

1.3.2.1: Number of courses that include experiential learning through project work/field work /internship year wise during last five years.

Programme / Curriculum/ Syllabus of the courses



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai-400 050.



1.3.2 Programme / Curriculum/ Syllabus of the courses

Sr. No	Activity Name
1	Revised-19 Curriculum/ Syllabus of the courses
2	Revised-16 Curriculum/ Syllabus of the courses
3	Revised-12 Curriculum/ Syllabus of the courses


Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

Revised-19 Curriculum/ Syllabus of the Courses



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

- Artificial Intelligence and Data Science
- Artificial Intelligence and Machine Learning
- Cyber Security
- Internet of Things (IoT)
- Data Engineering
- Computer Science and Engineering (Data Science)
- Computer Science and Engineering (Artificial Intelligence and Machine Learning)
- Computer Science and Engineering (Internet of Things and Cyber Security Including Block Chain Technology)

Second Year with Effect from AY 2021-22

Under



FACULTY OF SCIENCE & TECHNOLOGY

Dr. G. T. Shahani
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

(As per AICTE guidelines with effect from the academic year 2019–2020)

Program Structure for Second Year Computer Engineering

UNIVERSITY OF MUMBAI (With Effect from 2020-2021) Semester III

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total	
CSC301	Engineering Mathematics-III	3	--	1*	3	--	1	4	
CSC302	Discrete Structures and Graph Theory	3	--	--	3	--	--	3	
CSC303	Data Structure	3	--	--	3	--	--	3	
CSC304	Digital Logic & Computer Architecture	3	--	--	3	--	--	3	
CSC305	Computer Graphics	3	--	--	3	--	--	3	
CSL301	Data Structure Lab	--	2	--	--	1	--	1	
CSL302	Digital Logic & Computer Architecture Lab	--	2	--	--	1	--	1	
CSL303	Computer Graphics Lab	--	2	--	--	1	--	1	
CSL304	Skill base Lab course: Object Oriented Programming with Java	--	2+2*	--	--	2	--	2	
CSM301	Mini Project – 1 A	--	4\$	--	--	2	--	2	
Total		15	14	1	15	07	1	23	
Course Code	Course Name	Examination Scheme							
		Theory			Term Work	Pract & oral	Total		
		Internal Assessment		End Sem. Exam					
		Test 1	Test 2	Avg					
		20	20	20	80	3	25	--	125
CSC301	Engineering Mathematics-III	20	20	20	80	3	25	--	100
CSC302	Discrete Structures and Graph Theory	20	20	20	80	3	25	--	100
CSC303	Data Structure	20	20	20	80	3	25	--	100
CSC304	Digital Logic & Computer Architecture	20	20	20	80	3	25	--	100
CSC305	Computer Graphics	20	20	20	80	3	25	--	100
CSL301	Data Structure Lab	--	--	--	--	25	25	50	
CSL302	Digital Logic & Computer Architecture Lab	--	--	--	--	25	25	50	
CSL303	Computer Graphics Lab	--	--	--	--	Dr. Q.S. Thamani PRINCIPAL	25	50	
CSL304	Skill base Lab course: Object Oriented Programming with Java	--	--	--	--	Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050. 50	25	75	
CSM301	Mini Project – 1 A	--	--	--	--		25	50	
Total		--	--	100	400		175	100	775

*Should be conducted batch wise and

\$ indicates workload of Learner (Not Faculty), Students can form groups with minimum 2 (Two) and not more than 4 (Four), Faculty Load: 1 hour per week per four groups

Program Structure for Second Year Computer Engineering
UNIVERSITY OF MUMBAI (With Effect from 2020-2021)
Semester IV

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total	
CSC401	Engineering Mathematics-IV	3	--	1*	3	--	1	4	
CSC402	Analysis of Algorithm	3	--	--	3	--	--	3	
CSC403	Database Management System	3	--	--	3	--	--	3	
CSC404	Operating System	3	--	--	3	--	--	3	
CSC405	Microprocessor	3	--	--	3	--	--	3	
CSL401	Analysis of Algorithm Lab	--	2	--	--	1	--	1	
CSL402	Database Management System Lab	--	2	--	--	1	--	1	
CSL403	Operating System Lab	--	2	--	--	1	--	1	
CSL404	Microprocessor Lab	--	2	--	--	1	--	1	
CSL405	Skill Base Lab Course: Python Programming	--	2*+2	--	--	2	--	2	
CSM401	Mini Project 1-B	--	4\$	--	--	2	--	2	
Total		15	16	1	15	7	1	24	
Course Code	Course Name	Examination Scheme							
		Theory				Term Work	Pract & oral	Total	
		Internal Assessment			End Sem. Exam.	Exam. Duration (in Hrs)			
		Test 1	Test 2	Avg.					
CSC401	Engineering Mathematics - IV	20	20	20	80	3	25	--	125
CSC402	Analysis of Algorithm	20	20	20	80	3	--	--	100
CSC403	Database Management System	20	20	20	80	3	--	--	100
CSC404	Operating System	20	20	20	80	3	--	--	100
CSC405	Microprocessor	20	20	20	80	3	--	--	100
CSL401	Analysis of Algorithm Lab	--	--	--	--	--	25	25	50
CSL402	Database Management System Lab	--	--	--	--	--	25	25	50
CSL403	Operating System Lab	--	--	--	--	Dr. G. T. Hampi	25	25	50
CSL404	Microprocessor Lab	--	--	--	--	Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	--	--	25
CSL405	Skill Base Lab Course: Python Programming	--	--	--	--		25	--	25
CSM401	Mini Project 1-B	--	--	--	--		25	25	50
Total		--	--	100	400	--	175	100	775

*Should be conducted batchwise and

\$ indicates workload of Learner (Not Faculty), Students can form groups with minimum 2 (Two) and not more than 4 (Four), Faculty Load: 1 hour per week per four groups.

UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Biomedical Engineering

Second Year with Effect from AY 2020-21

Third Year with Effect from AY 2021-22

Final Year with Effect from AY 2022-23

(REV- 2019 ‘C’ Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



(As per AICTE guidelines with effect from the academic year
2019–2020)

Program Structure for Second Year Engineering

Semester III & IV

UNIVERSITY OF MUMBAI

(With Effect from 2020-2021)

Semester III

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total	
BMC301	Engineering Mathematics - III	3	--	1	3	--	1	4	
BMC302	Human Anatomy and Physiology for Engineers	3		--	3		--	3	
BMC303	Medical Sensors	3	--	--	3	--	--	3	
BMC304	Electronic Circuits Analysis and Design	4	--	--	4	--	--	4	
BMC305	Digital Electronics	3	--	--	3	--	--	3	
BML301	Human Anatomy and Physiology for Engineers Lab	--	2	--	--	1	--	1	
BML302	Medical Sensors Lab	--	2	--	--	1	--	1	
BML303	Electronic Circuits Analysis and Design Lab	--	2	--	--	1	--	1	
BML304	Electronics Lab (SBL)	--	4	--	--	2	--	2	
BMM301	Mini Project – 1 A	--	4\$	--	--	2	--	2	
Total		16	14	1	16	07	1	24	
Course Code	Course Name	Examination Scheme							
		Theory			Term Work	Pract/oral	Total		
		Internal Assessment							
		Test 1	Test 2	Avg.	End Sem. Exam	Exam. Duration (in Hrs)			
BMC301	Engineering Mathematics - III	20	20	20	80	3	25	--	125
BMC302	Human Anatomy and Physiology for Engineers	20	20	20	80	3	--	--	100
BMC303	Medical Sensors	20	20	20	80	3	--	--	100
BMC304	Electronic Circuits Analysis and Design	20	20	20	80	3	--	--	100
BMC305	Digital Electronics	20	20	20	80	3	--	--	100
BML301	Human Anatomy and Physiology for Engineers Lab	--	--	--	--	--	25		25
BML302	Medical Sensors Lab	--	--	--	--	Dr. G. I. Thampi PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	25		50
BML303	Electronic Circuits Analysis and Design Lab	--	--	--	--		25	25	50
BML304	Electronics Lab (SBL)	--	--	--	--		25	25	50
BMM301	Mini Project – 1 A	--	--	--	--		25	--	25
Total		--	--	100	400	--	150	75	725

\$ indicates work load of Learner (Not Faculty), for Mini Project - 1 A.

Faculty Load :1 hour per week per 4 mini project groups.

**Program Structure for Second Year Engineering
UNIVERSITY OF MUMBAI
(With Effect from 2020-2021)**
Semester IV

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned					
		Theor y	Pract.	Tut.	Theory	Pract.	Tut.	Total		
BMC401	Engineering Mathematics - IV	3	--	1	3	--	1	4		
BMC402	Integrated Circuit Design	3	--	--	3	--	--	3		
BMC403	Principles of Control Systems	3	--	--	3	--	--	3		
BMC404	Medical Imaging – I	3	--	--	3	--	--	3		
BMC405	Biomaterials and Artificial Organs	3	--	--	3	--	--	3		
BML401	Integrated Circuit Design Lab	--	2	--	--	1	--	1		
BML402	Principles of Control Systems Lab	--	2	--	--	1	--	1		
BML403	Medical Imaging – I Lab	--	2	--	--	1	--	1		
BML404	Computing Lab (SBL)	--	4	--	--	2	--	2		
BMM401	Mini Project – 1 B	--	4\$	--	--	2	--	2		
Total		15	14	1	15	7	1	23		
Course Code	Course Name	Examination Scheme								
		Theory					Term Work	Pract/oral		
		Internal Assessment			End Sem. Exam.	Exam. Duration (in Hrs)				
		Test 1	Test 2	Avg.						
BMC401	Engineering Mathematics - IV	20	20	20	80	3	25	--	125	
BMC402	Integrated Circuit Design	20	20	20	80	3	--	--	100	
BMC403	Principles of Control Systems	20	20	20	80	3	--	--	100	
BMC404	Medical Imaging – I	20	20	20	80	3	--	--	100	
BMC405	Biomaterials and Artificial Organs	20	20	20	80	3	--	--	100	
BML401	Integrated Circuit Design Lab	--	--	--	--	25			50	
BML402	Principles of Control Systems Lab	--	--	--	--	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	--		25	
BML403	Medical Imaging – I Lab	--	--	--	--	25	25	50		
BML404	Computing Lab (SBL)	--	--	--	--	25	25	50		
BMM401	Mini Project – 1 B	--	--	--	--	25	25	50		
Total		--	--	100	400	--	150	100	750	

\$ indicates work load of Learner (Not Faculty), for Mini Project - 1 B.

UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Biomedical Engineering

Third Year with Effect from AY 2021-22

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic
year 2019–2020)

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



**Program Structure for Third Year Engineering
Semester V & VI**
UNIVERSITY OF MUMBAI
(With Effect from 2021-2022)

Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Theory	Pract.	Total			
BMC501	Biomedical Instrumentation – I	3	--	3	--	3			
BMC502	Digital Signal Processing	3	--	3	--	3			
BMC503	Microcontrollers and Embedded Systems	4	--	4	--	4			
BMC504	Medical Imaging – II	3	--	3	--	3			
BMDO501X	Department Optional Course – 1	3	--	3	--	3			
BML501	Biomedical Instrumentation – I Laboratory	--	2	--	1	1			
BML502	Digital Signal Processing Laboratory	--	2	--	1	1			
BML503	Microcontrollers and Embedded Systems Laboratory	--	2	--	1	1			
BML504	Professional Communication and Ethics – II	--	2*+2	--	2	2			
BMM501	Mini Project – 2 A	--	4\$	--	2	2			
Total		16	14	16	07	23			
Course Code	Course Name	Examination Scheme							
		Theory			Term Work	Prac /oral	Total		
		Internal Assessment		End Sem Exam					
		Test 1	Test 2	Avg	Exam. Duration (in Hrs)				
BMC501	Biomedical Instrumentation – I	20	20	20	80	3	--	--	100
BMC502	Digital Signal Processing	20	20	20	80	3	--	--	100
BMC503	Microcontrollers and Embedded Systems	20	20	20	80	3	--	--	100
BMC504	Medical Imaging – II	20	20	20	80	3	--	--	100
BMDO501X	Department Optional Course – 1	20	20	20	80	3	--	--	100
BML501	Biomedical Instrumentation – I Laboratory	--	--	--	--	--	25	25	50
BML502	Digital Signal Processing Laboratory	--	--	--	--	--	25	25	50

BML503	Microcontrollers and Embedded Systems Laboratory	--	--	--	--	--	25	25	50
BML504	Professional Communication and Ethics	--	--	--	--	--	25	25	50
BMM501	Mini Project – 2 A	--	--	--	--	--	25	--	25
Total		--	--	100	400	--	125	100	725

* Theory class to be conducted for full class

\$ indicates work load of Learner (Not Faculty), for Mini Project - 2 A

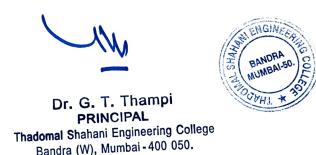
Faculty Load :1 hour per week per 4 mini project groups.

Sem. V: Department Optional Course – 1

BMDO5011: Principles of Communication Engineering

BMDO5012: Very Large Scale Integration

BMDO5013: Tissue Engineering



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai-400 050.

Semester VI

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned		
		Theory	Pract. /Tut.	Theory	Pract.	Total	
BMC601	Biomedical Instrumentation – II	3	--	3	--	3	
BMC602	Biomedical Digital Image Processing	3	--	3	--	3	
BMC603	Data Analysis in Healthcare	3	--	3	--	3	
BMC604	Biomechanics, Prosthetics and Orthotics	3	1	3	--	4	
BMDO601X	Department Optional Course – 2	3	--	3	--	3	
BML601	Biomedical Instrumentation – II Laboratory	--	2	--	1	1	
BML602	Biomedical Digital Image Processing Laboratory	--	2	--	1	1	
BML603	Data Analysis in Healthcare Laboratory	--	2	--	1	1	
BML604	Patient-care Automation Laboratory	--	4	--	2	2	
BMM601	Mini Project – 2 B	--	4 ^s	--	2	2	
Total		15	15	15	07	23	
Course Code	Course Name	Examination Scheme					
		Theory			Term Work	Prac /oral	Total
		Internal Assessment					
		Test 1	Test 2	Avg	End Sem Exam	Exam. Duration (in Hrs)	
BMC601	Biomedical Instrumentation - II	20	20	20	80	3	--
BMC602	Biomedical Digital Image Processing	20	20	20	80	3	--
BMC603	Data Analysis in Healthcare	20	20	20	80	3	--
BMC604	Biomechanics, Prosthetics and Orthotics	20	20	20	80	3 <i>W</i> 25	125
BMDO601X	Department Optional Course – 2	20	20	20	80	3 Dr. G. T. Thampi PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	100
BML601	Biomedical Instrumentation – II Laboratory	--	--	--	--	25	50
BML602	Biomedical Digital Image Processing Laboratory	--	--	--	--	25	50

BML603	Data Analysis in Healthcare Laboratory	--	--	--	--	--	25	--	25
BML604	Patient-care Automation Laboratory	--	--	--	--	--	25	25	50
BMM601	Mini Project – 2 B	--	--	--	--	--	25	25	50
Total		--	--	100	400	--	150	100	750

\$ indicates work load of Learner (Not Faculty), for Mini Project - 2 B

Faculty Load :1 hour per week per 4 mini project groups.

Sem. VI: Department Optional Course – 2

BMDO6011: Nuclear Medicine

BMDO6012: Advanced Embedded Systems

BMDO6013: Telemedicine

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Biomedical Engineering

Third Year with Effect from AY 2021-22

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic
year 2019–2020)

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (West), Mumbai - 400 050.



**Program Structure for Third Year Engineering
Semester V & VI**
UNIVERSITY OF MUMBAI
(With Effect from 2021-2022)

Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Theory	Pract.	Total			
BMC501	Biomedical Instrumentation – I	3	--	3	--	3			
BMC502	Digital Signal Processing	3	--	3	--	3			
BMC503	Microcontrollers and Embedded Systems	4	--	4	--	4			
BMC504	Medical Imaging – II	3	--	3	--	3			
BMDO501X	Department Optional Course – 1	3	--	3	--	3			
BML501	Biomedical Instrumentation – I Laboratory	--	2	--	1	1			
BML502	Digital Signal Processing Laboratory	--	2	--	1	1			
BML503	Microcontrollers and Embedded Systems Laboratory	--	2	--	1	1			
BML504	Professional Communication and Ethics – II	--	2*+2	--	2	2			
BMM501	Mini Project – 2 A	--	4\$	--	2	2			
Total		16	14	16	07	23			
Course Code	Course Name	Examination Scheme							
		Theory			Term Work	Prac /oral	Total		
		Internal Assessment		End Sem Exam					
		Test 1	Test 2	Avg	Exam. Duration (in Hrs)				
BMC501	Biomedical Instrumentation – I	20	20	20	80	3	--	--	100
BMC502	Digital Signal Processing	20	20	20	80	3	--	--	100
BMC503	Microcontrollers and Embedded Systems	20	20	20	80	3	--	--	100
BMC504	Medical Imaging – II	20	20	20	80	3	--	--	100
BMDO501X	Department Optional Course – 1	20	20	20	80	3	--	--	100
BML501	Biomedical Instrumentation – I Laboratory	--	--	--	--	--	25	25	50
BML502	Digital Signal Processing Laboratory	--	--	--	--	--	25	25	50

BML503	Microcontrollers and Embedded Systems Laboratory	--	--	--	--	--	25	25	50
BML504	Professional Communication and Ethics	--	--	--	--	--	25	25	50
BMM501	Mini Project – 2 A	--	--	--	--	--	25	--	25
Total		--	--	100	400	--	125	100	725

* Theory class to be conducted for full class

\$ indicates work load of Learner (Not Faculty), for Mini Project - 2 A

Faculty Load :1 hour per week per 4 mini project groups.

Sem. V: Department Optional Course – 1

BMDO5011: Principles of Communication Engineering

BMDO5012: Very Large Scale Integration

BMDO5013: Tissue Engineering



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai-400 050.

UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Chemical Engineering

Second Year with Effect from AY 2020-21

Third Year with Effect from AY 2021-22

Final Year with Effect from AY 2022-23

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic year
2019–2020) 
Dr. G. T. Thampi
PRINCIPAL
Shahani Engineering College
Thadoma, Bandra (W), Mumbai - 400 050.



