

Chemical Engineering R23 Structure

I Year Course structure

Semester - I									
Course Code	Title of the course	Category	L	T	P	Credits	Sessional Marks	SEE Marks	Total Marks
23MA1101	Linear Algebra and Multivariable Calculus	BS	2	1	0	3	40	60	100
23PY1101	Engineering Physics	BS	3	0	0	3	40	60	100
23EE3101	Basics of Electrical and Electronics Engineering	ES	2	1	0	3	40	60	100
23ME3101	Computeraided Engineering Graphics	ES	1	0	4	3	50	50	100
23CH4101	Introduction to Chemical Engineering	PC	3	0	0	3	40	60	100
23PY1201	Engineering Physics Lab.	BS	0	0	3	1.5	50	50	100
23IT3201	Engineering & IT Workshop	ES	0	0	3	1.5	50	50	100
23EC3201	IoT Lab	ES	0	0	3	1.5	50	50	100
23MC0102	Environmental Science	MC	2	0	0	0	100	0	100
Total			13	2	13	19.5	460	440	900
Semester - II									
Course Code	Title of the course	Category	L	T	P	Credits	Sessional Marks	SEE Marks	Total Marks
23EN2101	Communicative English	HS	3	0	0	3	40	60	100
23MA1102	Ordinary Differential Equations and Numerical Methods	BS	2	1	0	3	40	60	100
23CY1101	Engineering Chemistry	BS	2	1	0	3	40	60	100
23CS3101	Problem Solving and Programming using C	ES	2	1	0	3	40	60	100
23CH3101	Material Science for Chemical Engineers	ES	3	0	0	3	40	60	100
23EN2201	Communicative English Language Lab	HS	0	0	3	1.5	50	50	100
23CY1201	Engineering Chemistry Lab	BS	0	0	3	1.5	50	50	100
23CS3201	Problem Solving and Programming using C lab.	ES	0	0	3	1.5	50	50	100
23MC0101	Universal Human Values and Professional Ethics	MC	2	0	0	0	100	0	100
Total			14	3	9	19.5	450	450	900

II Year Course structure									
Semester - I									
Course Code	Title of the course	Category	L	T	P	Credits	Sessional Marks	SEE Marks	Total Marks
23MA1103	Vector Calculus and Transform Techniques	BS	2	1	0	3	40	60	100
23CH3102	Instrumentation and analytical techniques	ES	3	0	0	3	40	60	100
23CH3103	Biology for Engineers	ES	2	0	0	2	100	0	100
23CH4102	Chemical Process Calculations	PC	2	1	0	3	40	60	100
23CH4103	Momentum Transfer	PC	2	1	0	3	40	60	100
23CH4104	Mechanical Operations	PC	2	1	0	3	40	60	100
23CH4201	Momentum Transfer Lab	PC	0	0	3	1.5	50	50	100
23CH4202	Mechanical Operations Lab	PC	0	0	3	1.5	50	50	100
23CR9101	Logical Reasoning and Corporate skills	HS	0	0	2	1	50	50	100
23MC0104	Entrepreneurship and Intellectual Property Rights	MC	2	0	0	0	100	0	100
Total			15	4	8	21	550	450	1000
Semester - II									
Course Code	Title of the course	Category	L	T	P	Credits	Sessional Marks	SEE Marks	Total Marks
23MA1104	Complex Variables and Statistical Methods	BS	2	1	0	3	40	60	100
23ME3104	Design Thinking	ES	1	0	2	2	100	0	100
23CH4105	Chemical Engineering Thermodynamics	PC	2	1	0	3	40	60	100
23CH4106	Chemical Technology	PC	3	0	0	3	40	60	100
23CH4107	Heat transfer	PC	2	1	0	3	40	60	100
23CH9101	Artificial Intelligence for Chemical Engineers	SC	1	0	0	1	100	0	100
23CH511*	Professional Elective-I	PE	3	0	0	3	40	60	100
23CH4203	Heat Transfer Lab	PC	0	0	3	1.5	50	50	100
23CH9201	Artificial Intelligence Lab	SC	0	0	3	1.5	50	50	100
23CR9102	Numerical Ability and Professional Communication skills	HS	0	0	2	1	50	50	100
23MC0103	Financial literacy	MC	2	0	0	0	100	0	100
Total			16	3	10	22	650	450	1100

III Year Course structure

Semester - I

Course Code	Title of the course	Category	L	T	P	Credits	Sessional Marks	SEE Marks	Total Marks
	Open Elective- I	OE	3	0	0	3	40	60	100
23HS211*	Humanities elective	HS	2	0	0	2	40	60	100
23CH4108	Chemical Process Safety	PC	2	0	0	2	40	60	100
23CH4109	Mass Transfer-I	PC	2	1	0	3	40	60	100
23CH4110	Chemical Reaction Engineering-1	PC	2	1	0	3	40	60	100
23CH512*	Professional Elective-II	PE	3	0	0	3	40	60	100
23CH521*	Elective Lab	PE	0	0	3	1.5	50	50	100
23CH9202	Computational Lab	SC	0	0	3	1.5	50	50	100
23CR9103	Quantitative Aptitude and Effectual Communication skills	HS	0	0	2	1	50	50	100
23CH4401	Internship-I	PR	0	0	2	1	100	0	100
23MC0105	Constitution of India	MC	2	0	0	0	100	0	100
Total			16	2	10	21	590	510	1100

