B.TECH. PROGRAMME

CHEMICAL ENGINEERING

CURRICULUM

for 2010 admissions onwards

GENERAL INFORMATION

In this section, category-wise distribution of credits for B.Tech (Chemical Engineering) program for all semesters are given, followed by curriculum.

Code Numbering

Each course is assigned a code number consisting of two letters followed by three digits. The two-letter code indicates the department offering the course. The digit code indicates the level of the course (100,200,300,400 etc..). The odd number indicates courses offered in odd semesters and even number indicates courses offered in even semesters. When a subject is offered in both even and odd semesters, the digit code ends with a zero. Generally Elective courses begin with * 51 and lab courses begin with *90. Courses in humanity subjects (except language) are offered by any department where expertises are available.

ABBREVIATIONS

Curriculum

L	-	Lecture	H	-	Humanities
T	-	Tutorial	S	-	Science
P	-	Practical	M	-	Mathematics
Cr	-	Credit	G	-	General Engg.
Cat	-	Category	C	-	Core Engg.
ES	-	Exam Slot	Pr	-	Project

Departments

AES	-	Aerospace Engineering
CHE	-	Chemical Engineering
CHY	-	Chemistry
CSE	-	Computer Science and Engineering
CVL	-	Civil Engineering
ECE	-	Electronics and Communication Engineering
EEE	-	Electrical and Electronics Engineering
EIE	-	Electronics and Instrumentation Engineering
HUM	-	Humanities and Languages
MAT	-	Mathematics
MEC	-	Mechanical Engineering
PHY	-	Physics

B Tech Programme
CHEMICAL ENGINEERING
REVISED CURRICULUM
(2010 admissions onwards)

SEMESTER I:

Cat.	Code	Course Title	L-T-P	Cr	ES
H	ENG111	Communicative English	2 0 2	3	G
S	PHY100/ CHY100	Physics/ Chemistry	3 0 0	3	B
M	MAT111	Calculus, Matrix Algebra and Ordinary Differential Equations	3 1 0	4	A
G	EEE100	Electrical Engineering	3 0 0	3	C
G	MEC100/ CSE100	Engineering Mechanics/ Computer Programming	3 1 0 / 3 0 0	4 / 3	D
G	MEC181	Engineering Drawing	1 0 3	2	-
S	PHY181/ CHY181	Physics Lab./ Chemistry Lab.	0 0 3	1	-
G	MEC180/ EEE180	Workshop A/ Workshop B	1 0 2	2	-
G	CSE180	Computer Programming Lab.	0 0 3	1	-
H	CUL101	Cultural Education I	2 0 0	2	H

H = 5 S = 4 M = 4 G = 11 **Total = 24**

SEMESTER II:

Cat.	Code	Course Title	L-T-P	Cr	ES
H	ENG112	Technical Communication	2 0 2	3	G
S	CHY100/ PHY100	Chemistry/ Physics	3 0 0	3	B
M	MAT112	Vector Calculus, Fourier Series and Partial Differential Equations	3 1 0	4	A
G	ECE100	Electronics Engineering	3 0 0	3	C
G	CSE100/ MEC100	Computer Programming/ Engineering Mechanics	3 0 0 / 3 1 0	3 / 4	D
G	MEC182	Computer Aided Drawing	1 0 3	2	-
S	CHY181/ PHY181	Chemistry Lab./ Physics Lab.	0 0 3	1	-
G	EEE180/ MEC180	Workshop B/ Workshop A	1 0 2	2	-
G	CSE180	Computer Programming Lab.	0 0 3	1	-
H	CUL102	Cultural Education II	2 0 0	2	H

