



SHIV NADAR UNIVERSITY

Department of Chemical Engineering

School of Engineering

Undergraduate Chemical Engineering Prospectus

(2019-2020)

Program Educational Objectives: Graduating Students of B.Tech. program of Chemical Engineering will be able to

1. Have sufficient knowledge related to basic concepts and principles related to physics chemistry, mathematics, chemical engineering basic courses.
2. Comprehend the knowledge obtained and apply it to solve problems of different level of difficulties.
3. Analyse the complex problem, break it into simpler problem corresponding to fundamental concepts and thus solve it.
4. Design the process, its related flowsheets and documents with required and necessary specifications
5. Analyse the various components of a given Process and understand various interactions among these components and use it to design and operate the process safely, reliably and economically.
6. Communicate to respective agency through technical reports, presentations etc. with desired technical information and data in the form suitable for the audience.
7. Appreciate the importance of roles and responsibilities of a chemical engineer in the welfare and progress of industry as well as environment and in turn of society.

B.Tech. Chemical Engineering Curriculum (2019-2023 batch)

The B.Tech. Chemical Engineering course curriculum requires students to complete a minimum of 160 credits.

Overall Credit Distribution

S.No.	Category	Credits
1.	Core Common Curriculum (CCC)*	18
2.	University Wide Elective (UWE)*	18
3	UWE/CCC*	6
4.	Basic Sciences (BS)	28
5.	Engineering Sciences (ES)	15
6.	Major Core	54
7.	Project (Major + Minor)	9
8.	Major Elective	12
	Total Credits	160

**All Chemical Engineering students should register for a minimum of 18 CCC and 18 UWE credits. The total credits for CCC and UWE combined should be a minimum of 42.*

Semesters	Total Credits
Semester - 1	21
Semester - 2	23
Semester - 3	22
Semester - 4	24
Semester - 5	19
Semester - 6	20
Semester - 7	20
Semester - 8	12
Total	161[#]

The additional one credit coming due to one compulsory CCC of 4 credits. The same can be compensated by proper choice of CCC/ UWE with one credit less in the later semesters to make it 160 credits.

Courses: Category wise

Basic Sciences				
S.No.	Code	Courses	L:T:P	Credits
1.	BIO 113	Essentials of Biology	3:00:00	3
2.	CHY 111	Chemical Principles	3:01:01	5
3.	MAT 103	Mathematical Methods-I	3:01:00	4
4.	MAT 104	Mathematical Methods-II	3:01:00	4
5.	MAT 205	Mathematical Methods-III – Prob. and Stat	3:00:00	3
6.	PHY 101	Introduction to Physics-I	3:01:00	4
7.	PHY 102	Introduction to Physics-II	3:01:01	5
Total				28

Engineering Sciences				
S.No.	Code	Courses	L:T:P	Credits
1.	CED 101	Engineering Mechanics	3:01:00	4
2.	CSD 101	Introduction to Computing and Programming	3:00:01	4
3.	MED 101	Manufacturing Processes	1:00:01	2
4.	MED 104	Descriptive Engg. Drawing	1:00:01	2
5.	MED 201	Material Science and Engineering	3:00:00	3
Total				15

Major Core Courses				
S.No.	Code	Courses	L:T:P	Credits
1.	CHD 210	Fluid Mechanics	2:01:00	3
2.	CHD 211	Chemical Engineering Thermodynamics	3:01:00	4
3.	CHD 214	Material and Energy Balance	2:01:00	3
4.	CHD 221	Heat Transfer	2:01:00	3
5.	CHD 222	Mechanical Operations	2:01:00	3
6.	CHD 223	Industrial and Engineering Chemistry	3:00:00	3
7.	CHD 225	Chemical Reaction Engineering – I	3:00:00	3
8.	CHD 311	Mass Transfer-I	2:01:00	3
9.	CHD 313	Process Dynamics and Control	3:01:00	4
10.	CHD 315	Chemical Engineering Laboratory -I	0:00:02	2
11.	CHD 317	Chemical Reaction Engineering – II	3:01:00	4
12.	CHD 321	Mass Transfer-II	2:01:00	3
13.	CHD 322	Transport Phenomenon	2:01:00	3
14.	CHD 323	Chemical Engineering Laboratory -II	0:00:02	2
15.	CHD 413	Chemical Technology	3:00:00	3
16.	CHD 414	Chemical Engineering Laboratory -III	0:00:02	2
17.	CHD 415	Process Equipment Design	3:00:00	3
18.	CHD 416	Chemical Process Safety	3:00:00	3
Total				54

Projects				
S.No.	Code	Courses	L:T:P	Credits
1.	CHD 417	Minor Project	0:00:03	3
2.	CHD 421	Major Project	0:00:06	6
Total				9