University of Mumbai
Program Structure for B.E. Chemical Engineering (Revised 2020-2021)
Semester III

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			Total
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
CHC301	Engineering Mathematics-III	3	-	1	3	-	1	4
CHC302	Industrial and Engineering Chemistry I	3	-	-	3	-	-	3
CHC303	Fluid Flow Operations	3	-	-	3	-	-	3
CHC304	Chemical Engineering Thermodynamics I	3	-	-	3	-	-	3
CHC305	Process Calculations	3	-	-	3	-	-	3
CHL301	Industrial and Engineering Chemistry I Lab	-	3	-	-	1.5	-	1.5
CHL302	Fluid Flow Operation Lab	-	3	-	-	1.5	-	1.5
CHL303	Basic Chemical Engineering Lab	-	3	-	-	1.5	-	1.5
CHL304	Skilled Based Lab: Chemical Technology Lab	-	2*2	-	-	2	-	2
CHM301	Mini Project 1A	-	3#	-	-	1.5	-	1.5
	Total	15	16	1	15	8	1	24

Course code	Course Name	Examination Scheme												
		Theory			Term Work	Pract/Oral	Oral	Total						
		Internal Assessment		End Sem Exam										
		Test 1	Test 2	Avg										
CHC301	Engineering Mathematics-III	20	20	20	80	3	25	-	125					
CHC302	Industrial and Engineering Chemistry I	20	20	20	80	3	-	-	100					
CHC303	Fluid Flow Operations	20	20	20	80	3	-	-	100					
CHC304	Chemical Engineering Thermodynamics I	20	20	20	80	3	-	-	100					
CHC305	Process Calculations	20	20	20	80	3	-	-	100					
CHL301	Industrial and Engineering Chemistry I Lab	-	-	-	-	3	25	25	- 50					
CHL302	Fluid Flow Operation Lab	-	-	-	-	3	25	25	- 50					
CHL303	Basic Chemical Engineering Lab	-	-	-	-	25	25	25	50					
CHL304	Skilled Based Lab: Chemical Technology Lab	-	-	-	-	25	25	25	50					
CHM301	Mini Project 1A	-	-	-	-	Dr. G. T. Thadomal Shahani Engineering College	25	25	50					
	Total	-	-	100	400	PRINCIPAL Thadomal Shahani Engineering College	50	75	775					

Bandra (W), Mumbai - 400 050.

*Indicates Theory class to be conducted for full class

indicates work load of Learner (Not Faculty), for Mini Project;
 Faculty load: 1 hour per week per four groups, for Mini Project

University of Mumbai
Program Structure for B.E. Chemical Engineering (Revised 2020-2021)
Semester IV

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
CHC401	Engineering Mathematics-IV	3	-	1	3	-	1	4
CHC402	Industrial and Engineering Chemistry II	3	-		3	-	-	3
CHC403	Numerical Method in Chemical Engineering	3	-	-	3	-	-	3
CHC404	Solid Fluid Mechanical Operations	3	-	-	3	-	-	3
CHC405	Chemical Engineering Thermodynamics II	3	-	-	3	-	-	3
CHL401	Industrial and Engineering Chemistry II Lab	-	3	-	-	1.5	-	1.5
CHL402	Numerical Method in Chemical Engineering Lab	-	3	-	-	1.5	-	1.5
CHL403	Solid Fluid Mechanical Operation Lab	-	3	-	-	1.5	-	1.5
CHL404	Skilled based lab: Design Calculation of Auxiliary Plant Equipment	-	3	-	-	1.5	-	1.5
CHM401	Mini Project 1B	-	2#	--	-	1		1
	Total	15	14	1	15	7	1	23

Course code	Course Name	Examination Scheme								
		Theory			Term Work	Pract/Oral	Oral	Total		
		Internal Assessment								
		Test 1	Test 2	Avg	End Sem Exam	Exam Duration (in hrs)				
CHC401	Engineering Mathematics-IV	20	20	20	80	3	25	-	125	
CHC402	Industrial and Engineering Chemistry II	20	20	20	80	3	-	-	100	
CHC403	Numerical Method in Chemical Engineering	20	20	20	80	3	-	-	100	
CHC404	Solid Fluid Mechanical Operations	20	20	20	80	3	-	-	100	
CHC405	Chemical Engineering Thermodynamics II	20	20	20	80	3	-	-	100	
CHL401	Industrial and Engineering Chemistry II Lab	-	-	-	-	3	25	25	50	
CHL402	Numerical Method in Chemical Engineering Lab	-	-	-	-	25	25	Dr. G. T. Thampi	50	
CHL403	Solid Fluid Mechanical Operation Lab	-	-	-	-	25	25	PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	50	
CHL404	Skilled based lab: Design Calculation of Auxiliary Plant Equipment	-	-	-	-	25	-	25	50	
CHM401	Mini Project 1B	-	-	-	-	25	-	25	50	
	Total	-	-	100	400	-	150	50	75	
									775	

indicates work load of Learner (Not Faculty), for Mini Project
 faculty load : 1 hour per week per four groups, for Mini Project

AC- 29/06/2021
Item No.: 6.3

UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Chemical Engineering

Third Year Syllabus with Effect from AY 2021-22

(REV- 2019 'C' Scheme) from Academic Year 2019 – 2020

Under

FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic year 2019–2020)

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



University of Mumbai
Program Structure for B.E. Chemical Engineering (Revised 2019) wef 2021-2022
Semester V

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
CHC501	Mass transfer Operations-I	3	-	-	3	-	-	3
CHC502	Heat transfer Operations	3	-	-	3	-	-	3
CHC503	Chemical Reaction Engineering-I	3	-	-	3	-	-	3
CHC504	Transport Phenomena	3	-	-	3	-	-	3
CHDO501X	Department Optional Course 1	3	-	-	3	-	-	3
CHL501	Mass transfer Operations-I Lab	-	3	-	-	1.5	-	1.5
CHL502	Heat transfer Operations Lab	-	3	-	-	1.5	-	1.5
CHL503	Chemical Reaction Engineering-I Lab	-	3	-	-	1.5	-	1.5
CHL504	Skilled Based Lab: Professional Communication and Ethics II Lab	-	2*2	-	-	2	-	2
CHM501	Mini Project-2A	-	3#	-	-	1.5	-	1.5
	Total	15	14	-	15	8	-	23

Course code	Course Name	Examination Scheme							
		Theory				Term Work	Pract /Oral	Oral	Total
		Internal Assessment	End Sem Exam	Exam Duration (in hrs)	Avg				
CHC501	Mass transfer Operations-I	20	20	20	80	3	-	-	100
CHC502	Heat transfer Operations	20	20	20	80	3	-	-	100
CHC503	Chemical Reaction Engineering-I	20	20	20	80	3	-	-	100
CHC504	Transport Phenomena	20	20	20	80	3	-	-	100
CHDO501X	Department Optional Course 1	20	20	20	80	3	-	-	100
CHL501	Mass transfer Operations-I Lab	-	-	-	-	3	25	25	- 50
CHL502	Heat transfer Operations Lab	-	-	-	-	3	25	25	- 50
CHL503	Chemical Reaction Engineering-I Lab	-	-	-	-	3	25	25	- 50
CHL504	Skilled Based Lab: Professional Communication and Ethics II Lab	-	-	-	-	-	25	- 25	50
CHM501	Mini Project-2A	-	-	-	-	-	25	25	50
	Total			100	400	-	125	75	750

Department Optional Course 1 (Semester V)

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Dandekar (W), Mumbai - 400 050.



Engineering Stream (Elective Code)	Technology Stream (Elective Code)	Management Stream
Food Engineering(CHDO5011)	Advanced Material Sciences (CHDO5012)	Total Quality Management (CHDO5013)

*Indicates Theory class to be conducted for full class;
indicates work load of Learner (Not Faculty), for mini project.
For mini project faculty load: 1 hour per week per four groups

University of Mumbai
Program Structure for B.E. Chemical Engineering (Revised 2021-2022)
T.E Semester VI

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
CHC601	Mass Transfer Operation II	3	-	-	3	-	-	3
CHC602	Chemical Reaction Engineering II	3	-	-	3	-	-	3
CHC603	Pollution Control Technology	3	-	-	3	-	-	3
CHC604	Process Engineering and Economics	3	-	1	3	-	1	4
CHDO602X	Departmental Optional Course 2	3	-	-	3	-	-	3
CHL601	Mass Transfer Operation II Lab	-	3	-	-	1.5	-	1.5
CHL602	Chemical Reaction Engineering II Lab	-	3	-	-	1.5	-	1.5
CHL603	Pollution Control Technology Lab	-	3	-	-	1.5	-	1.5
CHL604	Skilled Based Lab: Piping Design Engineering Lab	-	3	-	-	1.5	-	1.5
CHM601	Mini Project – 2B	-	2#	-	-	1	-	1
	Total	15	14	1	15	7	1	23

Course code	Course Name	Examination Scheme								
		Theory			Term Work	Pract/Oral	Oral	Total		
		Internal Assessment								
		Test 1	Test 2	Avg	End Sem. Exam	Exam Duration (in Hrs.)				
CHC601	Mass Transfer Operation II	20	20	20	80	3	-	-	100	
CHC602	Chemical Reaction Engineering II	20	20	20	80	3	-	-	100	
CHC603	Pollution Control Technology	20	20	20	80	3	-	-	100	
CHC604	Process Engineering and Economics	20	20	20	80	3	25	-	125	
CHDO602X	Departmental Optional Course 2	20	20	20	80	3	-	-	100	
CHL601	Mass Transfer Operation II Lab	-	-	-	-	3	25	25	-	50
CHL602	Chemical Reaction Engineering II Lab	-	-	-	-	3	25	25	-	50
CHL603	Pollution Control TechnologyLab	-	-	-	-	3	25	25	-	50
CHL604	Skilled Based Lab: Piping Design Engineering Lab	-	-	-	-	25	25	25	-	50
CHM601	Mini Project – 2B	-	-	-	-	Dr. G. T. Thandri PRINCIPAL Thadomal Shahani Engineering College	25	25	-	50
	Total			100	400		75	50	775	

Thadomal Shahani Engineering College,
Bandra (W), Mumbai - 400 050.

