Department of Chemical Engineering (CH)

B.Tech Curriculum (2023 onwards)

Sl No.	Course	L-T-P-C
Semester 1		
1	Chemistry for Engineers	2-1-0-3
2	Physics Laboratory/Chemistry Laboratory	0-0-3-2
3	Engineering Mathematics -1	3-1-0-4
4	Computer Programming	2-0-3-4
5	Engineering Mechanics	2-1-0-3
6	Introduction to Electrical Systems	2-0-0-2
7	Concepts in Engineering and Design	1-0-2-2
8	Language Course (P/F)	2-0-0-2
	NCC/NSS*	
	Creative Arts / Physical Wellness / Lifestyle Management Course*	
	Semester Credits (Cumulative Credits)	22 (22)
Semester 2		
1	Introduction to Classical Physics	2-1-0-3
2	Chemistry Laboratory/Physics Laboratory	0-0-3-2
3	Engineering Mathematics -2	3-0-0-3
4	Engineering Drawing	1-0-3-3
5	Makers Laboratory	0-0-3-2
6	Introduction to Electronics	2-0-0-2
7	Ecology, Environment and Sustainability	2-0-0-2
8	Chemical Process Calculations	3-1-0-4
	Semester Credits (Cumulative Credits)	21 (43)
Summer – Socially/locally relevant project under NSS		

* The minimum requirements i.e., 90 hours for NSS and 30 hours for Creative arts/Physical Wellness/Lifestyle Management must be completed before the enrolment for Semester 5.

Department of Chemical Engineering (CH)

B.Tech Curriculum (2023 onwards)

Course	L-T-P-C
Semester 3	
Department Courses / Laboratories	16
Mathematics Elective	3-0-0-3
Introduction to Quantum Science and Technology	2-1-0-3
Semester Credits (Cumulative Credits)	22 (65)
Semester 4	
Department Courses / Laboratories	17
Introduction to Data Science and Machine Learning	2-1-0-3
Humanities Elective 1	3-0-0-3
Semester Credits (Cumulative Credits)	23 (88)
Summer – Socially/locally relevant project under NSS	
Semester 5	
Department Courses / Laboratories	19
Humanities Elective 1	3-0-0-3
Free Elective 1	3-0-0-3
Semester Credits (Cumulative Credits)	25 (113)
Semester 6	
Department Courses / Laboratories	13
Free Elective 2	3-0-0-3
Free Elective 3	3-0-0-3
Semester Credits (Cumulative Credits)	19 (132)
Summer – See details given in the study plan section	

Choice of Study Plans Available

All students must choose one of the five study plans given below.

	Summer Internship (Min. of 8 weeks)	Extended Internship (Min. of 24 weeks)	Project 2
Study Plan A	√	×	√*
Study Plan B	√	×	×
Study Plan C	×	√	×
Study Plan D	×	×	√*
Study Plan E	×	×	×

** For these study plans, as per the Senate resolution, it is necessary to obtain Grade B or better in Project 1 done during Semester 7.*

- For Study Plans A and B: Summer Internship must be done after completion of Semester 6 and before beginning of Semester 7 for a minimum of 8 weeks. Evaluation will be completed, and grades will be recorded in the transcript along with the courses taken in Semester 7.
- For Study Plan C: Extended Internship must be done after completion of Semester 6 and before beginning of Semester 8 for a minimum of 24 weeks. Evaluation will be completed, and grades will be awarded recorded in the transcript for Semester 7.
- For Study Plans D and E: No internship activity during summer after Semester 6.

Study Plan A

Students must have grade B or better in Project 1 to choose this study plan

Course	L-T-P-C
Semester 7	
Department Courses / Laboratories	3
Project 1	- - - 3
Summer Internship (Evaluation of internship done in the preceding summer, P/F course)	- - - 2
Semester Credits (Cumulative Credits)	8 (140)
Semester 8	
Project 2	- - - 6
Free Elective 4	3-0-0-3
Professional Ethics	1-0-0-1
Semester Credits (Cumulative Credits)	10 (150)

Category	Minimum Credit Requirement	Remarks
Basic sciences	20	Includes mathematics courses and/or electives.
Engineering Sciences	26	Includes emerging technology courses of 6 credits.
Professional Major	72	Department electives must be earned from 4 or 5 level courses approved by the department.
Project	9	
Humanities	9	Humanities electives must be earned from 2, 3, 4 or 5level humanities and social science courses
Free Electives	12	Must be earned from 2, 3, 4, or 5 level courses offered by the institute.
Internship	2	Minimum duration: 8 weeks
Total Credits	150	

Study Plan B

Course	L-T-P-C
Semester 7	
Department Courses / Laboratories	3
Project 1	- - - 3
Summer Internship (Evaluation of internship done in the preceding summer, P/F course)	- - - 2
Semester Credits (Cumulative Credits)	8 (140)
Semester 8	
Department Courses / Laboratories	6
Free Elective 4	3-0-0-3
Professional Ethics	1-0-0-1
Semester Credits (Cumulative Credits)	10 (150)