Major Elective Courses				
S.No.	Code	Courses	L:T:P	Credits
1.	CHD 262	Major Elective : Numerical Methods	3:00:00	3
2.	CHD 372	Major Elective : Computational Fluid Dynamics	2:00:01	3
3.	CHD 382	Major Elective : Modeling and Simulation of Chemical Engineering Systems	2:00:01	3
4.	CHD 471	Major Elective : Process Engineering	3:00:00	3
Total				12

Courses: Semester wise

First Semester

S.No.	Code	Courses	L:T:P	Credits
1	CCC 704	CCC - Environmental Studies -Compulsory		4
2	CHY 111	Chemical Principles	03:01:01	5
3	MAT 103	Mathematical Methods-I	03:01:00	4
4	MED 101	Manufacturing Processes	01:00:01	2
5	MED 104	Descriptive Engg. Drawing	01:00:01	2
6	PHY 101	Introduction to Physics-I	03:01:00	4

Total 21

Credits **Cumulative**

Core 17 17

UWE 0 0

CCC 4 4

Total **21** **21**

Second Semester

S.No.	Code	Courses	L:T:P	Credits
1	BIO 113	Essentials of Biology	03:00:00	3
2	CED 101	Engineering Mechanics	03:01:00	4
3	CSD 101	Introduction to Computing and Programming	03:00:01	4
4	MAT 104	Mathematical Methods-II	03:01:00	4
5	PHY 102	Introduction to Physics-II	03:01:01	5
6		CCC 2+3		3

Total 23

Credits **Cumulative**

Core 20 37

UWE 0 0

CCC 3 7

Total **23** **44**

Third Semester

S.No.	Code	Courses	L:T:P	Credits
1	CHD 210	Fluid Mechanics	02:01:00	3
2	CHD 211	Chemical Engineering Thermodynamics	03:01:00	4
3	CHD 214	Material and Energy Balance	02:01:00	3
4	MAT 205	Mathematical Methods-III – Prob. and Stat	03:00:00	3
5	MED 201	Material Science and Engineering	03:00:00	3
6		CCC 4+5		3
7		UWE-1		3

Total 22

Credits **Cumulative**

Core	16	53
UWE	3	3
CCC	3	10
Total	22	66

Fourth Semester

S.No.	Code	Courses	L:T:P	Credits
1	CHD 221	Heat Transfer	02:01:00	3
2	CHD 222	Mechanical Operations	02:01:00	3
3	CHD 223	Industrial and Engineering Chemistry	03:00:00	3
4	CHD 225	Chemical Reaction Engineering – I	03:00:00	3
5	CHD 262	Major Elective : Numerical Methods	03:00:00	3
6		CCC 6+7		3
7		UWE-2		3
8		UWE-3		3

Total 24

Credits **Cumulative**

Core	15	68
UWE	6	9
CCC	3	13
Total	24	90

Fifth Semester

S.No.	Code	Courses	L:T:P	Credits
1	CHD 311	Mass Transfer-I	02:01:00	3
2	CHD 313	Process Dynamics and Control	03:01:00	4
3	CHD 315	Chemical Engineering Laboratory – I (FM&HT)	00:00:02	2
4	CHD 317	Chemical Reaction Engineering – II	03:01:00	4
5		UWE-4		3
6		UWE-5		3

	Total	19
	Credits	Cumulative
Core	13	81
UWE	6	15
CCC	0	13
Total	19	109

Sixth Semester

S.No.	Code	Courses	L:T:P	Credits
1	CHD 321	Mass Transfer-II	02:01:00	3
2	CHD 322	Transport Phenomenon	02:01:00	3
3	CHD 323	Chemical Engineering Laboratory –II (MO&CRE)	00:00:02	2
4	CHD 413	Chemical Technology	03:00:00	3
5		CCC 8+9		3
6		UWE-6		3
7		UWE-7		3

	Total	20
	Credits	Cumulative
Core	11	92
UWE	6	21
CCC	3	16
Total	20	129

Seventh Semester

S.No.	Code	Courses	L:T:P	Credits
1	CHD 372	Major Elective : Computational Fluid Dynamics	02:00:01	3
2	CHD 414	Chemical Engineering Laboratory –III (MT&PDC)	00:00:02	2
3	CHD 415	Process Equipment Design	03:00:00	3
4	CHD 416	Chemical Process Safety	03:00:00	3
5	CHD 417	Minor Project	00:00:03	3
6		CCC 10+11		3
7		UWE-8		3

Total	20
Credits	Cumulative
Core	14
UWE	3
CCC	3
Total	20
	106
	24
	19
	149

Eighth Semester

S.No.	Code	Courses	L:T:P	Credits
1	CHD 382	Major Elective : Modeling and Simulation of Chemical Engineering Systems	02:00:01	3
2	CHD 421	Major Project	00:00:06	6
3	CHD 471	Major Elective : Process Engineering	03:00:00	3

Total	12
Credits	Cumulative
Core	12
UWE	0
CCC	0
Total	12
	118
	24
	19
	161