Internship	4
						23.5

B. Tech. 8th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC4 (Minor)/ DC4 (Hons)			3-1-0	Theory	4
2	DC5 (Minor)/ DC5 (Hons)			3-1-0	Theory	4
3	SDC4 (Minor)/ DP4 (Hons)			0-0-3	Practical	1.5
4	Project	NCHC402	Project - II	8-0-0	Project	8
						17.5

POOLS/TABLES

MINOR TABLE

Title of Minor			Chemical Engineering				
Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**	**Semester**
1	DC1 (Minor)	NCHM301	Fundamentals of Chemical Engineering	3-1-0	Theory	4	5
2	SDC1 (Minor)	NCHM302	Unit Operations Laboratory - I	0-0-3	Practical	1.5	5
3	DC2 (Minor)	NCHM303	Chemical Process Principles	3-1-0	Theory	4	6
4	SDC2 (Minor)	NCHM304	Unit Operations Laboratory - II	0-0-3	Practical	1.5	6
5	DC3 (Minor)	NCHM401	Chemical Reaction Engineering	3-1-0	Theory	4	7
6	SDC3 (Minor)	NCHM402	Chemical Reaction Engineering Laboratory	0-0-3	Practical	1.5	7
7	DC4 (Minor)	NCHM403	Fundamentals of Transport Phenomena	3-1-0	Theory	4	8
8	DC5 (Minor)	NCHM404	Separation Process Principles	3-1-0	Theory	4	8
9	SDC4 (Minor)	NCHM405	Process Design Laboratory	0-0-3	Practical	1.5	8
						26 - Minor	

HONORS TABLE

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**
1	DC1 (Hons)	NCHH301	Optimization in Chemical Engineering	3-1-0	Theory	4
2	DP1 (Hons)	NCHH302	Computational Methods Laboratory	0-0-3	Practical	1.5
3	DC2 (Hons)	NCHH303	Computational Fluid Dynamics	3-1-0	Theory	4
4	DP2 (Hons)	NCHH304	Optimization and AI in Chemical Engineering Labo	0-0-3	Practical	1.5
5	DC3 (Hons)	NCHH401	Petroleum Refining	3-1-0	Theory	4
6	DP3 (Hons)	NCHH402	Process Simulation Laboratory	0-0-3	Practical	1.5
7	DC4 (Hons)	NCHH403	Heterogeneous Reaction Engineering	3-1-0	Theory	4
8	DC5 (Hons)	NCHH404	Industrial Safety and Hazards Management	3-1-0	Theory	4
9	DP4 (Hons)	NCHH405	Fuel Analysis Laboratory	0-0-3	Practical	1.5
						26 - Hons.

POOL of ESC (except MS & HSS)

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**	**Semester**
1	ESC3	NCHE201	Chemical Process Technology	3-0-0	Theory	3	3
2	ESC4	NCHE202	Transport Phenomena	3-0-0	Theory	3	4

POOL of AEC (except HSS)

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**
1	AEC	NCHA201	Mechanical Operations	3-0-0	Theory	3
2	AEC			3-0-0	Theory	3

POOL of SEC (except HSS)

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**	**Semester**
1	SEC			3-0-0	Theory	3	3
2	SEC	NCHS201	Chemical Plant Design and Economics	3-0-0	Theory	3	4

POOL of UG DE course

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**	**Level of Course**
1	DE	NCHD301	Polymers Science and Engineering	3-0-0	Theory	3	**3**
2	DE	NCHD302	Food Processing Technology	3-0-0	Theory	3	**3**
3	DE	NCHD303	Electrochemical Science and Engineering	3-0-0	Theory	3	**3**
4	DE	NCHD304	Biofuels and Biomass Conversion Technology	3-0-0	Theory	3	**3**
5	DE	NCHD305	AI in Process Industries	3-0-0	Theory	3	**3**
6	DE	NCHD401	Petrochemical Technology	3-0-0	Theory	3	**4**
7	DE	NCHD402	Bioprocess Technology	3-0-0	Theory	3	**4**
8	DE	NCHD403	Energy Technology	3-0-0	Theory	3	**4**
9	DE	NCHD404	Process Data Analytics	3-0-0	Theory	3	**4**
10	DE	NCHD405	Advanced Separation Processes	3-0-0	Theory	3	**4**
11	DE	NCHD406	Membrane Science and Engineering	3-0-0	Theory	3	**4**
12	DE	NCHD407	Process Integration	3-0-0	Theory	3	**4**
13	DE	NCHD408	Process Intensification	3-0-0	Theory	3	**4**
14	DE	NCHD409	Materials Characterization	3-0-0	Theory	3	**4**
15	DE	NCHD410	Interfacial Phenomena and Microfluidics	3-0-0	Theory	3	**4**