

**COURSE STRUCTURE  
AND  
DETAILED SYLLABUS**

**R19**

**CHEMICAL  
ENGINEERING**

**For**

**B. Tech 4-Year Degree Course**

**(Applicable for the students admitted into E1 during the Academic Year 2019-20)**

**(I – IV Years Syllabus)**



**RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES**

**Basar, Nirmal, Telangana - 504107**

## COURSE STRUCTURE

### FIRST YEAR (E1) – SEMESTER – I

S.No .	Course Code	Course Title	Category	Hours per week			Credits
				Lecture	Tutorial	Practical	
1	MA1101	Linear Algebra and Calculus	BS	3	1	0	4
2	PH1102	Physics	BS	3	0	0	3
3	CY1102	Chemistry –I	BS	3	0	0	3
4	HS1101	English	HSMC	2	0	0	2
5	BM1108	Education, Technology and Society	HSMC	2	0	0	2
6	PH1602	Physics Lab	BS	0	0	3	1.5
7	CY1701	Chemistry Lab	BS	0	0	3	1.5
8	ME1702	Engineering Workshop	ESC	0	0	3	1.5
9	HS1701	English Lab	HSMC	0	0	2	1
Total				13	1	11	19.5

### FIRST YEAR (E1) – SEMESTER – II

S.No .	Course Code	Course Title	Category	Hours per week			Credits
				Lecture	Tutorial	Practical	
1	MA1201	Mathematics-II	BS	3	1	0	4
2	CY1205	Chemistry-II	BS	3	0	0	3
3	CH1201	Engineering Thermodynamics	ESC	3	0	0	3
4	BS1201	Biology	BS	3	0	0	3
5	CS1201	Programming for Problem Solving	ESC	3	0	0	3
6	BM0009	Human Relations at Work	HSMC	2	0	0	2
7	CE1801	Engineering Graphics	ESC	0	0	6	3
8	CS1801	Programming for Problem Solving Lab	ESC	0	0	3	1.5
Total				17	1	9	22.5

**SECOND YEAR (E2) – SEMESTER – I**

S.No.	Course Code	Course Title	Category	Hours per week			Credits
				Lecture	Tutorial	Practical	
1	MA2101	Mathematics-III	BS	3	0	0	3
2	EE2101	Basic Electrical & Electronics Engineering.	ESC	3	0	0	3
3	CH2101	Chemical Process Calculations	PCC	3	1	0	4
4	CH2102	Chemical Engineering Thermodynamics	PCC	3	1	0	4
5	CH2103	Chemical Engineering Fluid Mechanics	PCC	3	1	0	4
6	BM0005	Constitution of India	MC	3	0	0	0
7	EE2703	Basic Electrical & Electronics Engineering Lab	ESC	0	0	3	1.5
8	CH2701	Chemical Engineering Fluid Mechanics Lab	PCC	0	0	3	1.5
Total				18	3	6	21

**SECOND YEAR (E2) – SEMESTER – II**

S.No.	Course Code	Course Title	Category	Hours per week			Credits
				Lecture	Tutorial	Practical	
1	CH2201	Process Heat Transfer	PCC	3	1	0	4
2	CH2202	Mechanical Unit Operations	PCC	3	0	0	3
3	CH2203	Mass Transfer Operations-I	PCC	3	1	0	4
4	MM2211	Material Science	ESC	3	0	0	3
5	BM0007	Managerial Economics and Financial Analysis	HSMC	3	0	0	3
6	BS2201	Environmental Science	MC	3	0	0	0
7	CH2801	Process Heat Transfer Lab	PCC	0	0	3	1.5
8	CH2802	Mechanical Unit Operations Lab	PCC	0	0	3	1.5
Total				18	2	6	20

