



IPS Academy, Indore
Institute of Engineering & Science
 (A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Department of Chemical Engineering
Scheme w.e.f. 2022-2023
Total Credits

B.Tech. Chemical Engineering [Regular Students]

Sr. No.	Semester	Course Name	Teaching Scheme			Credits
			L	T	P	
1	Semester - I	Total Academic Engagement and Credits	13	1	12	20
2	Semester – II		13	1	12	20
3	Semester – III		16	6	8	20
4	Semester – IV		18	5	10	22
5	Semester – V		15	4	14	23
6	Semester – VI		15	5	8	19
7	Semester – VII		12	4	16	23
8	Semester – VIII		8	2	18	19
Total			110	28	98	166

Total Credits
[LATERAL ENTRY Students]

Sr. No.	Semester	Course Name	Teaching Scheme			Credits
			L	T	P	
1	Semester - III	Total Academic Engagement and Credits	16	6	8	20
2	Semester – IV		18	5	10	22
3	Semester – V		15	4	14	23
4	Semester – VI		15	5	8	19
5	Semester – VII		12	4	16	23
6	Semester – VIII		8	2	18	19
Total			84	26	74	126

COURSE DISTRIBUTION: SEMESTER WISE

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Sr No	Type of Course	Abbreviations	No. of Courses/Semester								Total	
											Regular	Lateral Entry from SEM III onwards
			1	2	3	4	5	6	7	8		
1	(a) Basic Science Courses	BSC	2	2	1	1					08	02
	(b) Basic Science Laboratory Course	LC-BSC	1	1								
2	(a) Engineering Science Courses	ESC	3	4							12	-
	(b) Engineering Science Laboratory Courses	LC-ESC	2	3								
3	(a) Humanities and Social Sciences including Management Courses	HSMC	1	1	1	1	1	1			07	04
	(b) Humanities and Social Sciences including Management Laboratory Courses	LC-HSMC	1									
4	(a) Professional Core Courses	PCC			4	4	3	3	1	1	26	26
	(b) Professional Core Laboratory Courses	LC-PCC			2	3	3	1	1			
5	Professional Elective Courses	PEC					1	1	2	1	06	06
		LCPEC						1				
6	Inter-disciplinary Foundation Courses	IFC				1	1				02	02
7	Skill Based Courses	SBC	1	1	1	1	1	1			06	04
8	Liberal Learning Courses	LLC	1		1			1			03	02
9	Inter-disciplinary Open Courses	IOC							1	1	02	02
10	Project/Internship	PROJ					1	1	3	1	06	06
11	Mandatory Learning Courses	MLC			1	1					02	02
Total			12	12	11	12	11	10	08	04	80	56

CREDIT DISTRIBUTION: SEMESTER WISE

CREDIT DISTRIBUTION: SEMESTER WISE													
1 Lecture hour = 1 Credit			2 Lab Hours = 1 Credit			1 Tutorial Hour = 1 Credit							
Sr No	Type of Course	Abbreviations	No. of Credits/Semester								Total Credits		
			1	2	3	4	5	6	7	8	Regular	Lateral Entry from SEM III onwards	
1	(a) Basic Science Courses	BSC	6	6	3	3						20	06
	(b) Basic Science Laboratory Course	LC-BSC	1	1									
2	(a) Engineering Science Courses	ESC	6	8								19	-
	(b) Engineering Science Laboratory Courses	LC-ESC	2	3									
3	(a) Humanities and Social Sciences including Management Courses	HSMC	2	1	1	1	2	2				10	06
	(b) Humanities and Social Sciences including Management Laboratory Courses	LC-HSMC	1										
4	(a) Professional Core Courses	PCC			12	12	9	9	4	4		60	60
	(b) Professional Core Laboratory Courses	LC-PCC			2	3	3	1	1				
5	Professional Elective Courses	PEC					3	3	6	3		16	16
		LC-PEC						1					
6	Inter-disciplinary Foundation Courses	IFC				2	2					04	04
7	Skill Based Courses	SBC	1	1	1	1	2	2				08	06
8	Liberal Learning Courses	LLC	1		1			1				03	02
9	Inter-disciplinary Open Courses	IOC							3	3		6	06
10	Project	PROJ					2		9	9		20	20
11	Mandatory Learning Courses	MLC											
Total			20	20	20	22	23	19	23	19		166	126

