



Rashtrasant Tukadoji Maharaj Nagpur University

Structure & Syllabus
B. Tech (Chemical Engineering)

Submitted by
Board of Studies, Chemical Engineering

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FIRST SEMESTER B. TECH (CHEMICAL ENGINEERING)

Sr. No.	Code	Subject	Board	Work Load Hrs				Credit				Marks				Total Marks	Min. % of Marks Required for Passing
	Theory (T)			L	P	T	Total	L	P	T	Total	Theory		Practical			
	Practical (P)											College Assessment	University	College Assessment	University		
1	CE -BS -101T	Maths I	BGE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%
2	CE- BS -102 T	Physics	BGE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%
3	CE- BS -103 T	Chemistry-I	BGE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%
4	CE- BS -104 T	Fundamentals of Reaction Mechanism	BGE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%
5	CE- GES -105 T	Engineering & Solid Mechanics	BGE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%
6	CE- HSMC-HS 106 T	HASS I: Communication Skill	BGE	2	0	0	2	0	0	0	Audit	50	-	-	-	50	Audit Course S/NS**
7	CE- BS -107 P	Physics Laboratory	BGE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
8	CE- BS -108 P	Chemistry I Laboratory	BGE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
9	CE- BS -109 P	Fundamentals of Reaction Mechanism Laboratory	BGE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
10	CE -GES -110 P	Engineering & Solid Mechanics Laboratory	BGE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%
11	CE -HSMC-HS -111 P	HASS I Communication Skill Laboratory	BGE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
		Total		13	11	0	24	11	5.5	0	16.5	140	210	125	125	600	-

** S/NS Grade for Audit Course S – Satisfactory or NS – Not Satisfactory

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
SECOND SEMESTER B. TECH (CHEMICAL ENGINEERING)

Sr. No.	Code	Subject	Board	Work Load Hrs				Credit				Marks				Total Marks	Min. % of Marks Required for Passing
	Theory (T)			L	P	T	Total	L	P	T	Total	Theory		Practical			
	Practical (P)											College Assessment	University	College Assessment	University		
1	CE -BS -201T	Maths II	BGE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%
2	CE- BS -202 T	Properties of Matter	BGE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%
3	CE- BS -203 T	Chemistry-II	BGE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%
4	CE -BS -204 T	Organic Process Technology	BGE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%
5	CE-GES -205 T	Thermodynamics I	BGE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%
6	CE-GES -206 T	Electrical & Electronics Engineering	BGE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%
7	CE- BS -207 P	Properties of Matter Laboratory	BGE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
8	CE- BS -208 P	Chemistry -II Laboratory	BGE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
9	CE- BS -209 P	Organic Process Technology Laboratory	BGE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%
10	CE-GES -210 P	Electrical & Electronics Engineering Laboratory	BGE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
11	CE -GES -211P	Engineering Graphics	BGE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%
		Total		15	12	0	27	15	6	0	21	135	315	125	125	700	-

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
THIRD SEMESTER B. TECH (CHEMICAL ENGINEERING)

Sr. No.	Code	Subject	Board	Work Load Hrs				Credit				Marks				Total Marks	Min. % of Marks Required for Passing
	Theory (T)			L	P	T	Total	L	P	T	Total	Theory		Practical			
	Practical (P)											College Assessment	University	College Assessment	University		
1	CE-PCC-301T	Material & Energy Balance Computations	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%
2	CE-PCC-302T	Particle & Fluid Particle Processing	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%
3	CE-PCC-303T	Thermodynamics – II	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%
4	CE -GES -304 T	Material Science	BGE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%
5	CE- BS -305 T	Maths - III	BGE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%
6	CE -BS -306 T	Elementary Molecular Approach	BGE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%
7	CE -GES -307P	Material Science Laboratory	BGE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
8	CE -BS -308 P	Elementary Molecular Approach – Laboratory	BGE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%
9	CE -GES -309 P	Engineering workshop	BGE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%
10	CE-PCC-310P	Particle & Fluid Particle Processing Lab	BCE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%
		Total		18	11	3	32	18	5.5	3	26.5	180	420	100	100	800	-

