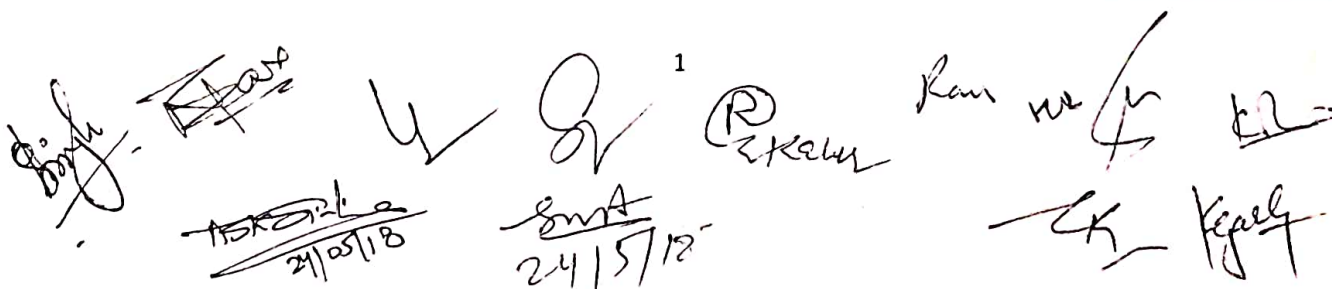


UG Study Scheme Chemical Engineering-Group B (GCT-2018 onwards)

Semester-I Group-B (GCT)							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	BSMA-401	Engineering Mathematics I	3	1	0	4	4
2	BSCH-401	Applied Chemistry	3	1	0	4	4
3	ESME-401	Elements of Mechanical Engineering	2	1	0	3	3
4	ESME-402	Workshop Technology and Practice	1	0	0	1	1
5	HSMC-401	English Communication and Soft Skills	1	0	0	1	1
6	BSCH-402	Applied Chemistry Lab	0	0	2	2	1
7	ESME-403	Elements of Mechanical Engineering Lab	0	0	2	2	1
8	ESME-404	Engineering Drawing	0	0	4	4	2
9	ESME-405	Workshop Technology and Practice Lab	0	0	4	4	2
10	HSMC-402	English Communication and Soft Skills Lab	0	0	2	1	1
11	MC-401	Environment studies	3	0	0	3	0
		Total					20
Semester-II Group-B (GCT)							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	BSMA-402	Engineering Mathematics II	3	1	0	4	4
2	BSPH-401	Applied Physics	3	1	0	4	4
3	ESEE-401	Elements of Electrical Engineering	2	1	0	3	3
4	ESCS-401	Elements of Computer Engineering	2	0	0	2	2
5	ESEC-401	Elements of Electronics Engineering	2	0	0	2	2
6	BSPH-402	Applied Physics Lab	0	0	2	2	1
7	ESEE-402	Elements of Electrical Engineering Lab	0	0	2	2	1
8	ESCS-402	Elements of Computer Engineering Lab	0	0	4	4	2
9	ESEC-402	Elements of Electronics Engineering Lab	0	0	2	2	1
		Total					20
Semester-III-A Group-B (GCT)							
	TPIN-511	Practical Training During Summer Vacations (In-house) 02 weeks				80	2 (S/US)
Semester-III-B Group-B (GCT)							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	ESME-501	Engineering Mechanics	3	1	0	4	4
2	PCCH-511	Material and Energy Balance	3	1	0	4	4
3	PCCH-512	Fluid Mechanics	3	0	0	3	3
4	PCCH-513	Chemical Engineering Thermodynamics	3	1	0	4	4

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5	HSMC-501	Principles of Management	3	0	0	3	3
6	PCCH-514	Fluid Mechanics lab	0	0	2	2	1
7	PCCH-515	Process Technology lab	0	0	2	2	1
8	MC-501	Mandatory Course-2	3	0	0	3	0
		Total					20
9*		Optimization of Chemical Processes	3	1	0	4	4

Semester-IV Group-B (GCT)

S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	BSMA-501	Numerical and Statistical Methods	3	0	0	3	3
2	PCCH-521	Mass Transfer - I	3	1	0	4	4
3	PCCH-522	Heat Transfer	3	1	0	4	4
4	PCCH-523	Fluid and Particle Mechanics	3	1	0	4	4
5	BSBL-501	Biology for Engineers	2	0	0	2	2
6	BSMA-501	Numerical and Statistical Methods Lab	0	0	2	2	1
7	PCCH-524	Heat and Mass Transfer Lab	0	0	2	2	1
8	PCCH-525	Fluid and Particle Mechanics Lab	0	0	2	2	1
		Total					20
9*		Chemical Plant Utilities and Safety	3	1	0	4	4

Semester-V-A Group-B (GCT)

	TPID-611	Industrial Training 02 weeks				80	2 (S/US)
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Semester-V-B Group-B (GCT)

S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PCCH-611	Chemical Reaction Engineering -I	3	1	0	4	4
2	PCCH-612	Mass Transfer - II	3	0	0	3	3
3	OECH-611	Open Elective-1	3	0	0	3	3
4	OECH-612	Open Elective-2	3	0	0	3	3
5	PECH-611	Professional Elective-1	3	0	0	3	3
6	HSMC-603	Engineering Economics and Entrepreneurship	3	0	0	3	3
7	PCCH-613	Reaction Engineering & Thermodynamics Lab	0	0	2	2	1
		Total	16	1	6	23	20
9*		Industrial pollution control	3	1	0	4	4