Course and Credit Distribution

Sr. No.	Type of Course	Abbreviation	REGULAR		LATERAL ENTRY From SEM III onwards	
			No. of Courses	Total credits	No. of Courses	Total credits
1.	(a) Basic Science Courses	BSC	08	20	02	06
	(b) Basic Science Laboratory Course	LC-BSC				
2.	(a) Engineering Science Courses	ESC	12	19	-	-
	(b) Engineering Science Laboratory Courses	LC-ESC				
3.	(a) Humanities and Social Sciences including Management Courses	HSMC	07	10	04	06
	(b) Humanities and Social Sciences including Management Laboratory Courses	LC-HSMC				
4.	(a) Professional Core Courses	PCC	26	60	26	60
	(b) Professional Core Laboratory Courses	LC-CE				
5.	Professional Elective Courses	PEC	06	16	06	16
6.	Inter-disciplinary Foundation Courses	IFC	02	04	02	04
7.	Skill Based Courses	SBC	06	08	04	06
8.	Liberal Learning Courses	LLC	03	03	02	02
9.	Inter-disciplinary Open Courses	IOC	02	06	02	06
10.	Project	PROJ	06	20	06	20
11.	Mandatory Learning Courses	MLC	02		02	
Total			80	166	56	126

First Semester

S. No.	Course Type	Course Code	Course Title	Hrs./ Week			Credits
				L	T	P	
1	BSC	MA01	Linear Algebra	2	1	-	3
2	BSC	CH01	Applied Chemistry	3	-	-	3
3	ESC	ME02	Fundamentals of Mechanical Engineering	2	-	-	2
4	ESC	CE02	Engineering Mechanics	2	-	-	2
5	ESC	EE01	Basic Electrical Engineering	2	-	-	2
6	HSMC	HS02	English	2	-	-	2
7	BSC	CH01(P)	Applied Chemistry Lab	-	-	2	1
8	ESC	CE02(P)	Engineering Mechanics Lab	-	-	2	1
9	ESC	EE01(P)	Basic Electrical Engineering Lab	-	-	2	1
10	HSMC	HS02(P)	Language Lab	-	-	2	1
11	LLC	LLC01	Liberal Learning Course-I	-	-	2	1
12	SBC	ME01(P)	Tech. Shop Lab	-	-	2	1
Total Credits							20

- **Liberal Learning Course-I, LLC01 (NSS)**
 - Rural Outreach

Second Semester

S. No.	Course Type	Course Code	Course Title	Hrs./ Week			Credits
				L	T	P	
1	BSC	MA02	Calculus	2	1	-	3
2	BSC	PY01	Optics and Modern Physics	3	-	-	3
3	ESC	ME01	Engineering Graphics and Visualization	2	-	-	2
4	ESC	CE01	Basic Civil Engineering	2	-	-	2
5	ESC	EC01	Basic Electronics Engineering	2	-	-	2
6	ESC	CS01	Programming for Problem Solving	2	-	-	2
7	BSC	PY01(P)	Optics and Modern Physics Lab	-	-	2	1
8	ESC	ME01(P)	Engineering Graphics Lab	-	-	2	1
9	ESC	CE01(P)	Basic Civil Engineering Lab	-	-	2	1
10	ESC	CS01(P)	Programming for Problem Solving Lab	-	-	2	1
11	SBC	EC01(P)	Electronics and Computer Workshop	-	-	2	1
12	HSMC	HS01	Design Thinking	-	-	2	1
Total Credits							20