H = 5 S = 4 M = 4 G = 11 **Total = 24**

III Semester

Cat.	Code	Course Title	L-T-P	Cr	ES
M	MAT211	Integral Transforms and Complex Analysis	3 1 0	4	A
C	CHE210	Introduction to Chemical Engineering	3 1 0	4	C
C	CHE211	Fluid Mechanics	3 1 0	4	D
C	CHE220	Inorganic Chemical Technology	3 0 0	3	E
C	CHE240	Inorganic and Physical Chemistry	3 1 0	4	B
H		Humanities Elective I	1 0 2	2	H
C	CHE290	Inorganic and Physical Chemistry Lab.	0 0 3	1	-
C	CHE291	Fluid Mechanics Lab.	0 0 3	1	-

M = 4 H = 2 C = 17 **Total = 23**

IV Semester

Cat.	Code	Course Title	L-T-P	Cr	ES
M	MAT212	Mathematical Statistics and Numerical Methods	3 1 0	4	A
C	CHE212	Chemical Engineering Thermodynamics	3 1 0	4	C
C	CHE213	Heat Transfer in Chemical Engineering	3 1 0	4	B
C	CHE221	Mechanical Operations	3 0 0	3	E
C	CHE241	Material Science and Strength of Materials	4 0 0	4	D
H		Humanities Elective II	1 0 2	2	H
C	CHE292	Strength of Materials Lab.	0 0 3	1	-
C	CHE293	Mechanical Operations Lab.	0 0 3	1	-
H	SSK111	SOFT SKILLS I	0 0 3	1	-

M = 4 H = 3 C = 17 **Total = 24**

V Semester

Cat.	Code	Course Title	L-T-P	Cr	ES
C	CHE310	Diffusional Mass Transfer Operations	3 1 0	4	C
C	CHE311	Chemical Reaction Engineering	3 1 0	4	E
C	CHE320	Organic Chemical Technology	3 0 0	3	F
C	CHE330	Advanced Topics in Chemical Engineering	0 0 3	1	-
S		Science Elective I	3 0 0	3	B
H	ENV200	Environmental Studies	3 1 0	4	D
C	CHE390	Chemical Technology Lab.	0 0 3	1	-
C	CHE391	Heat Transfer Lab.	0 0 3	1	-
H	SSK112	SOFT SKILLS II	0 0 3	1	-

H = 5 S = 3 C = 14 **Total = 22**

VI Semester

Cat.	Code	Course Title	L-T-P	Cr	ES
C	CHE312	Equilibrium Staged Operations	3 1 0	4	C
C	CHE313	Computational Methods in Chemical Engineering	2 0 3	3	D
C	CHE331	Process Dynamics and Control	3 1 0	4	E
C		Elective I	3 0 0	3	F
S		Science Elective II	3 0 0	3	B
C	CHE392	Mass Transfer Lab.	0 0 3	1	-
C	CHE393	Chemical Reaction Engineering Lab.	1 0 3	2	-
Pr	CHE397	Seminar	0 0 3	1	-
H	SSK113	SOFT SKILLS III	0 0 3	1	-

S = 3 H = 1 C = 17 Pr = 1 **Total = 22**

VII Semester

Cat.	Code	Course Title	L-T-P	Cr	ES
C	CHE400	Environmental Engineering for Process Industries	3 1 0	4	D
C	CHE410	Transport Phenomena	3 1 0	4	E
C	CHE430	Process Equipment Design and Drawing	1 0 3	2	-
C	CHE440	Biochemistry and Molecular Biology	3 0 0	3	B
C		Elective II	3 0 0	3	F
H	MNG400	Principles of Management	3 0 0	3	C
C	CHE490	Computer-aided Design Lab.	1 0 3	2	-
C	CHE491	Chemical Process Control Lab.	0 0 3	1	-

H = 3 C = 19 **Total = 22**

VIII Semester

Cat.	Code	Course Title	L-T-P	Cr	ES
C		Elective III	3 0 0	3	F
H		Management Elective	3 0 0	3	C
Pr	CHE499	Project		10	-

H = 3 C = 3 Pr = 10 **Total = 16**

Total credits for the programme=177

ELECTIVES

CHEMICAL PROCESSES AND MANUFACTURING

CHE351 Modern Separation Methods
CHE352 Petroleum Refining and Petrochemical Technology
CHE353 Biochemical Engineering
CHE450 Paper Pulp and Fertilizer Technology
CHE451 Safety and Hazard Management in Chemical Industries
CHE452 Pharmaceutical Technology
CHE453 Food and Bioprocess Engineering
CHE454 Catalysis in Refining and Petrochemicals