FOURTH SEMESTER

FOURTH SEMESTER																	
Sr. No.	Code	Subject	Board	Work Load Hrs				Credit				Theory		Practical		Total Marks	Marks Required for Passing
				L	P	T	Total	L	P	T	Total	College Assessment	University	College Assessment	University		
1	CE-PCC-401T	Process Technology & Economics	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%
2	CE-PCC-402T	Mass Transfer I	BCE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%
3	CE-PCC-403T	Fluid Mechanics	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%
4	CE-PCC-404T	Numerical Methods in Chemical Engineering	BCE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%
5	CE- BS -405 T	Inorganic Process Technology	BGE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%
6	CE- HSMC-HS 406T	HASS II: Functional English	BGE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%
7	CE-PCC-407P	Fluid Mechanics Lab	BCE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
8	CE-PCC-408P	Numerical Methods in Chemical Engineering Lab	BCE	0	2	0	2	0	1	0	1	-	-	25	25	50	50%
9	CE- BS -409 P	Inorganic Process Technology Laboratory	BGE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%
10	MC	Environmental Sciences	BCE	2	0	0	2	0	0	0	0	-	-	-	-	-	Audit Course S/NS**
		Total		18	7	2	27	16	3.5	2	21.5	150	350	75	75	650	-
**S/NS Grade for Audit Course S – Satisfactory or NS – Not Satisfactory																	

** S/NS Grade for Audit Course S – Satisfactory or NS – Not Satisfactory

FIFTH SEMESTER																	
Sr. No.	Code	Subject	Board	Work Load Hrs				Credit				Theory		Practical		Total Marks	Required for Passing
	Theory (T)			L	P	T	Total	L	P	T	Total	College Assessment	University	College Assessment	University		
1	CE-PCC-501T	Heat Transfer	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%
2	CE-PCC-502T	Chemical Reaction Engineering I	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%
3	CE-PCC-503T	Mass Transfer II	BCE	4	0	1	5	4	0	1	5	30	70	-	-	100	45%
4	CE-CEL-504T	Core Elective I	BCE	3	0	0	3	3	0	0	3	30	70	-	-	100	45% ^s
5	CE-OEL-505T	Open Elective I	BCE	3	0	0	3	3	0	0	3	30	70	-	-	50	45%
6	CE-HSMC-HS-506T	HASS III: Industrial Economics & Project Management	BCE	2	0	0	2	2	0	0	2	15	35	-	-	50	50%
7	CE-PCC-507P	Chemical Reaction Engineering I Lab	BCE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%
8	CE-PCC-508P	Mass Transfer Lab	BCE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%
9	CE-PCC-509P	Heat Transfer Lab	BCE	0	3	0	3	0	1.5	0	1.5	-	-	-	-	-	Audit Course S/NS**
10	MC	Constitution of India/ Essence of Indian Traditional Knowledge		2	0	0	2	0	0	0	0	-	-	-	-	-	-
		Total		20	9	3	32	18	4.5	3	25.5	165	385	75	75	700	-

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** S/NS Grade for Audit Course S – Satisfactory or NS – Not Satisfactory

^s Open Electives offered are only for B.Tech Chemical Engineering and B.Tech Chemical Technology (All specialization). Therefore, students B.Tech Chemical Engineering and B.Tech Chemical Technology (All specialization) need not be restricted from opting the open elective courses offered by their own program.

Elective	Subject Name	
	BOARD	
	BCE	
Core Elective I	Statistical Design of Experiments	Non-Newtonian Flow and Rheology
Open Elective I	Environmental Pollution and Control	Renewable Energy
		Chemical Process Synthesis and Design
		Energy Conservation and Recycling

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RASHI RASAI
SIXTH SEMESTER B. TECH (CE)