Third Semester

S. No.	Course Type	Course Code	Course Title	Hrs./ Week			Credits
				L	T	P	
1	BSC	MA04(D)	Laplace Transform and Complex Analysis	2	1	-	3
2	PCC	CH01	Chemical Engineering Thermodynamics-I	3	1	-	3
3	PCC	CH02	Fluid Mechanics	3	1	-	3
4	PCC	CH03	Chemical Process Calculation	3	1	-	3
5	PCC	CH04	Fluid Particle Mechanics	3	1	-	3
6	HSMC	HS03	Innovation and Creativity	1	1	-	1
7	LC	CH02(P)	Fluid Mechanics	-	-	2	1
8	LC	CH04(P)	Fluid Particle Mechanics	-	-	2	1
9	SBC	CS01(P)	Computer Programming	-	-	2	1
10	LLC	LLC02	Liberal Learning Course-II	-	-	2	1
11	MLC	MLC01	Energy & Environmental Engineering	1	-	-	Audit
Total Credits							20

❖ **Basic Science Course (BSC), Program Specific Mathematics, (MA04)
(Any One Course)**

- (A) Numerical Method and Transforms
- (B) Differential Equations
- (C) Continuous and Discrete Transforms
- (D) Laplace Transforms and Complex Analysis

❖ **Liberal Learning Course-II, LLC02 (Any One Course from NCC/NSO/NCA)**

- A. NCC
- B. NSO
 - Any one Sports at State Level
- C. NCA
 - (A) Music
 - (B) Western Dance
 - (C) Photography
 - (D) Cinematography
 - (E) Podcasting
 - (F) Theatre
 - (G) Madhubani Painting
 - (H) Kathak

Fourth Semester

S.No.	Course Type	Course Code	Course Title	Hrs./ Week			Credits
				L	T	P	
1	BSC	MA03	Statistics & Probability	3	1	-	3
2	PCC	CH05	Chemical Engineering Thermodynamics-II	3	1	-	3
3	PCC	CH06	Heat Transfer	3	1	-	3
4	PCC	CH07	Mass Transfer-I	3	1	-	3
5	PCC	CH08	Fuel Technology	3	1	-	3
6	HSMC	HS04	Entrepreneurship and Principles of Management	1	-	-	1
7	IFC	AL01	Inter-Disciplinary Foundation Course-I	2	-	-	2
8	LC	CH06(P)	Heat Transfer	-	-	2	1
9	LC	CH07(P)	Mass Transfer-I	-	-	2	1
10	LC	CH08(P)	Fuel Technology	-	-	2	1
11	SBC	CH01(P)	Computer Applications in Chemical Engineering	-	-	2	1
12	MLC	MLC02	Constitution of India	2	-	-	Audit
Total Credits							22

- ❖ **Interdisciplinary Foundation Course-I**
Foundation of AIML (Offered by CSE department)

Fifth Semester

S. No.	Course Type	Course Code	Course Title	Hrs./ Week			Credits
				L	T	P	
1	PCC	CH09	Mass Transfer-II	3	1	-	3
2	PCC	CH 10	Computational Methods in Chemical Engineering	3	1	-	3
3	PCC	CH 11	Chemical Reaction Engineering-I	3	1	-	3
4	PEC	CH 01	Professional Elective-I	3	1	-	3
5	HSMC	HS05	Humanities and Social Science Open Course-I	2	-	-	2
6	IFC	DS01	Inter-disciplinary Foundation Course-II	2	-	-	2
7	LC	CH 09(P)	Mass Transfer-II	-	-	2	1
8	LC	CH 10(P)	Computational Methods in Chemical Engineering	-	-	2	1
9	LC	CH 11(P)	Chemical Reaction Engineering-I	-	-	2	1
10	SBC	CH 02(P)	Design Studio-I	0	0	2	2
11	PROJ	CH01	Seminar-I	0	0	4	2
Total Credits							23

❖ **Interdisciplinary Foundation Course II**

- Foundation of data science (Offered by CSE department)

❖ **Humanities and Social Sciences Open Courses-I**

- (A) English Language Proficiency
- (B) German Language
- (C) French Language
- (D) Japanese Language
- (E) Soft Skills and Interpersonal Communication