Semester - II

Course Code	Title of the course	Category	L	T	P	Credits	Sessional Marks	SEE Marks	Total Marks
	Open Elective- II	OE	3	0	0	3	40	60	100
23CH4111	Mass Transfer-II	PC	2	1	0	3	40	60	100
23CH4112	Chemical Reaction Engineering-II	PC	2	1	0	3	40	60	100
23CH4113	Transport Phenomena	PC	2	1	0	3	40	60	100
23CH4114	Chemical Process Economics and Equipment Design	PC	2	1	0	3	40	60	100
23CH513*	Professional Elective-III	PE	3	0	0	3	40	60	100
23CH4204	Mass Transfer Lab	PC	0	0	3	1.5	50	50	100
23CH4205	Chemical Reaction Engineering Lab	PC	0	0	3	1.5	50	50	100
23CR9104	High Level Reasoning and Employability skills	HS	0	0	2	1	50	50	100
Total			14	4	8	22	390	510	900

IV Year Course structure

Semester - I

Course Code	Title of the course	Category	L	T	P	Credits	Sessional Marks	SEE Marks	Total Marks
	Open Elective- III	OE	3	0	0	3	40	60	100
23CH4115	Chemical Process utilities	PC	1	0	0	1	100	0	100
23CH4116	Process Dynamics and Control	PC	2	1	0	3	40	60	100
23CH9102	Process Modelling and Simulation	SC	2	1	0	3	40	60	100
23CH514*	Professional Elective -IV	PE	3	0	0	3	40	60	100
23CH515*	Professional Elective -V	PE	3	0	0	3	40	60	100
23CH4206	Process Dynamics and Control Lab	PC	0	0	3	1.5	50	50	100
23CH9203	Process Modelling and Simulation Lab	SC	0	0	3	1.5	50	50	100
23CH4402	Internship-II	PR	0	0	2	1	100	0	100
23CH4501	Project Phase – I	PR	0	0	6	3	100	0	100
Total			14	2	14	23	600	400	1000

Semester - II

Course Code	Title of the course	Category	L	T	P	Credits	Sessional Marks	SEE Marks	Total Marks
	Open Elective- IV	OE	MOOCS			3	100	0	100
23CH4502	Project Phase – II	PR	0	0	18	9	100	100	200
Total			0	0	18	12	200	100	300

Table 1: List of Professional Electives

	PE-I (23CH511*)	PE-II (23CH512*)	PE-III(23CH513*)	PE-IV(23CH514*)	PE-V(23CH515*)
Technology	Polymer Technology	Fertilizer Technology	Pharmaceutical Technology	Nanotechnology	Petrochemicals
Environmental & Sustainability	Introduction to sustainability	Industrial Pollution and Control	Water Treatment Technologies	Solid and Hazard Waste Management	Environment Impact Assessment
Energy	Energy Engineering	Electrochemical Engineering	Petroleum Refinery Engineering	Fuel Cell and Hydrogen Engineering	Energy Auditing and Management
Emerging technologies	Membrane Technology	Design of Experiments	Carbon Capture and Storage	Process Optimization	Biochemical Engineering
#Any Emerging / required subject with pre-approval from internal BoS can also be included					

Table 2: List of Elective lab and Management Elective

Chemical Technology Lab	Entrepreneur Engineering		23CH6111	Bioinspired Designs in Engineering	
Environmental Engineering Lab	Innovation and Incubation		23CH6112	Industrial Safety	
Chemical Analysis Lab	Industrial Management		23CH6113	Biomaterials for Engineering applications	
	Managerial Economics and Financial Analysis		23CH6121	Introduction to Bioinformatics	
	Operations Research		23CH6122	Computational tools for Engineers	
			23CH6122	Food Biotechnology	
			23CH6131	Introduction to Bioinformatics	
			23CH6132	Food Processing and Technology	
			23CH6133	Corrosion Engineering	

Table 3: List of Open electives (tentative) offered by Chemical Engineering Depar

Table 1: List of Minors offered in Chemical Engineering**Industrial Safety**

Course Code	Course title	Credits
23CH7101	Industrial safety management	4
23CH7102	Industrial safety engineering	4
23CH7103	Industrial safety and law	4
23CH7104	Industrial health and hygiene	4
23CH7105	MOOCs - I	2
23CH7106	MOOCs-II	2

Table 2: List of Honors offered in Chemical Engineering (Pool-I)**Biochemical Engineering**

Course Code	Course title	Credits
23CH8101	Biochemistry and Microbiology	4
23CH8102	Bioprocess Engineering	4
23CH8103	Bioseparation Technology	4
23CH8104	Bioanalytical techniques	4
23CH8105	MOOCs - I	2
23CH8106	MOOCs-II	2

Table 3: List of Honors offered in Chemical Engineering (Pool-II)**Chemical Process Safety**

Course Code	Course title	Credits
23CH8101	Principles of Safety Management	4
23CH8102	Environmental Issues and Management	4
23CH8103	Hazard Identification and Risk Assessment	4
23CH8104	Legal Aspect of Safety, Health, and Environment	4
23CH8105	MOOCs - I	2
23CH8106	MOOCs-II	2