RAJALAKSHMI ENGINEERING COLLEGE

(An Autonomous Institution Affiliated to Anna University Chennai)

DEPARTMENT OF CHEMICAL ENGINEERING

CURRICULUM AND SYLLABUS REGULATIONS – 2023

B.TECH – CHEMICAL ENGINEERING

CHOICE BASED CREDIT SYSTEM

VISION OF THE INSTITUTION

- To be an institution of excellence in Engineering, Technology and Management Education & Research.
- To provide competent and ethical professionals with a concern for society.

MISSION OF THE INSTITUTION

- To impart quality technical education imbibed with proficiency and humane values
- To provide right ambience and opportunities for the students to develop into creative, talented and globally competent professionals
- To promote research and development in technology and management for the benefit of the society

VISION OF THE DEPARTMENT

- To be a center of excellence in chemical engineering to provide well prepared professionals to the industries and society.

MISSION OF THE DEPARTMENT

- To provide state of art environment to the students for better learning to cater for the chemical industries and pursue higher studies.
- To provide space to the students in research to think, create and innovate things.

CURRICULUM

SEMESTER – I

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	Total Hours	Total Credits	Category
THEORY & PRACTICALS								
1	HS23111	Technical Communication I	2	0	0	2	2	HS
2	MA23112	Algebra and Calculus	3	1	0	4	4	BS
3	PH23111	Physics for Chemical Engineering	3	0	0	3	3	BS
4	CY23132	Chemistry for Technologists	3	0	2	5	4	BS
5	GE23111	Engineering Graphics	2	2	0	4	4	ES
6	GE23121	Engineering Practices-(Civil and Mechanical)	0	0	2	2	1	ES
7	MC23112	Environmental Science and Engineering	3	0	0	3	0	MC
8	GE23117	Heritage of Tamils	1	0	0	1	1	HS
		TOTAL	**17**	**3**	**4**	**24**	**19**	

SEMESTER – II

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	Total Hours	Total Credits	Category
THEORY& PRACTICALS								
1.	HS23221	Technical Communication II	0	0	2	2	1	HS
	HS23222	English for Professional Competence						
2.	MA23212	Differential Equations and Complex Variables	3	1	0	4	4	BS
3.	CH23211	Introduction to Chemical Engineering	3	0	0	3	3	PC
4.	GE23233	Problem Solving and Python Programming	2	0	4	4	4	ES
5.	PH23233	Material Science	3	0	2	4	4	BS
6.	EE23133	Basic Electrical and Electronics Engineering	3	0	2	4	4	ES
7.	GE23122	Engineering Practices – Electrical and Electronics	0	0	2	1	1	ES
8.	MC23111	Indian Constitution and Freedom Movement	3	0	0	3	0	MC
9.	GE23217	Tamils and Technology	1	0	0	1	1	HS
		TOTAL	**18**	**1**	**12**	**26**	**22**	

SEMESTER –III

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	Total Hours	Total Credits	Category
THEORY & PRACTICALS								
1	MA23311	Transforms and Applied Partial differential equations	3	1	0	4	4	BS
2	CY23334	Physical and Organic Chemistry	3	0	2	4	4	ES
3	CH23311	Solid Mechanics	2	1	0	3	3	ES
4	CH23312	Chemical Process Calculations	2	1	0	3	3	PC
5	CH23313	Chemical Process Industries	3	0	0	3	3	PC
6	CH23331	Fluid Mechanics for Chemical Engineers	3	0	1	4	4	PC
		TOTAL	**16**	**3**	**3**	**21**	**21**	

SEMESTER –IV

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	Total Hours	Total Credits	Category
THEORY								
1	MA23431	Probability, Statistics and Reliability	3	0	2	4	4	BS
2	CH23411	Thermodynamics	3	0	0	3	3	PC
3	CH23412	Heat Transfer	3	0	0	3	3	PC
4	CH23431	Particle science and Technology	3	0	1	4	4	PC
5		Open Elective – 1	3	0	0	3	3	OE
PRACTICALS								
6	CS23422	Python Programming for Machine Learning	0	0	4	4	2	ES
7	GE23327	SOFT SKILLS - I	0	0	2	1	1	EEC
8	CH23421	Technical Analysis Lab	0	0	4	4	2	PC
		TOTAL	**15**	**0**	**12**	**26**	**22**	

