

Branch Code: CH21
Dual Degree (B.Tech. & M.Tech.) in Chemical Engineering
2018 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	CY1001	Chemistry I	3	1	0	0	6	10	S
2	CY1002	Chemistry Laboratory I	0	0	0	3	0	3	S
3	MA1101	Functions of Several Variables	3	1	0	0	6	10	S
4	ME1100	Thermodynamics	3	1	0	0	6	10	E
5	PH1010	Physics I	3	1	0	0	6	10	S
6	PH1030	Physics Lab I	0	0	0	3	1	4	S
7	ID1200	Ecology and Environment	0	0	0	0	2	0	
8	GN1101	Life Skills I	0	0	0	0	2	0	
		NCC (NC1010)/NSO (NS1020)/NSO(NS1030)	0	0	0	0	2	0	
		Total Credits :						47	

Winter

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	WS1301	Workshop I	0	0	0	3	0	3	E

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	AM1100	Engineering Mechanics	3	1	0	0	6	10	E
2	MA1102	Series and Matrices	3	1	0	0	6	10	S
3	PH1020	Physics II	3	1	0	0	6	10	S
4	CS1100	Introduction to Programming	3	0	0	3	6	12	E
5	CH1020	Principles & Calculations in Chemical	3	1	0	0	6	10	P
6	GN1102	Life Skills II	0	0	0	0	1	0	
7		NCC (NC1010)/NSO (NS1020)/NSO(NS1030)	0	0	0	0	3	0	
		Total Credits :						52	

Summer

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	WS1302	Workshop I	0	0	0	3	0	3	E

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	CH2010	Chemical Engineering Thermodynamics	3	1	0	0	6	10	P
2	CH2012	Continuum Mechanics & Transport Phenomena	3	1	0	0	6	10	P
3	CH2013	Computational Programming & Process Simulation Lab	1	0	0	2	2	5	P
4	CH2061	Computational Techniques	3	1	0	0	6	10	P
5	MAE1	Maths Elective 1	3	0	0	0	6	9	S
6	HSE1	Humanities I	3	0	0	0	6	9	H
		Total Credits :						53	

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	CH2014	Fundamentals of Heat & Mass Transfer	3	1	0	0	6	10	P
2	CH2015	Fluid and Particle Mechanics	3	1	0	0	6	10	P
3	CH2016	Thermodynamics Lab	0	0	0	3	2	5	P
4	CY2010	Kinetics and Catalysis	3	0	0	0	6	9	S
5	EE1100	Basic Electrical Engineering	3	1	0	0	6	10	E
6	HSE2	Humanities 2	3	0	0	0	6	9	H
		Total						53	

Semester 5

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	BT1010	Life Sciences	3	0	0	0	6	9	S
2	CH3030	Applications of Mass Transfer	3	1	0	0	6	10	P
3	CH3010	Chemical Reaction Engineering	3	1	0	0	6	10	P
4	CH3510	Momentum Transfer & MO Lab	0	0	0	3	2	5	P
5	CH3520	Heat and Mass Transfer Lab	0	0	0	3	2	5	P
6		Dept. Elective 1	3	0	0	0	6	9	P
		Total						48	

Semester 6

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	CH3052	Materials Science for Chemical Engineers	3	1	0	0	6	10	P
2	CH3050	Process Dynamics and Control	3	1	0	0	6	10	P
3	CH3521	Heat and Mass Transfer Lab 2	1	0	0	3	2	6	P
4	CH3021	CRE Lab	0	0	0	3	2	5	P
5		Dept. Elective 2	3	0	0	0	6	9	P
		Total						40	

Summer

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
	CH3500	Summer Internship	0	0	0	0	20	0	

Semester 7

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	CH4010	Process & Product Design	3	1	0	0	6	10	P
2	CH4050	Chemical Technology and Equipment Design	3	1	0	0	6	10	P
3	CH4030	Process Control Lab	0	0	0	3	2	5	P
4		Humanities 3	3	0	0	0	6	9	H
5		Dept. Elective 3	3	0	0	0	6	9	P
		Total						43	

Semester 8

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1		Dept. Elective 4	3	0	0	0	6	9	P
2		Dept. Elective 5	3	0	0	0	6	9	P
3		Dept. Elective 6	3	0	0	0	6	9	P
4		Restricted Core - 1*	3	0	0	0	6	9	P
5		Restricted Core - 2*	3	0	0	0	6	9	P
6	HS3050	Professional Ethics	2	0	0	0	0	0	H
		Total						45	

* A restricted set of core courses is available for the students in the areas of a. fluid dynamics b. process modeling and simulation and c. energy. Students will take two courses from these categories only. Further, they may take maximum ONE from each of these categories. The restricted core courses in each category are as follows

I. Fluid Dynamics

- CH5100 Multiphase Systems
- CH5541 Advanced Topics in Momentum Transfer
- CH6020 Computational Fluid Dynamics Techniques

II. Modeling and Simulation

- CH5140 Process Analysis and Simulation
- CH5230 System Identification
- CH5180 Steady State & Dynamic Analysis of Physiochemical Systems
- CH5440 Multivariate Data Analysis for Process Modeling
- CH6531 Multiscale Modeling of Heterogeneous Catalytic Systems

III. Energy

- CH5013 Principles of Fuel Cells
- CH5018 Biomass Conversion Processes and Analysis
- CH5023 Unconventional Oil and Gas Resources
- CA5350 Catalysis in Petroleum Technology

Summer

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	CH5681	Project 1	0	0	0	0	25	25	P
		Total						25	

Semester 9

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1		Dept. Elective 7	3	0	0	0	6	9	P
2	CH5682	Project 2	0	0	0	0	25	25	
		Total						34	

Semester 10

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	CH5683	Project 3	0	0	0	0	40	40	P
		Total						40	

Semester	I	II	III	IV	V	VI	VII	VIII	Summer	IX	X	Total
Credits	47	52+6	53	53	48*	40*	43*	45*	25	34	40	558

* Indicated credits are only for core program including Department Electives 7. In addition, students are required to take 72 elective credits (13%) during semesters V-VIII from any dept. including Chemical Engineering, subject to maximum of 60 credits per semester.
Suggested elective credits: 9cr. in V, 18cr. each in VI & VII sem; 27 cr. in VIII sem.

Category	Engineering (E)	Professional (P) Core+Elective+Project	Humanities (H)	Sciences (S)	Un-allotted credits	Total
Credits	48	174+63+90	27	84	72	558

B.Tech (Honours) + M.Tech.: (Total credit requirement: 558 + 27 = 585)

- **Eligibility:** Minimum CGPA of 8.5 at the end of 4th semester without U or W grade in any course.
- **Extra credit requirement:** 27 credits total in VII & VIII semesters over and above the regular B.Tech requirement. (13+14 infeasible as specified in curriculum)
- **27 credits of free electives have to be from CH5000+ (elective courses in the department)**
- Thus, professional credits for Dual Degree (B.Tech. (Honours) & M.Tech.) program is 381 credits, of which 90 credits are as Dual Project.
- Category-wise Credit Distribution for Dual Degree (B.Tech. (Honours) & M.Tech.) program

Category	Engineering (E)	Professional (P) Core+Elective+Project	Humanities (H)	Sciences (S)	Un-allotted credits	Total
Credits	48	134+90+90	27	75+9	45	585