Department Optional Course 2 (Semester VI)

Engineering Stream (Elective Code)	Technology Stream (Elective Code)	Management Stream (Elective Code)
Piping Engineering (CHDO6021)	Polymer Technology (CHDO6022)	Industrial Organization and Management (CHDO6023)

indicates work load of Learner (Not Faculty), for Mini Project; For mini project faculty load: 1 hour per week per four groups

UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Computer Engineering

Second Year with Effect from AY 2020-21

Third Year with Effect from AY 2021-22

Final Year with Effect from AY 2022-23

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic year 2019–2020)

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Program Structure for Second Year Computer Engineering

UNIVERSITY OF MUMBAI (With Effect from 2020-2021) Semester III

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
CSC301	Engineering Mathematics-III	3	--	1*	3	--	1	4
CSC302	Discrete Structures and Graph Theory	3	--	--	3	--	--	3
CSC303	Data Structure	3	--	--	3	--	--	3
CSC304	Digital Logic & Computer Architecture	3	--	--	3	--	--	3
CSC305	Computer Graphics	3	--	--	3	--	--	3
CSL301	Data Structure Lab	--	2	--	--	1	--	1
CSL302	Digital Logic & Computer Architecture Lab	--	2	--	--	1	--	1
CSL303	Computer Graphics Lab	--	2	--	--	1	--	1
CSL304	Skill base Lab course: Object Oriented Programming with Java	--	2+2*	--	--	2	--	2
CSM301	Mini Project – 1 A	--	4\$	--	--	2	--	2
Total		15	14	1	15	07	1	23
Course Code	Course Name	Examination Scheme						
		Theory				Term Work	Pract & oral	Total
		Internal Assessment			End Sem. Exam	Exam. Duration (in Hrs)		
		Test 1	Test2	Avg				
CSC301	Engineering Mathematics-III	20	20	20	80	3	25	-- 125
CSC302	Discrete Structures and Graph Theory	20	20	20	80	3	--	-- 100
CSC303	Data Structure	20	20	20	80	3	--	-- 100
CSC304	Digital Logic & Computer Architecture	20	20	20	80	3	--	-- 100
CSC305	Computer Graphics	20	20	20	80	3	--	-- 100
CSL301	Data Structure Lab	--	--	--	--	--	25	25 50
CSL302	Digital Logic & Computer Architecture Lab	--	--	--	--	--	25	Dr. G. T. Thampli -- 25
CSL303	Computer Graphics Lab	--	--	--	--	--	Thadmal Shahdi Engineering College, Bandra (W), Mumbai - 400 050.	50
CSL304	Skill base Lab course: Object Oriented Programming with Java	--	--	--	--	--	50	25 75
CSM301	Mini Project – 1 A	--	--	--	--	--	25	25 50
Total		--	--	100	400	--	175	100 775

*Should be conducted batch wise and

\$ indicates workload of Learner (Not Faculty), Students can form groups with minimum 2 (Two) and not more than 4 (Four), Faculty Load: 1 hour per week per four groups

Program Structure for Second Year Computer Engineering
UNIVERSITY OF MUMBAI (With Effect from 2020-2021)
Semester IV

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total	
CSC401	Engineering Mathematics-IV	3	--	1*	3	--	1	4	
CSC402	Analysis of Algorithm	3	--	--	3	--	--	3	
CSC403	Database Management System	3	--	--	3	--	--	3	
CSC404	Operating System	3	--	--	3	--	--	3	
CSC405	Microprocessor	3	--	--	3	--	--	3	
CSL401	Analysis of Algorithm Lab	--	2	--	--	1	--	1	
CSL402	Database Management System Lab	--	2	--	--	1	--	1	
CSL403	Operating System Lab	--	2	--	--	1	--	1	
CSL404	Microprocessor Lab	--	2	--	--	1	--	1	
CSL405	Skill Base Lab Course: Python Programming	--	2*+2	--	--	2	--	2	
CSM401	Mini Project 1-B	--	4\$	--	--	2	--	2	
Total		15	16	1	15	7	1	24	
Course Code	Course Name	Examination Scheme							
		Theory				Term Work	Pract & oral	Total	
		Internal Assessment			End Sem. Exam.	Exam. Duration (in Hrs)			
		Test 1	Test 2	Avg.					
CSC401	Engineering Mathematics-IV	20	20	20	80	3	25	--	125
CSC402	Analysis of Algorithm	20	20	20	80	3	--	--	100
CSC403	Database Management System	20	20	20	80	3	--	--	100
CSC404	Operating System	20	20	20	80	3	--	--	100
CSC405	Microprocessor	20	20	20	80	3	--	--	100
CSL401	Analysis of Algorithm Lab	--	--	--	--	--	25	25	50
CSL402	Database Management System Lab	--	--	--	--	--	25	25	50
CSL403	Operating System Lab	--	--	--	--	Dr. G. I. Thampli Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 090.	25	50	
CSL404	Microprocessor Lab	--	--	--	--	--	25	--	25
CSL405	Skill Base Lab Course: Python Programming	--	--	--	--	--	25	--	25
CSM401	Mini Project 1-B	--	--	--	--	--	25	25	50
Total		--	--	100	400	--	175	100	775

*Should be conducted batchwise and

\$ indicates workload of Learner (Not Faculty), Students can form groups with minimum 2 (Two) and not more than 4 (Four), Faculty Load: 1 hour per week per four groups.

UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Computer Engineering

Second Year with Effect from AY 2020-21

Third Year with Effect from AY 2021-22

Final Year with Effect from AY 2022-23

(REV- 2019 ‘C’ Scheme) from Academic Year 2019 – 20

Under



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic year 2019–2020)

Program Structure for Third Year Computer Engineering
UNIVERSITY OF MUMBAI (With Effect from 2021-2022)

Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Theory	Pract.	Total			
CSC501	Theoretical Computer Science	3	--	3	--	3			
CSC502	Software Engineering	3	--	3	--	3			
CSC503	Computer Network	3	--	3	--	3			
CSC504	Data Warehousing & Mining	3	--	3	--	3			
CSDLO501x	Department Level Optional Course- 1	3	--	3	--	3			
CSL501	Software Engineering Lab	--	2	--	1	1			
CSL502	Computer Network Lab	--	2	--	1	1			
CSL503	Data Warehousing & Mining Lab	--	2	--	1	1			
CSL504	Professional Comm. & Ethics II	--	2*+2	--	2	2			
CSM501	Mini Project: 2 A	--	4\$	--	2	2			
Total		15	14	15	07	22			
Course Code	Course Name	Examination Scheme							
		Theory			Term Work	Pract &oral	Total		
		Internal Assessment		End Sem Exam	Exam. Duration (in Hrs)				
		Test 1	Test 2	Avg					
CSC501	Theoretical Computer Science	20	20	20	80	3	25	--	125
CSC502	Software Engineering	20	20	20	80	3	--	--	100
CSC503	Computer Network	20	20	20	80	3	--	--	100
CSC504	Data Warehousing & Mining	20	20	20	80	3	--	--	100
CSDLO501x	Department Level Optional Course -1	20	20	20	80	3	--	--	100
CSL501	Software Engineering Lab	--	--	--	--	25	25	50	
CSL502	Computer Network Lab	--	--	--	--	25	25	50	
CSL503	Data Warehousing & Mining Lab	--	--	--	--	Dr. G. T. Thampli Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050	25	50	
CSL504	Professional Comm. & Ethics II	--	--	--	--	50	--	50	
CSM501	Mini Project : 2A	--	--	--	--	25	25	50	
Total		--	--	100	400	--	175	100	775

* Theory class to be conducted for full class and \$ indicates workload of Learner (Not Faculty), students can form groups with minimum 2(Two) and not more than 4(Four). Faculty Load: 1hour per week per four groups.

**Program Structure for Third Year Computer Engineering
UNIVERSITY OF MUMBAI (With Effect from 2021-2022)**

Semester VI

Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned					
		Theory	Pract. Tut.	Theory	Pract.	Total			
CSC601	System Programming & Compiler Construction	3	--	3	--	3			
CSC602	Cryptography & System Security	3	--	3		3			
CSC603	Mobile Computing	3	--	3	--	3			
CSC604	Artificial Intelligence	3	--	3	--	3			
CSDLO601x	Department Level Optional Course -2	3	--	3	--	3			
CSL601	System Programming & Compiler Construction Lab	--	2	--	1	1			
CSL602	Cryptography & System Security Lab	--	2	--	1	1			
CSL603	Mobile Computing Lab	--	2	--	1	1			
CSL604	Artificial Intelligence Lab	--	2	--	1	1			
CSL605	Skill base Lab Course: Cloud Computing	--	4	--	2	2			
CSM601	Mini Project Lab: 2B	--	4 ^s	--	2	2			
Total		15	16	15	08	23			
Course Code	Course Name	Examination Scheme							
		Theory			Term Work	Pract. &oral			
		Internal Assessment		End Sem Exa m	Exam. Duration (in Hrs)				
		Test 1	Test 2	Avg					
CSC601	System Programming & Compiler Construction	20	20	20	80	3	--	--	100
CSC602	Cryptography & System Security	20	20	20	80	3	--	--	100
CSC603	Mobile Computing	20	20	20	80	3	--	--	100
CSC604	Artificial Intelligence	20	20	20	80	3	--	--	100
CSDLO601x	Department Level Optional Course -2	20	20	20	80	3	--	--	100
CSL601	System Programming & Compiler Construction Lab	--	--	--	--	--	25		50
CSL602	Cryptography & System Security Lab	--	--	--	--	Dr. G. J. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	25	--	25
CSL603	Mobile Computing Lab	--	--	--	--		25	-	25
CSL604	Artificial Intelligence Lab						25	25	50
CSL605	Skill base Lab Course: Cloud Computing	--	--	--	--	--	50	25	75
CSM601	Mini Project :2B	--	--	--	--	--	25	25	50
Total		--	--	100	400	--	175	100	775