SEMESTER – V

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	Total Hours	Total Credits	Category
THEORY								
1	CH23511	Process Engineering Economics	3	0	0	3	3	PC
2	CH23512	Chemical Engineering Thermodynamics	3	0	0	3	3	PC
3	CH23513	Mass Transfer I	3	0	0	3	3	PC
4	CH23514	Chemical Reaction Engineering I	3	0	0	3	3	PC
5		Professional Elective I	3	0	0	3	3	PE
		Open Elective - I	3	0	0	3	3	OE
PRACTICALS								
7	GE23427	SOFT SKILLS – II	0	0	2	1	1	EEC
8	CH23521	Heat Transfer Lab	0	0	4	4	2	PC
9	CR23P51	Microfluidics Laboratory	0	0	2	2	1	PE
		TOTAL	**18**	**0**	**8**	**25**	**22**	

SEMESTER – VI

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	Total Hours	Total Credits	Category
THEORY								
1	CH23611	Mass Transfer II	3	0	0	3	3	PC
2	CH23612	Chemical Reaction Engineering II	3	0	0	3	3	PC
3	CH23613	Process Control	3	0	0	3	3	PC
	CH23614	Process Equipment Design	3	0	0	3	3	PC
4		Professional Elective II	3	0	0	3	3	PE
5		Open Elective II	3	0	0	3	3	OE
PRACTICALS								
7								
8	GE23627	Problem Solving Techniques	0	0	2	1	1	EEC
9	CH23621	Mass Transfer Lab	0	0	4	4	2	PC
10	CH23622	Innovation and Design thinking for Chemical Engineers	0	0	4	4	2	PC
11		Value Added Course				30	2	EEC
		TOTAL	**18**	**0**	**10**	**57**	**25**	

SEMESTER – VII

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	Total Hours	Total Credits	Category
THEORY								
1	CH23711	Transport Phenomena	3	0	0	3	3	PC
2	CH23712	Comprehensive Chemical Engineering	3	0	0	3	3	PC
3	CH23713	Computer Applications in Chemical Engineering	3	0	0	3	3	PC
4		Professional Elective III	3	0	0	3	3	PE
5		Professional Elective IV	3	0	0	3	3	PE
PRACTICALS								
6	CH23721	Chemical Reaction Engineering lab	0	0	4	4	2	PC
7	CH23722	Process Control Lab	0	0	4	4	2	PC
8	CH23723	Artificial Intelligence and Machine Learning for Chemical Engineers	0	0	4	4	2	PC
		TOTAL	**15**	**0**	**12**	**27**	**21**	

SEMESTER – VIII

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	Total Hours	Total Credits	Category
PRACTICALS								
1		Professional Elective V	3	0	0	3	3	PE
2	CH23811	Project Work	0	0	24	24	10	EEC
		TOTAL	**3**	**0**	**24**	**27**	**13**	

PROFESSIONAL ELECTIVE VERTICAL LIST

VERTICAL I	VERTICAL II	VERTICAL III	VERTICAL IV	VERTICAL V	VERTICAL VI
Environmental Courses	**Biotechnology Courses**	**Energy Courses**	**Technology Courses**	**Allied Chemical Courses**	**Food Courses**
Environmental Engineering	Biochemical Engineering	Energy Management and Audit	Polymer Technology	Membrane Separation Process	Food microbiology
Environmental Impact assessment & clean technology	Bioprocess Engineering	Energy Conservation and Management in Process Industries	Fertilizer Technology	Instrumental Methods of Analysis	Chemical Engineering applications in Food technology
Industrial Environmental Management	Downstream processing	Renewable and Non-Renewable Energy Resources	Paper and Pulp Technology	Process modelling and simulation	Food Technology
Air Pollution and Control	Bioreaction Engineering	Solar Energy Engineering and Technology	Electrochemical Technology	Optimization in Process Industries	Introduction to food safety Analysis and Quality Risk Management.
Waste Water Treatment	Industrial Biotechnology	Fuels and Combustion	Petrochemical Technology	Fluidization Engineering	Principles of Food preservation and storage
Unit Operations in Environmental Engineering	Enzyme Engineering	Hydrogen Energy and Fuel Cells	Drugs and Pharmaceutical Technology	Piping and Instrumentation	Frontiers of Chemical Engineering