Category	Minimum Credit Requirement	Remarks
Basic sciences	20	Includes mathematics courses and/or electives.
Engineering Sciences	26	Includes emerging technology courses of 6 credits.
Professional Major	78	Department electives must be earned from 4 or 5 level courses approved by the department.
Project	3	
Humanities	9	Humanities electives must be earned from 2, 3, 4 or 5level humanities and social science courses
Free Electives	12	Must be earned from 2, 3, 4, or 5 level courses offered by the institute.
Internship	2	Minimum duration: 8 weeks
Total Credits	150	

Study Plan C

Course	L-T-P-C
Semester 7	
Extended Internship (Evaluation of internship to be done before beginning of Semester 8, P/F course)	- - - 6
Semester Credits (Cumulative Credits)	6 (138)
Semester 8	
Project 1	- - - 3
Department Courses / Laboratories	3
Free Elective 4	2-0-0-2
Free Elective 5	3-0-0-3
Professional Ethics	1-0-0-1
Semester Credits (Cumulative Credits)	12 (150)

Category	Minimum Credit Requirement	Remarks
Basic sciences	20	Includes mathematics courses and/or electives.
Engineering Sciences	26	Includes emerging technology courses of 6 credits.
Professional Major	72	Department electives must be earned from 4 or 5 level courses approved by the department.
Project	3	
Humanities	9	Humanities electives must be earned from 2, 3, 4 or 5level humanities and social science courses
Free Electives	14	Must be earned from 2, 3, 4, or 5 level courses offered by the institute.
Internship	6	Minimum duration: 24 weeks
Total Credits	150	

Study Plan D

Students must have grade B or better in Project 1 to choose this study plan

Course	L-T-P-C
Semester 7	
Department Courses / Laboratories	3
Project 1	- - - 3
Free Elective 4	2-0-0-2
Semester Credits (Cumulative Credits)	8 (140)
Semester 8	
Project 2	- - - 6
Free Elective 5	3-0-0-3
Professional Ethics	1-0-0-1
Semester Credits (Cumulative Credits)	10 (150)

Category	Minimum Credit Requirement	Remarks
Basic sciences	20	Includes mathematics courses and/or electives.
Engineering Sciences	26	Includes emerging technology courses of 6 credits.
Professional Major	72	Department electives must be earned from 4 or 5 level courses approved by the department.
Project	9	
Humanities	9	Humanities electives must be earned from 2, 3, 4 or 5level humanities and social science courses
Free Electives	14	Must be earned from 2, 3, 4, or 5 level courses offered by the institute.
Internship	-	
Total Credits	150	

Study Plan E

Course	L-T-P-C
Semester 7	
Department Courses / Laboratories	3
Project 1	- - - 3
Free Elective 4	2-0-0-2
Semester Credits (Cumulative Credits)	8 (140)
Semester 8	
Department Courses / Laboratories	6
Free Elective 4	3-0-0-3
Professional Ethics	1-0-0-1
Semester Credits (Cumulative Credits)	10 (150)

Category	Minimum Credit Requirement	Remarks
Basic sciences	20	Includes mathematics courses and/or electives.
Engineering Sciences	26	Includes emerging technology courses of 6 credits.
Professional Major	78	Department electives must be earned from 4 or 5 level courses approved by the department.
Project	3	
Humanities	9	Humanities electives must be earned from 2, 3, 4 or 5level humanities and social science courses
Free Electives	14	Must be earned from 2, 3, 4, or 5 level courses offered by the institute.
Internship	-	
Total Credits	150	

Guidelines

1. The credits shown for department/free elective courses are only indicative. They may vary based on the actual elective course chosen by the student.

2. A maximum of 3 credits may be obtained against humanities electives from MOOCs courses approved by the HSS department.

3. A maximum of 6 credits may be obtained against department electives from MOOCs courses approved by the department.

4. A maximum of 6 credits may be obtained against free electives from MOOCs courses approved by the institute.

5. The maximum number of allowed MOOCs credits under all elective categories will be limited to 6.

6. The minimum number of credits necessary to obtain a degree is 150.

Details of NSS Activity and Socially/Locally Relevant Project

At present 80 hours of NSS work is mandatory requirement for UG degree. A student is allowed to earn these hours by participating in different activities organized by the NSS team.

In the proposed curriculum NSS activity will be divided into three segments for a total of 90 hours.

(a) 30 hours of mandatory participation in activities organized by the NSS team as earlier.
(b) 30 hours of mandatory project work in a socially/locally relevant project during the summer after Semester 2. The student will identify, formulate and propose a solution to a socially/locally relevant issues. The students are encouraged to work in their local communities. NSS team will form detailed guidelines for the same.
(c) The project work in part (b) will be evaluated by appropriate committee formed by NSS.
(d) If the project is recommended for the next phase, in the summer after Semester 4 the students can complete the same and submit a final report to earn 30 hours of work.
(e) If the project is not recommended by the NSS committee, then the student must earn another 30 hours through regular NSS activity.

A few of the best projects, if any will be recognized and recommended by the NSS committee to the Institute's Innovation Council for consideration of financial support.

Details of Creative Arts/Physical Wellness/Lifestyle management Course

To complete this course requirement, a student must register for one of the recognized activities organized by the institute for 30 hours and complete the same with a Pass Grade before beginning of Semester 6. These activities may include creative arts (such as music/dance/painting etc.), physical wellness (such as sports/yoga/martial arts etc.), and lifestyle management courses (organized by GCU/health center etc.).