Program Structure for Computer Engineering
UNIVERSITY OF MUMBAI (With Effect from 2021-2022)

Department Optional Courses

Department Level Optional Courses	Semester	Code & Course
Department Level Optional Course -1	V	CSDLO5011: Probabilistic Graphical Models CSDLO5012: Internet Programming CSDLO5013: Advance Database Management System
Department Level Optional Course -2	VI	CSDLO6011: Internet of Things CSDLO6012: Digital Signal & Image Processing CSDLO6013: Quantitative Analysis



Dr. G. T. Thampli
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Computer Engineering

Second Year with Effect from AY 2020-21

Third Year with Effect from AY 2021-22

Final Year with Effect from AY 2022-23

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic year 2019–2020)

Program Structure for Third Year Computer Engineering
UNIVERSITY OF MUMBAI (With Effect from 2021-2022)

Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Theory	Pract.	Total			
CSC501	Theoretical Computer Science	3	--	3	--	3			
CSC502	Software Engineering	3	--	3	--	3			
CSC503	Computer Network	3	--	3	--	3			
CSC504	Data Warehousing & Mining	3	--	3	--	3			
CSDLO501x	Department Level Optional Course- 1	3	--	3	--	3			
CSL501	Software Engineering Lab	--	2	--	1	1			
CSL502	Computer Network Lab	--	2	--	1	1			
CSL503	Data Warehousing & Mining Lab	--	2	--	1	1			
CSL504	Business Comm. & Ethics II	--	2*+2	--	2	2			
CSM501	Mini Project: 2 A	--	4\$	--	2	2			
Total		15	14	15	07	22			
Course Code	Course Name	Examination Scheme							
		Theory			Term Work	Pract &oral	Total		
		Internal Assessment		End Sem Exam	Exam. Duration (in Hrs)				
		Test 1	Test 2	Avg					
CSC501	Theoretical Computer Science	20	20	20	80	3	25	--	125
CSC502	Software Engineering	20	20	20	80	3	--	--	100
CSC503	Computer Network	20	20	20	80	3	--	--	100
CSC504	Data Warehousing & Mining	20	20	20	80	3	--	--	100
CSDLO501x	Department Level Optional Course -1	20	20	20	80	3	--	--	100
CSL501	Software Engineering Lab	--	--	--	--	25	25	50	
CSL502	Computer Network Lab	--	--	--	--	25	25	50	
CSL503	Data Warehousing & Mining Lab	--	--	--	--	Dr. G. T. Thampli Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050	25	50	
CSL504	Business Comm. & Ethics II	--	--	--	--	50	--	50	
CSM501	Mini Project : 2A	--	--	--	--	25	25	50	
Total		--	--	100	400	--	175	100	775

* Theory class to be conducted for full class and \$ indicates workload of Learner (Not Faculty), students can form groups with minimum 2(Two) and not more than 4(Four). Faculty Load: 1hour per week per four groups.

Program Structure for Computer Engineering
UNIVERSITY OF MUMBAI (With Effect from 2021-2022)

Department Optional Courses

Department Level Optional Courses	Semester	Code & Course
Department Level Optional Course -1	V	CSDLO5011: Probabilistic Graphical Models CSDLO5012: Internet Programming CSDLO5013: Advance Database Management System

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

UNIVERSITY OF MUMBAI



Bachelor of Engineering in **Electronics and Telecommunication Engineering**

Second Year with Effect from AY 2020-21

Third Year with Effect from AY 2021-22

Final Year with Effect from AY 2022-23

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

Dr. G. T. Thampli
PRINCIPAL

Tanmal Shahani Engineering College
Bandra (W), Mumbai - 400051



(As per AICTE guidelines with effect from the academic year
2019–2020)

Program Structure for Second Year Engineering

Semester III & IV

UNIVERSITY OF MUMBAI

(With Effect from 2020-2021)

Semester III

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
ECC301	Engineering Mathematics-III	3	--	1*	3	--	1	4
ECC302	Electronic Devices & Circuits	3	--	--	3	--	--	3
ECC303	Digital System Design	3	--	--	3	--	--	3
ECC304	Network Theory	3	--	1	3	--	1	4
ECC305	Electronic Instrumentation & Control Systems	3	--	--	3	--	--	3
ECL301	Electronic Devices & Circuits Lab	--	2	--	--	1	--	1
ECL302	Digital System Design Lab	--	2	--	--	1	--	1
ECL303	Electronic Instrumentation & Control Systems Lab	--	2	--	--	1	--	1
ECL304	Skill Lab: C++ and Java Programming	--	4	--	--	2	--	2
ECM301	Mini Project 1A	--	4\$	--	--	2	--	2
Total		15	14	2	15	07	2	24

* Should be conducted batch wise.

\$ Indicates work load of a learner (Not Faculty) for Mini Project 1A. Faculty Load: 1 hour per week per four groups.

Course Code	Course Name	Examination Scheme										
		Theory			End Sem. Exam	Exam. Duration (in Hrs)	Term Work	Pract. & oral				
		Internal Assessment										
		Test 1	Test 2	Avg.								
ECC301	Engineering Mathematics-III	20	20	20	80	3	25	--	125			
ECC302	Electronic Devices & Circuits	20	20	20	80	3	--	--	100			
ECC303	Digital System Design	20	20	20	80	3	--	--	100			
ECC304	Network Theory	20	20	20	80	3	25	--	125			
ECC305	Electronic Instrumentation & Control Systems	20	20	20	80	3	--	--	100			
ECL301	Electronic Devices & Circuits Lab	--	--	--	--	--	25	25	50			
ECL302	Digital System Design Lab	--	--	--	--	---	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	25	25			
ECL303	Electronic Instrumentation & Control Systems Lab	--	--	--	--	--	25	--	25			
ECL304	Skill Lab: C++ and Java Programming	--	--	--	--	--	25	25	50			
ECM301	Mini Project 1A	--	--	--	--	--	25	25	50			
Total		--	--	100	400	--	175	75	750			

Semester IV

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
ECC401	Engineering Mathematics-IV	3	--	1*	3	--	1	4
ECC402	Microcontrollers	3	--	--	3	--	--	3
ECC403	Linear Integrated Circuits	3	--	--	3	--	--	3
ECC404	Signals & Systems	3	--	1	3	--	1	4
ECC405	Principles of Communication Engineering	3	--	--	3	--	--	3
ECL401	Microcontrollers Lab	--	2	--	--	1	--	1
ECL402	Linear Integrated Circuits Lab	--	2	--	--	1	--	1
ECL403	Principles of Communication Engineering Lab	--	2	--	--	1	--	1
ECL404	Skill Lab: Python Programming	--	4	--	--	2	--	2
ECM401	Mini Project 1B	--	4\$	--	--	2	--	2
Total		15	14	2	15	7	2	24

* Should be conducted batch wise.

\$ Indicates work load of a learner (Not Faculty) for Mini Project 1B. Faculty Load: 1 hour per week per four groups.

Course Code	Course Name	Examination Scheme							
		Theory			Internal Assessment		Term Work	Pract. & oral	
		Test 1	Test 2	Avg.					
					End Sem. Exam.	Exam. Duration (in Hrs)			
ECC401	Engineering Mathematics-IV	20	20	20	80	3	25	--	125
ECC402	Microcontrollers	20	20	20	80	3	--	--	100
ECC403	Linear Integrated Circuits	20	20	20	80	3	--	--	100
ECC404	Signals & Systems	20	20	20	80	3	25	--	125
ECC405	Principles of Communication Engineering	20	20	20	80	3	--	--	100
ECL401	Microcontrollers Lab	--	--	--	--	25			25
ECL402	Linear Integrated Circuits Lab	--	--	--	--	25	Dr. G. T. Thampi		50
ECL403	Principles of Communication Engineering Lab	--	--	--	--	25	PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.		50
ECL404	Skill Lab: Python Programming	--	--	--	--	25			50
ECM401	Mini Project 1B	--	--	--	--	25			50
Total		--	--	100	400	--	175	100	775

UNIVERSITY OF MUMBAI



Bachelor of Engineering in **Electronics and Telecommunication Engineering**

Second Year with Effect from AY 2020-21

Third Year with Effect from AY 2021-22

Final Year with Effect from AY 2022-23

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

Dr. G. T. Thampi
PRINCIPAL

Tianan Shahani Engineering College
Bandra (W), Mumbai - 400 051



(As per AICTE guidelines with effect from the academic year
2019–2020)

Program Structure for Third Year Engineering

Semester V & VI

UNIVERSITY OF MUMBAI

(With Effect from 2021-2022)

Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
ECC501	Digital Communication	3	--	--	3	--	--	3
ECC502	Discrete Time Signal Processing	3	--	--	3	--	--	3
ECC503	Digital VLSI	3	--	--	3	--	--	3
ECC504	Random Signal Analysis	3	--	1	3	--	1	4
ECCDLO 501X	Department Optional Course-1	3	--	--	3	--	--	3
ECL501	Digital Communication Lab	--	2	--	--	1	--	1
ECL502	Discrete Time Signal Processing Lab	--	2	--	--	1	--	1
ECL503	Digital VLSI Lab	--	2	--	--	1	--	1
ECL504	Professional Communication & Ethics - II	--	2*+2~	--	--	2	--	2
ECM501	Mini Project 2A- Embedded System Project	--	4\$	--	--	2	--	2
Total		15	14	1	15	07	1	23

* Theory should be conducted for the full class.