❖ **Professional Elective Courses-I**

- (A) Chemical Technology
- (B) Food Technology
- (C) Process Piping Design-I

❖ **Skill Based Courses**

- Simulation Lab-I

Sixth Semester

S.No.	Course Type	Course Code	Course Title	Hrs./ Week			Credits	
				L	T	P		
1	PCC	CH12	Chemical Reaction Engineering-II	3	1	-	3	
2	PCC	CH 13	Chemical Process Control	3	1	-	3	
3	PCC	CH 14	Process Equipment Design-I	3	1	-	3	
4	PEC	CH 02	Professional Elective-II	3	1	-	3	
5	HSMC	HS06	Humanities and Social Science Open Course -II	2	1	-	2	
6	LC	CH 13(P)	Chemical Process Control	-	-	2	1	
7	LC	CH 02(P)	Professional Elective-II	-	-	2	1	
8	SBC	CH 03(P)	Design Studio-II	-	-	2	2	
9	LLC	LLC03	Liberal Learning Course-III	-	-	2	1	
10	PROJ	CH 02	<i>Internship-To be completed anytime during Fifth/Sixth semester (Minimum 15Days/90Hrs.)Its evaluation/credit to be added in Seventh Semester.</i>					
Total Credits							19	

- ❖ **Professional Elective Courses-II**
 - (A) Chemical Process Modeling & Simulation
 - (B) Biochemical Engineering
 - (C) Environmental Pollution and Control

- ❖ **Humanities and Social Sciences Open Courses-II**
 - (A) Industrial Psychology
 - (B) Personnel Psychology
 - (C) Engineering Economics
 - (D) Finance for Engineers
 - (E) Stress Management
 - (F) Business Communication

- ❖ **Skill Based Courses**
 - Simulation Lab-II

- ❖ **Liberal learning Course -III**
 - (A) Sociology
 - (B) Sanskrit
 - (C) Graphic Design
 - (D) Animation
 - (E) Corporate Culture
 - (F) Interior Design

Seventh Semester

S. No.	Course Type	Course Code	Course Title	Hrs./ Week			Credits
				L	T	P	
1	PCC	CH15	Process Equipment Design-II	3	1	-	4
2	PEC	CH 03	Professional Elective-III	3	1	-	3
3	PEC	CH 04	Professional Elective-IV	3	1	-	3
4	IOC	-	Inter-disciplinary Open Courses -I	3	1	-	3
5	LC	CH 15(P)	Process Equipment Design-II	-	-	2	1
6	PROJ	CH03	Project-Phase-I	-	-	10	5
7	PROJ	CH 04	Evaluation Of Internship	-	-	-	2
8	PROJ	CH 05	Seminar-II	-	-	4	2
Evaluation of Internship- <i>Completed in Fifth/Sixth Semester</i>							
Total Credits							23

➤ **Professional Elective Courses-III**

- (A) Fluidization Engineering
- (B) Plant Utility
- (C) Chemical Project Engineering & Economics

➤ **Professional Elective Courses-IV**

- (A) Advance Separation Process
- (B) Catalysis
- (C) Polymer Technology

➤ **Interdisciplinary Open Courses-I**

- (A) Chemical Process Safety (offered by FT dept)
- (B) Artificial Intelligence and Machine Learning (offered by CSE dept)
- (C) Finite Elements Methods (offered by CE dept)

Eighth Semester

S.No.	Course Type	Course Code	Course Title	Hrs./ Week			Credits
				L	T	P	
1	PCC	CH16	Transport Phenomena	3	1	-	4
2	PEC	CH05	Professional Elective-V	3	-	-	3
3	IOC	-	Inter-disciplinary Open Courses -II	2	1	-	3
4	PROJ	CH06	Project Phase-II	-	-	18	9
Total Credits							19

❖ **Professional Elective Course -V**

- Chemical Process Synthesis
- Petrochemical Engineering
- Energy Conservation In Chemical Process Industry
- Fertilizer Technology

❖ **Interdisciplinary Open Course-II**

- Biomedical Instrumentation (offered by EC dept.)
- Non Conventional Energy Sources(offered by EX dept)
- Disaster Management - Forecasting and Mitigation (offered by FT dept)
- Any MOOC Course, Minimum 12 Weeks, (AICTE/SWAYAM/ Other Relevant Online Learning Platform)