Semester-VI Group-B (GCT)

S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PCCH-621	Transport Phenomena	3	1	0	4	4
2	PCCH-622	Chemical Reaction Engineering - II	3	0	0	3	3
3	OECH-621	Open Elective-3	3	0	0	3	3
4	OECH-622	Open Elective - 4	3	0	0	3	3
5	PECH-621	Professional Elective- 2	3	0	0	3	3
6	HSMC-601	Technical Communication	2	0	0	2	2

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7	PCCH-623	Design and simulation lab	0	0	2	2	1
8	HSMC-602	Technical Communication Lab	0	0	2	2	1
			17	1	4	22	20
9*		Modelling and Simulation	3	1	0	4	4
Semester-VIIA Group-B (GCT)							
	TPID-711	Industrial Training 04 weeks				160	4 (S/US)
Semester-VIIB Group-B (GCT)							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PCCH-711	Process Technology and Economics	3	0	0	3	3
2	PCCH-712	Process Instrumentation and Control	3	1	0	4	4
3	OECH-711	Open Elective- 5	3	0	0	3	3
4	PECH-711	Professional Elective- 3	3	1	0	4	4
5	PECH-712	Professional Elective -4	3	0	0	3	3
6	PCCH-713	Process Instrumentation and Control lab	0	0	2	2	1
7	PROJCH-711	Project Stage I and Seminar	0	0	4	4	2
		Total	14	2	8	24	20
8*		Process Equipment Design	2	2	0	4	4
Semester-VIII Group-B (GCT)							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PECH-721	Professional Elective- 5	3	0	0	3	3
2	PECH-722	Professional Elective 6	3	0	0	3	3
3	PROJCH-721	Project Stage II	0	0	12	12	6
		Total	6	0	12	18	12
OR							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	INID-721	Internship in Industry					6
2	PROJCH-721	Project Stage II	0	0	12	12	6
		Total	6	0	12	18	12

***For Honour degree**

CH will be replaced by different departments as Chemical Engineering-CH, Computer Science and Engineering-CS, Electronics and Communication Engineering-EC, Electrical Engineering-EE, Food Technology-FT, Instrumentation and Control Engineering-IE, Mechanical Engineering-ME, respectively as per their study schemes.

GCT will be replaced by the programme code as GCT, GFT, GME, GWT, respectively as per their study schemes.

Asst. Dir. Engg. Div. K.P.S. (R) 3 Ram n.e. 24/5/18. [Signatures]

Professional Electives Courses

Semester V

Professional Elective – 1 [PECH-611]

- ~~A.~~ Agro Residue Utilization
- B. Paint Technology
- ~~C.~~ Polymer Science and Engineering
- D. Computational Fluid Dynamics

Semester VI

Professional Elective – 2 [PECH-621]

- ~~A.~~ Pulping and Bleaching Technology
- B. Biochemical Engineering
- C. Polymer Technology
- D. Fuel Cells

Semester VII

Professional Elective – 3 [PECH-711]

- A. Novel Separation Technology
- B. Electrochemical Engineering
- C. Polymer Composites
- D. Biorefineries
- E. Molecular Simulation

Professional Elective - 4 [PECH-712]

- A. Stock Preparation and Paper Making
- B. Polymer Materials
- C. Petroleum Refining and Petrochemicals
- D. Fluidization Engineering
- E. Process Integration
- F. Renewable Energy Sources

Semester VIII

Professional Elective - 5 [PECH-721]

- A. Energy Audit and Management
- B. Nanoscience and Nanotechnology
- C. Pharmaceutical Formulation
- D. Fertilizer Technology
- E. Hazardous Waste Management

Professional Elective – 6 [PECH-722]

- A. Chemical Recovery Processes in Pulp And Paper Industry
- B. Rubber Technology
- C. Advance Process Control
- D. Combustion Technology
- E. Environmental Impact Assessment

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Open Electives Courses

OECH-611

- (A) Fuel Cells
- (B) Analytical Methods and Instrumentation

OECH-612

- (A) Electrochemical Engineering
- (B) Renewable Energy Sources

OECH-621

- (A) Agro Residue Utilization
- (B) Corrosion Engineering

OECH-622

- (A) Industrial Pollution Control
- (B) Energy Audit and Management

OECH-711

- (A) Optimization Techniques for Engineers
- (B) Polymer Technology

Handwritten signatures and notes:

- W.R.
- R.K.
- Ram
- AK
- AK
- 24/5/18
- Agar
- Agar

Program Outcomes (POs):

- a. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation to the solution of complex engineering problems.
- b. **Problem analysis:** Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- c. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- d. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- e. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- f. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- g. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- h. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- i. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

- j. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- k. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and Leader in a team, to manage projects and in multidisciplinary environments.
- l. **Life-long learning:** Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program specific outcomes (PSOs):

- m. **Agro based chemical industry:** The candidate should have sufficient technical knowledge to cater to the need of existing and upcoming Agro based chemical industry.
- n. **Cleaner production:** Applying Chemical Engineering fundamentals for green and energy efficient processes.