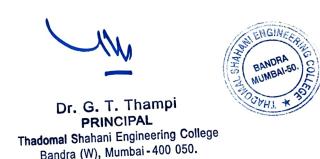
~ Batch-wise practical's to be conducted

\$ Indicates work load of a learner (Not Faculty) for Mini Project 2A. Faculty Load: 1 hour per week per four groups.

Course Code	Course Name	Examination Scheme										
		Theory				Term Work	Pract. & oral	Total				
		Internal Assessment			End Sem. Exam	Exam. Duration (in Hrs)						
		Test 1	Test 2	Avg.								
ECC501	Digital Communication	20	20	20	80	3	--	--	100			
ECC502	Discrete Time Signal Processing	20	20	20	80	3	--	--	100			
ECC503	Digital VLSI	20	20	20	80	3	--	--	100			
ECC504	Random Signal Analysis	20	20	20	80	3	25	--	125			
ECCDLO 501X	Department Level Optional Course-1	20	20	20	80	3	--	--	100			
ECL501	Digital Communication Lab	--	--	--	--	--	25	25	50			
ECL502	Discrete Time Signal Processing Lab	--	--	--	--	--	25	25	50			
ECL503	Digital VLSI Lab	--	--	--	--	--	25	25	50			
ECL504	Business Communication and Ethics Lab	--	--	--	--	--	25	25	50			
ECM501	Mini Project 2A- Embedded System Project	--	--	--	--	--	25	25	50			
Total		--	--	100	400	--	150	125	775			

Department Level Optional Course-1

Course Code	Department Level Optional Course-1
ECCDLO5011	Digital and IPTV Engineering
ECCDLO5012	Data Compression and Cryptography
ECCDLO5013	IT Infra and Security
ECCDLO5014	Data Structures and Algorithm
ECCDLO5015	Sensor Technology



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

Semester VI

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
ECC601	Electromagnetics and Antenna	3	--	--	3	--	--	3
ECC602	Computer Communication Networks	3	--	--	3	--	--	3
ECC603	Image Processing and Machine Vision	3	--	--	3	--	--	3
ECC604	Artificial Neural Network and Fuzzy Logic	3	--	--	3	--	--	3
ECCDLO 601X	Department Level Optional Course-2	3	--	--	3	--	--	3
ECL601	Electromagnetics and Antenna Lab	--	2	--	--	1	--	1
ECL602	Computer Communication Networks Lab	--	2	--	--	1	--	1
ECL603	Image Processing and Machine Vision Lab	--	2	--	--	1	--	1
ECL604	Skill Lab: Linux and Networking and Server Configuration	--	4	--	--	2	--	2
ECM601	Mini Project 2B- FPGA based Project	--	4\$	--	--	2	--	2
Total		15	14	--	15	07	--	22

\$ Indicates work load of a learner (Not Faculty) for Mini Project 2B. Faculty Load: 1 hour per week per four groups.

Course Code	Course Name	Examination Scheme										
		Theory			End Sem. Exam.	Exam. Duration (in Hrs)	Term Work	Pract. & oral				
		Internal Assessment		Avg.								
		Test 1	Test 2									
ECC601	Electromagnetics and Antenna	20	20	20	80	3	--	--	100			
ECC602	Computer Communication Networks	20	20	20	80	3	--	--	100			
ECC603	Image Processing and Machine Vision	20	20	20	80	3	--	--	100			
ECC604	Artificial Neural Network and Fuzzy Logic	20	20	20	80	3	--	--	100			
ECCDLO 601X	Department Level Optional Course-2	20	20	20	80	3	--	--	100			
ECL601	Electromagnetics and Antenna Lab	--	--	--	--	--	25	25	50			
ECL602	Computer Communication Networks Lab	--	--	--	--	--	25	25	50			
ECL603	Image Processing and Machine Vision Lab	--	--	--	--	Dr. G. T. Thamhi PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050	25	25	50			
ECL604	Skill Lab: Linux and Networking and Server Configuration	--	--	--	--	25	25	50				
ECM601	Mini Project 2B- FPGA based Project	--	--	--	--	25	25	50				
Total		--	--	100	400	--	125	125	750			

Department Level Optional Course-2

Course Code	Department Level Optional Course-2
ECCDLO6011	Mixed Signal VLSI
ECCDLO6012	Computer Organization and Architecture
ECCDLO6013	Digital Forensic
ECCDLO6014	Database Management System
ECCDLO6015	IoT and Industry 4.0
ECCDLO6016	Radar Engineering


Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

UNIVERSITY OF MUMBAI



Bachelor of Engineering in **Electronics and Telecommunication Engineering**

Second Year with Effect from AY 2020-21

Third Year with Effect from AY 2021-22

Final Year with Effect from AY 2022-23

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

Dr. G. T. Thampi
PRINCIPAL

Tianan Shahani Engineering College
Bandra (W), Mumbai - 400 051



(As per AICTE guidelines with effect from the academic year
2019–2020)

Program Structure for Third Year Engineering

Semester V & VI

UNIVERSITY OF MUMBAI

(With Effect from 2021-2022)

Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
ECC501	Digital Communication	3	--	--	3	--	--	3
ECC502	Discrete Time Signal Processing	3	--	--	3	--	--	3
ECC503	Digital VLSI	3	--	--	3	--	--	3
ECC504	Random Signal Analysis	3	--	1	3	--	1	4
ECCDLO 501X	Department Optional Course-1	3	--	--	3	--	--	3
ECL501	Digital Communication Lab	--	2	--	--	1	--	1
ECL502	Discrete Time Signal Processing Lab	--	2	--	--	1	--	1
ECL503	Digital VLSI Lab	--	2	--	--	1	--	1
ECL504	Professional Communication & Ethics - II	--	2*+2~	--	--	2	--	2
ECM501	Mini Project 2A- Embedded System Project	--	4\$	--	--	2	--	2
Total		15	14	1	15	07	1	23

* Theory should be conducted for the full class.

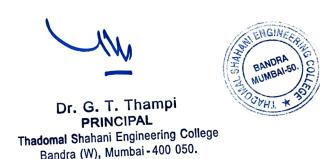
~ Batch-wise practical's to be conducted

\$ Indicates work load of a learner (Not Faculty) for Mini Project 2A. Faculty Load: 1 hour per week per four groups.

Course Code	Course Name	Examination Scheme								
		Theory				Term Work	Pract. & oral	Total		
		Internal Assessment			End Sem. Exam	Exam. Duration (in Hrs)				
		Test 1	Test 2	Avg.						
ECC501	Digital Communication	20	20	20	80	3	--	--	100	
ECC502	Discrete Time Signal Processing	20	20	20	80	3	--	--	100	
ECC503	Digital VLSI	20	20	20	80	3	--	--	100	
ECC504	Random Signal Analysis	20	20	20	80	3	25	--	125	
ECCDLO 501X	Department Level Optional Course-1	20	20	20	80	3	--	--	100	
ECL501	Digital Communication Lab	--	--	--	--	--	25	25	50	
ECL502	Discrete Time Signal Processing Lab	--	--	--	--	--	25	25	50	
ECL503	Digital VLSI Lab	--	--	--	--	--	25	25	50	
ECL504	Business Communication and Ethics Lab	--	--	--	--	--	25	25	50	
ECM501	Mini Project 2A- Embedded System Project	--	--	--	--	--	25	25	50	
Total		--	--	100	400	--	150	125	775	

Department Level Optional Course-1

Course Code	Department Level Optional Course-1
ECCDLO5011	Digital and IPTV Engineering
ECCDLO5012	Data Compression and Cryptography
ECCDLO5013	IT Infra and Security
ECCDLO5014	Data Structures and Algorithm
ECCDLO5015	Sensor Technology



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

UNIVERSITY OF MUMBAI



Bachelor of Engineering

First Year Engineering (Semester I & II), Revised course
(REV- 2019'C' Scheme) from Academic Year 2019 – 20
(Common for All Branches of Engineering)

Under

FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic year
2019–2020)


Dr. G. T. Thamhi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



**Program Structure for First Year Engineering
Semester I & II**
UNIVERSITY OF MUMBAI
(With Effect from 2019-2020)

Semester I

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total	
FEC101	Engineering Mathematics-I	3	--	1*	3	--	1	4	
FEC102	Engineering Physics-I	2		--	2		--	2	
FEC103	Engineering Chemistry-I	2	--	--	2	--	--	2	
FEC104	Engineering Mechanics	3	--	--	3	--	--	3	
FEC105	Basic Electrical Engineering	3	--	--	3	--	--	3	
FEL101	Engineering Physics-I	--	1	--	--	0.5	--	0.5	
FEL102	Engineering Chemistry-I	--	1	--	--	0.5	--	0.5	
FEL103	Engineering Mechanics	--	2	--	--	1	--	1	
FEL104	Basic Electrical Engineering	--	2	--	--	1	--	1	
FEL105	Basic Workshop practice-I	--	2	--	--	1	--	1	
Total		13	08	01	13	04	01	18	
Course Code	Course Name	Examination Scheme							
		Theory				Term Work	Pract. /oral	Total	
		Internal Assessment			End Sem. Exam.				
Test 1	Test 2	Avg.							
FEC101	Engineering Mathematics-I	20	20	20	80	3	25	--	125
FEC102	Engineering Physics-I	15	15	15	60	2	--	--	75
FEC103	Engineering Chemistry-I	15	15	15	60	2	--	--	75
FEC104	Engineering Mechanics	20	20	20	80	3	--	--	100
FEC105	Basic Electrical Engineering	20	20	20	80	3	--	--	100
FEL101	Engineering Physics-I	--	--	--	--	--	25	--	25
FEL102	Engineering Chemistry-I	--	--	--	--	--	25	--	25
FEL103	Engineering Mechanics	--	--	--	--	25	Dr. G. T. Thampi	25	50
FEL104	Basic Electrical Engineering	--	--	--	--	25	PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	25	50
FEL105	Basic Workshop practice-I	--	--	--	--	50		--	50
Total		--	--	90	360	--	175	50	675