RASHTRAKANTI SIXTH SEMESTER B. TECH (CHEMICAL ENGINEERING)																		Total Marks	Required for Passing
Sr. No.	Code	Subject	Board	Work Load Hrs				Credit				Theory		Practical					
				L	P	T	Total	L	P	T	Total	College Assessment	University	College Assessment	University				
1	CE-PCC-601T	Chemical Reaction Engineering II	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%		
2	CE-PCC-602T	Process Equipment Design	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%		
3	CE-PCC-603T	Process Dynamics & Control	BCE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%		
4	CE-CEL-604T	Core Elective- II	BCE	3	0	0	3	3	0	0	3	30	70	-	-	100	45% ^s		
5	CE-OEL-605T	Open Elective- II	BCE	2	0	0	2	2	0	0	2	15	35	-	-	50	45%		
6	CE- HSMC- HS -606T	HASS IV Industrial organization & Entrepreneurship Development	BCE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%		
7	CE-PCC-607P	Chemical Reaction Engineering II Lab	BCE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%		
8	CE-PCC-608P	Process Equipment Design & Drawing Lab	BCE	0	3	0	3	0	1.5	0	1.5	-	-	-	-	-	-		
9	CE-PCC-609P	Process Dynamics & Control Lab	BCE	0	3	0	3	0	1.5	0	1.5	-	-	-	-	-	-		
10	CE-PCC-610P	Summer Internship (3-4 weeks) (to be evaluated in seventh semester)	BCE	0	0	0	0	0	0	0	0	-	-	-	-	-	-		
		Total		17	9	3	29	17	4.5	3	24.5	165	385	75	75	700	-		

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Subject Name

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Elective	Subject Name	
	BOARD	
Core Elective II	BCE	
Open Elective II	Advanced Separation Processes	Computational Fluid Dynamics
	Polymer Science and Engineering	Chemical Processing for Microelectronics
		Process Intensification
		Membrane Technology

SCHEME OF EXAMINATION
RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
SEVENTH SEMESTER B. TECH (CHEMICAL ENGINEERING)

PRESIDENT YEKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR																		
SEVENTH SEMESTER B. TECH (CHEMICAL ENGINEERING)																		
Sr. No.	Code	Subject	Board	Work Load Hrs				Credit				Marks				Total Marks	Min. % of Marks Required for Passing	
	Theory (T)			Practical (P)	L	P	T	Total	L	P	T	Total	Theory		Practical			
	College Assessment												University	College Assessment	University			
1	CE-PCC-701T	Transport Phenomena	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%	
2	CE-PCC-702T	Process Modelling and Simulation	BCE	3	0	1	4	3	0	1	4	30	70	-	-	100	45%	
3	CE-CEL-703T	Core Elective- III	BCE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%	
4	CE-CEL-704T	Core Elective- IV	BCE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%	
5	CE-OEL-705T	Open Elective- III	BCE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%	
6	CE-OEL-706T	Open Elective- IV	BCE	3	0	0	3	3	0	0	3	30	70	-	-	100	45%	
7	CE-PCC-707P	Process Modelling and Simulation Lab	BCE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%	
8	CE-PCC-708P	Seminar and Summer Internship Evaluation	BCE	0	3	0	3	0	1.5	0	1.5	-	-	25	25	50	50%	
		Total		18	6	2	26	18	3	2	23	180	420	75	25	700	-	

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Chemical Technology (All specialization) need not be restricted from opting the open elective courses offered by the

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Elective	Subject Name		
	BOARD		
	BCE		
Core Elective III	Interfacial Science and Engineering	Advanced Catalysis	
Core Elective IV	Piping Engineering	Multiphase Reactor Design	Advanced Petroleum Refining
Open Elective III	Nanoscience and Nanotechnology	Optimization of Chemical Processes	Multiphase Flow
Open Elective IV	Fluidization Engineering	Advanced Materials	Biochemical Engineering
		Scale up Methods	Sustainable Development and Governance

SCHEME OF EXAMINATION

**RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
EIGHTH SEMESTER B. TECH (CHEMICAL ENGINEERING)**

Sr. No.	Code	Subject	Board	Work Load Hrs				Credit					Marks				Total Marks	Min. % of Marks Required for Passing
	Theory (T)			L	P	T	Total	L	P	T	Total	Theory		Practical				
	Practical (P)											College Assessment	University	College Assessment	University			
1	CE-PCC-801P	Industry Internship / Project	BCE	0	6	0	6	0	9	0	9	-	-	100	100	200	50%	
		Total		0	6	0	6	0	9	0	9	-	-	100	100	200	-	