### THIRD YEAR (E3) – SEMESTER – I

S.No .	Course Code	Course title	Category	Hours per week			Credits
				Lecture	Tutorial	Practical	
1	CH3101	Chemical Reaction Engineering-I	PCC	3	1	0	4
2	CH3102	Mass Transfer Operations-II	PCC	3	1	0	4
3	CH3103	General Chemical Technology (GCT)	PCC	3	0	0	3
4	CH311X	Core Elective-I	PCE	3	0	0	3
5	CH311Y	Core Elective-II	PCE	3	0	0	3
6	HS3101	Essence of Indian Traditional Knowledge	MC	3	0	0	0
7	CH3701	Mass Transfer Laboratory	PCC	0	0	3	1.5
8	CH3702	Chemical Engineering Analytical Laboratory	PCC	0	0	3	1.5
9	CH3131	Seminar	SIP	0		0	1
Total				18	2	6	21

#### Core Elective-I:

1	Environmental Pollution Control Engineering	CH3111
2	Industrial Safety and Hazard Mitigation	CH3113

#### Core Elective-II:

1	Numerical Methods for Chemical Engineers	CH3112
2	Energy Engineering	CH3114

### THIRD YEAR (E3) – SEMESTER – II

S.No .	Course Code	Course Title	Category	Hours per week			Credits
				Lecture	Tutorial	Practical	
1	CH3201	Chemical Reaction Engineering-II	PCC	3	0	0	3
2	CH3202	Instrumentation & Process Control	PCC	3	1	0	4
3	CH3203	Process Equipment Design	PCC	3	1	0	4
4	CH321X	Core Elective-III	PCE	3	0	0	3
5	CH322Y	Open Elective-I	OEC	3	0	0	3
6	CH3801	Chemical Reaction Engineering Laboratory	PCC	0	0	3	1.5
7	CH3802	Instrumentation & Process Control Laboratory	PCC	0	0	3	1.5
8	CH3231	Comprehensive Viva	SIP	0	0	0	1
Total				15	2	6	21

#### Core Elective-III:

1	Fertilizer Technology	CH3211
2	Petroleum Engineering	CH3212
3	Technology of Pharmaceuticals and fine Chemicals	CH3213

#### Open Elective-I:

1	Renewable Energy Sources	CH3221
2	Mineral Processing Engineering	CH3222

### FOURTH YEAR (E4) – SEMESTER – I

S.No .	Course Code	Course Title	Category	Hours per week			Credits
				Lecture	Tutorial	Practical	
1	CH4101	Process Modeling and Simulation	PCC	3	0	0	3
2	CH4102	Transport Phenomena	PCC	3	1	0	4
3	CH4103	Plant Design and Economics	PCC	3	0	0	3
4	CH411X	Core Elective-IV	PCE	3	0	0	3
5	CH412Y	Open Elective-II	OEC	3	0	0	3

6	CH4701	Design and Simulation Lab	PCC	0	0	3	1.5
7	CH4702	Process Modeling and Simulation Laboratory	PCC	0	0	3	1.5
8	CH4131	Internship (6 to 8 weeks)	SIP	0	0	0	2
Total				15	1	6	21

**Core Elective-IV:**

1	Polymer Science and Engineering	CH4111
2	Instrumental Methods in Chemical Analysis	CH4112
3	Fluidization Engineering	CH4113

**Open Elective-II:**

1	Computational Fluid Dynamics	CH4121
2	Water and Waste water Treatment	CH4122

**FOURTH YEAR (E4) – SEMESTER – II**

S.No.	Course Code	Course Title	Category	Hours per week			Credits
				Lecture	Tutorial	Practical	
1	CH421X	Core Elective -V	PCE	3	0	0	3
2	CH422Y	Open Elective- III	OCE	3	0	0	3
3	CH4231	Major Project	SIP	0	0	0	8
Total				6	0	0	14

**Core Elective-V:**

1	Process Optimization	CH4211
2	Finite Difference Methods in Transport Processes	CH4212
3	Advance Separation Processes	CH4213

**Open Elective-III:**

1	Bio- Chemical Engineering	CH4221
2	Nanotechnology	CH4222