* May be conducted batch-wise

Semester II

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total	
FEC201	Engineering Mathematics-II	3	--	1*	3	--	1	4	
FEC202	Engineering Physics-II	2	--	--	2	--	--	2	
FEC203	Engineering Chemistry-II	2	--	--	2	--	--	2	
FEC204	Engineering Graphics	2	--	--	2	--	--	2	
FEC205	C programming	2	--	--	2	--	--	2	
FEC206	Professional Communication and Ethics- I	2	--	--	2	--	--	2	
FEL201	Engineering Physics-II	--	1	--	--	0.5	--	0.5	
FEL202	Engineering Chemistry-II	--	1	--	--	0.5	--	0.5	
FEL203	Engineering Graphics	--	4	--	--	2	--	2	
FEL204	C programming	--	2	--	--	1	--	1	
FEL205	Professional Communication and Ethics- I	--	2	--	--	1	--	1	
FEL206	Basic Workshop practice-II	--	2	--	--	1	--	1	
Total		13	12	01	13	06	01	20	
Course Code	Course Name	Examination Scheme							
		Theory			End Sem. Exam.	Exam. Duration (in Hrs)	Term Work	Pract. /oral	Total
		Internal Assessment							
		Test1	Test 2	Avg.					
FEC201	Engineering Mathematics-II	20	20	20	80	3	25	--	125
FEC202	Engineering Physics-II	15	15	15	60	2	--	--	75
FEC203	Engineering Chemistry-II	15	15	15	60	2	--	--	75
FEC204	Engineering Graphics	15	15	15	60	3	--	--	75
FEC205	C programming	15	15	15	60	2	--	--	75
FEC206	Professional Communication and Ethics- I	10	10	10	40	2	--	--	50
FEL201	Engineering Physics-II	--	--	--	--	--	25	--	25
FEL202	Engineering Chemistry-II	--	--	--	--	--	25	--	25
FEL203	Engineering Graphics	--	--	--	--	--	Dr. G. T. Thoropi PRINCIPAL	50	75
FEL204	C programming	--	--	--	--	--	Thadomal Shahani Engineering College --Bandra (W), Mumbai 400 050.	25	50
FEL205	Professional Communication and Ethics- I	--	--	--	--	--	25	--	25
FEL206	Basic Workshop practice-II	--	--	--	--	--	50	--	50
Total		--	--	90	360	--	200	75	725

* May be conducted batch-wise

AC: 23/7/2020

Item No.: 126

UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Information Technology Engineering

Second Year with Effect from AY 2020-21

Third Year with Effect from AY 2021-22

Final Year with Effect from AY 2022-23

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic year
2019–2020)

M.G. Shahani
PRINCIPAL
M.G. Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Program Structure for Second Year
Engineering Semester III & IV
UNIVERSITY OF MUMBAI
(With Effect from 2020-2021)

Semester III

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
ITC301	Engineering Mathematics-III	3	--	1	3	--	1	4
ITC302	Data Structure and Analysis	3		--	3		--	3
ITC303	Database Management System	3	--	--	3	--	--	3
ITC304	Principle of Communication	3	--	--	3	--	--	3
ITC305	Paradigms and Computer Programming Fundamentals	3	--	--	3	--	--	3
ITL301	Data Structure Lab	--	2	--	--	1	--	1
ITL302	SQL Lab	--	2	--	--	1	--	1
ITL303	Computer programming Paradigms Lab	--	2	--	--	1	--	1
ITL304	Java Lab (SBL)	--	4	--	--	2	--	2
ITM301	Mini Project – 1 A for Front end /backend Application using JAVA	--	4\$	--	--	2	--	2
Total		15	14	1	15	07	1	23
Course Code	Course Name	Examination Scheme						
		Theory				Term Work	Pract/ oral	Total
		Internal Assessment			End Sem. Exam	Exam. Duration (in Hrs)		
		Test 1	Test2	Avg.				
ITC301	Engineering Mathematics-III	20	20	20	80	3	25	-- 125
ITC302	Data Structure and Analysis	20	20	20	80	3	--	-- 100
ITC303	Database Management System	20	20	20	80	3	--	-- 100
ITC304	Principle of Communication	20	20	20	80	3	--	-- 100
ITC305	Paradigms and Computer Programming Fundamentals	20	20	20	80	3		100
ITL301	Data Structure Lab	--	--	--	--	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 059.	25	50
ITL302	SQL Lab	--	--	--	--	25	25	50
ITL303	Computer programming Paradigms Lab	--	--	--	--	25	25	50
ITL304	Java Lab (SBL)	--	--	--	--	25	25	50
ITM301	Mini Project – 1 A for Front end /backend Application using JAVA	--	--	--	--	25	25	50
Total		--	--	100	400	--	150	125
		\$ indicates work load of Learner (Not Faculty), for Mini-Project. Students can form groups with minimum 2 (Two) and not more than 4 (Four) Faculty Load : 1 hour per week per four groups.						

**Program Structure for Second Year
Engineering Semester III & IV
UNIVERSITY OF MUMBAI
(With Effect from 2020-2021)**

Semester IV

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
ITC401	Engineering Mathematics-IV	3	--	1	3	--	1	4
ITC402	Computer Network and Network Design	3	--	--	3	--	--	3
ITC403	Operating System	3	--	--	3	--	--	3
ITC404	Automata Theory	3	--	--	3	--	--	3
ITC405	Computer Organization and Architecture	3	--	--	3	--	--	3
ITL401	Network Lab	--	2	--	--	1	--	1
ITL402	Unix Lab	--	2	--	--	1	--	1
ITL403	Microprocessor Lab	--	2	--	--	1	--	1
ITL404	Python Lab (SBL)	--	4	--	--	2	--	2
ITM401	Mini Project – 1 B for Python based automation projects	--	4\$	--	--	2	--	2
Total		15	14	1	15	7	1	23
Course Code	Course Name	Examination Scheme						
		Theory				Term Work	Pract/oral	Total
		Internal Assessment			End Sem. Exam.	Exam. Duration (in Hrs)		
		Test 1	Test 2	Avg.				
ITC401	Engineering Mathematics-IV	20	20	20	80	3	25	-- 125
ITC402	Computer Network and Network Design	20	20	20	80	3	--	-- 100
ITC403	Operating System	20	20	20	80	3	--	-- 100
ITC404	Automata Theory	20	20	20	80	3	--	-- 100
ITC405	Computer Organization and Architecture	20	20	20	80	3	--	-- 100
ITL401	Network Lab	--	--	--	--	Dr. G. T. Thamani PRINCIPAL T. S. Engineering College Bandra (W), Mumbai - 400 050	25	25 50
ITL402	Unix Lab	--	--	--	--		25	25 50
ITL403	Microprocessor Lab	--	--	--	--		25	25 50
ITL404	Python Lab (SBL)	--	--	--	--		25	25 50
ITM401	Mini Project – 1 B for Python based automation projects	--	--	--	--		25	25 50
Total		--	--	100	400	--	150	75 775

\$ indicates work load of Learner (Not Faculty), for Mini Project. Students can form groups with minimum 2 (Two) and not more than 4 (Four) Faculty Load : 1 hour per week per four groups

UNIVERSITY OF MUMBAI



Bachelor of Engineering

in

Information Technology

Third Year with Effect from AY 2021-22

(REV- 2019 'C' Scheme) from Academic Year 2019 – 20

Under

FACULTY OF SCIENCE & TECHNOLOGY

(As per AICTE guidelines with effect from the academic year
2019–2020)

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Program Structure for Third Year Information Technology
Semester V & VI
UNIVERSITY OF MUMBAI
(With Effect from 2021-2022)

Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned		
		Theory	Pract.	Theory	Pract.	Total
ITC501	Internet Programming	3	--	3	--	3
ITC502	Computer Network Security	3	--	3	--	3
ITC503	Entrepreneurship and E-business	3	--	3	--	3
ITC504	Software Engineering	3	--	3	--	3
ITDO501X	Department Optional Course – 1	3	--	3	--	3
ITL501	IP Lab	-	2	--	1	1
ITL502	Security Lab	-	2	--	1	1
ITL503	DevOPs Lab	-	2	--	1	1
ITL504	Advance DevOPs Lab	-	2	--	1	1
ITL505	Professional Communication & Ethics-II (PCE-II)	-	2*+2	--	2	2
ITM501	Mini Project – 2 A Web Based Business Model	-	4\$	--	2	2
Total		15	16	15	08	23
Course Code	Course Name	Examination Scheme				
		Theory			Term Work	Prac /oral
		Internal Assessment		End Sem Exam	Exam. Duration (in Hrs)	
		Test1	Test2	Avg		
ITC501	Internet Programming	20	20	20	80	Dr. C. T. Thampi --
ITC502	Computer Network Security	20	20	20	80	Hadomai Shethi Engineering College Bandra (W), Mumbai 400 050. --
ITC503	Entrepreneurship and E-business	20	20	20	80	3
ITC504	Software Engineering	20	20	20	80	3
ITDO501X	Department Optional Course – 1	20	20	20	80	3
ITL501	IP Lab	--	--	--	--	25
ITL502	Security Lab	--	--	--	--	25
ITL503	DevOPs Lab	--	--	--	--	25

ITL504	Advance DevOPs Lab	--	--	--	--	--	25	25	50
ITL505	Professional Communication & Ethics-II (PCE-II)	--	--	--	--	--	50	--	50
ITM501	Mini Project – 2 A Web Based Business Model	--	--	--	--	--	25	25	50
Total		--	--	100	400	--	175	125	800

* Theory class to be conducted for full class

\$ indicates work load of Learner (Not Faculty), for Mini-Project. Students can form groups with minimum 2(Two) and not more than 4(Four). Faculty Load: 1hour per week per four groups.