DESIGN, MODELING AND SIMULATION

CHE460 Molecular Modelling and Computational Chemistry
CHE461 Chemical Process Modelling and Simulation
CHE462 Computational Methods in Fluid Dynamics

MATERIALS

CHE371 Interfacial Science and Engineering
CHE372 Polymer Materials and Rheology
CHE373 Materials Characterisation and Spectroscopic Methods
CHE471 Nanoscience and Nanotechnology

MANAGEMENT ELECTIVES

CHE480 Project Engineering of Process Plants
CHE481 Management and Economics of Chemical Processes
MEC353 Optimisation Techniques in Engineering

ELECTIVES FOR STUDENTS OF OTHER BRANCHES (3 0 0 3)

CHE380 Solar Energy
CHE381 Introductory Modern Biology
CHE382 Fundamentals of Organic Electronics
CHE383 Fundamentals of Plastic Product and Mould Design
CHE384 Plastics : Material, Processing and Properties
CHE385 Composites for Aerospace Applications

SCIENCE ELECTIVES (3 0 0 3)

CHY250	Catalytic Chemistry
CHY251	Chemistry of Engineering Materials
CHY252	Chemistry of Advanced Materials
CHY253	Advanced Polymer Chemistry
CHY254	Polymers for Electronics
CHY255	Chemistry of Toxicology
CHY256	Chemistry of Nanomaterials
CHY257	Biomaterials Science
CHY258	Environmental Chemistry
CHY259	Instrumental Methods of Analysis
CHY260	Organic Synthesis and Stereochemistry
CHY261	Unit Processes in Organic Synthesis
CHY262	Medicinal Organic Chemistry
CHY263	Organic Reaction Mechanisms
CHY264	Green Chemistry and Technology
CHY270	Corrosion Science
CHY271	Electrochemical Energy Systems and Processes
CHY272	Computational Chemistry and Molecular Modelling
CHY273	Fuel Cells – Principles and Applications
CHY274	Solid State Chemistry
PHY250	Electrical Engineering Materials
PHY251	Optoelectronic Devices
PHY252	Physics of Semiconductor Devices
PHY253	Electromagnetic Fields and Waves
PHY254	Microelectronic Fabrication
PHY255	Electronic Materials Science
PHY260	Physics of Lasers and Applications
PHY261	Lasers in Material Processing
PHY262	Non-linear Dynamics
PHY263	Concepts of Nanophysics and Nanotechnology
PHY264	Thin Film Physics
PHY270	Medical Physics
PHY271	Advanced Classical Dynamics
PHY272	Quantum Physics and its Applications
PHY273	Computational Physics
PHY274	Astrophysics

HUMANITIES ELECTIVES (1 0 2 2)

CUL151	Achieving Excellence in Life - An Indian Perspective
CUL152	Exploring Science and Technology in Ancient India
CUL153	Excellence in Daily Life
CUL154	Yoga Psychology
ENG250	Professional Communication
ENG251	Business Communication
ENG252	Indian Thought in English
ENG253	Insights into Life through English Literature
FRE201	Proficiency in French Language (Lower)
FRE202	Proficiency in French Language (Higher)
GER201	Proficiency in German Language (Lower)
GER202	Proficiency in German Language (Higher)
GER211	German for Beginners I
GER212	German for Beginners II
HUM250	Indian Classics for the Twenty-first Century
HUM251	Introduction to India Studies
HUM252	Glimpses of Eternal India
HUM253	Glimpses into the Indian Mind – The Growth of Modern India
HUM254	Glimpses of Indian Economy and Polity
HUM255	Science and Society - An Indian Perspective
JAP201	Proficiency in Japanese Language (Lower)
JAP202	Proficiency in Japanese Language (Higher)