ITDO501X		Department Optional Course – 1
ITDO5011		Microcontroller Embedded Programming
ITDO5012		Advance Data Management Technologies
ITDO5013		Computer Graphics & Multimedia System
ITDO5014		Advanced Data structure and Analysis



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

Program Structure for Third Year Information Technology
Semester V & VI
UNIVERSITY OF MUMBAI
(With Effect from 2021-2022)

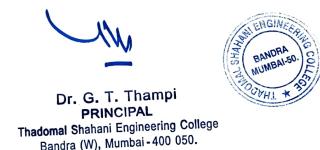
Semester VI

Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned			
		Theory	Pract. Tut.	Theory	Pract.	Total	
ITC601	Data Mining & Business Intelligence	3	--	3	--	3	
ITC602	Web X.0	3	--	3	--	3	
ITC603	Wireless Technology	3	--	3	--	3	
ITC604	AI and DS – 1	3	--	3	--	3	
ITDO601 X	Department Optional Course – 2	3	--	3	--	3	
ITL601	BI Lab	--	2	--	1	1	
ITL602	Web Lab	--	2	--	1	1	
ITL603	Sensor Lab	--	2	--	1	1	
ITL604	MAD & PWA Lab	--	2	--	1	1	
ITL605	DS using Python Skill based Lab	--	2	--	1	1	
ITM601	Mini Project – 2 B Based on ML	--	4 ^s	--	2	2	
Total		15	14	15	07	22	
Course Code	Course Name	Examination Scheme					
		Theory			Term Work	Prac /oral	Total
		Internal Assessment			End Sem Exam	Exam. Duration (in Hrs)	
		Test1	Test2	Avg			
ITC601	Data Mining & Business Intelligence	20	20	20	80	3 -- -- 100	
ITC602	Web X.0	20	20	20	80	3 -- -- 100	
ITC603	Wireless Technology	20	20	20	80	3 -- -- 100	
ITC604	AI and DS – 1	20	20	20	80	3 Dr. G. T. Thampi PRINCIPAL -- 100	
ITDO601 X	Department Optional Course – 2	20	20	20	80	3 -- -- 100	
ITL601	BI Lab	--	--	--	--	25 25 50	
ITL602	Web Lab	--	--	--	--	25 25 50	
ITL603	Sensor Lab	--	--	--	--	25 25 50	
ITL604	MAD & PWA Lab	--	--	--	--	25 25 50	
ITL605	DS using Python Lab (SBL)	--	--	--	--	25 25 50	

ITM601	Mini Project – 2 B Based on ML	--	--	--	--	--	25	25	50
Total		--	--	100	400	--	150	150	800

\$ indicates work load of Learner (Not Faculty), for Mini-Project. Students can form groups with minimum 2(Two) and not more than 4(Four). Faculty Load: 1hour per week per four groups.

ITDO601X	Department Optional Course – 2
ITDO6011	Software Architecture
ITDO6012	Image Processing
ITDO6013	Green IT
ITDO6014	Ethical Hacking and Forensic



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Revised-16 Curriculum/ Syllabus of the Courses



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



AC 05/05/2018

Item No. 4.57

UNIVERSITY OF MUMBAI



Revised Syllabus for the TE Biomedical Engineering (Third Year - Semester V and VI)

**(As per Choice Based Credit and Grading System
with effect from the academic year 2018–2019)**

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Examination Scheme for Semester VI



Course Code	Course Name	Examination Scheme				Pract. (Collelge)	Total Marks
		Theory External (UA)	Internal (CA)	Term work	Practical		
		Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks
BMC601	Biomedical Monitoring Equipment	80	32	20	8	---	---
BMC602	Microprocessors and Microcontrollers	80	32	20	8	---	---
BMC603	Digital Image Processing	80	32	20	8	---	---
BMC604	Medical Imaging-I	80	32	20	8	---	---
BMDLO 602X	Department Level Optional Course – II	80	32	20	8	---	---
BML601	Biomedical Monitoring Equipment	---	---	---	25	10	---
BML602	Microprocessors and Microcontrollers	---	---	---	25	10	---
BML603	Digital Image Processing	---	---	---	25	10	---
BML604	Medical Imaging-I	---	---	---	25	10	---
BMDLL 602X	Department Level Optional Course Laboratory – II	---	---	---	25	10	---
Total		400	160	100	40	125	50
							100
							750

Total Marks

100

50

50

50

50

50

50

50

50

AC
Item No.

UNIVERSITY OF MUMBAI



Revised Syllabus for the Biomedical Engineering (Final Year – Semester VII and VIII)

**(As per Choice Based Credit and Grading System
with effect from the academic year 2019–2020)**

A blue ink signature of Dr. G. T. Thampi's name.

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Examination Scheme for Semester VII

Course Code	Course Name	Examination Scheme										Total Marks	
		External (UA)		Internal (CA)		Term work		Practical		Oral			
		Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks		
BMC701	Life Saving and Surgical Equipment	80	32	20	8	---	---	---	---	---	---	100	
BMC702	Basics of VLSI	80	32	20	8	---	---	---	---	---	---	100	
BMC703	Medical Imaging-II	80	32	20	8	---	---	---	---	---	---	100	
BMDLO 703X	Department Level Optional Course - III	80	32	20	8	---	---	---	---	---	---	100	
ILE101X	Institute Level Optional Course – I	80	32	20	8	---	---	---	---	---	---	100	
BML701	Life Saving and Surgical Equipment	---	---	---	---	25	10	---	---	25	10	---	
BML702	Basics of VLSI	---	---	---	---	25	10	---	---	25	10	---	
BML703	Medical Imaging-II	---	---	---	---	25	10	---	---	25	10	50	
BMDLI 703X	Department Level Optional Course Laboratory – III	---	---	---	---	25	10	---	---	25	10	25	
BML704	Project Stage I	---	---	---	---	25	10	---	---	25	10	50	
Total		400	160	100	40	125	50	---	---	125	50	700	


 BANDARA
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Dr. G. P. Thampi,
 Principal, Bhandara Engineering College
 Bandra (W), Mumbai - 400 050.
 Tel: 022-24321212

Examination Scheme for Semester VIII

Course Code	Course Name	Examination Scheme										Total Marks	
		Theory		Internal		Term work		Practical		Oral			
		External (UA)	Internal (CA)	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks		
BMC801	Biomedical Microsystems	80	32	20	8	---	---	---	---	---	---	100	
BMC802	Hospital Management	80	32	20	8	---	---	---	---	---	---	100	
BMDLO 801X	Department Level Optional Course - IV	80	32	20	8	---	---	---	---	---	---	100	
ILO202X	Institute Level Optional Course –II	80	32	20	8	---	---	---	---	---	---	100	
BML801	Biomedical Microsystems	---	---	---	---	25	10	---	---	25	10	---	
BML802	Hospital Management	---	---	---	---	25	10	---	---	25	10	---	
BMDLL 801X	Department Level Optional Course Laboratory – IV	---	---	---	---	25	10	---	---	25	10	---	
BML803	Project Stage II	---	---	---	---	50	20	---	---	50	20	100	
Total		320	128	80	32	125	50	---	---	75	30	50	
												625	


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 Dr. M. P. Princpal
 Bandra (W), Mumbai

UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17

Biotechnology

Second Year with Effect from AY 2017-18

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

Under

FACULTY OF TECHNOLOGY

As per **Choice Based Credit and Grading System**

With effect from the AY 2016-17

Dr. G. T. Thampi
PRINCIPAL

Thadomal Shahani Engineering College
Rev. 2016
Bandra (W), Mumbai-400 050.



University of Mumbai
Program Structure for B.E. Biotechnology (Revised 2016)
S.E. Semester III (w.e.f 2017-2018)

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
BTC301	Applied Mathematics-III	3	-	1	3	-	1	4
BTC302	Microbiology	4	-	-	4	-	-	4
BTC303	Cell Biology	3	-	1	3	-	1	4
BTC304	Biochemistry	4	-	-	4	-	-	4
BTC305	Unit Operations-I	3	-	-	3	-	-	3
BTC306	Process Calculations	3	-	1	3	-	1	4
BTL301	Microbiology Lab	-	3	-	-	1.5	-	1.5
BTL302	Biochemistry Lab	-	3	-	-	1.5	-	1.5
BTL303	Unit Operations-I Lab	-	2	-	-	1	-	1
	Total	20	8	3	20	4	3	27

Course code	Course Name	Examination Scheme												
		Theory			Term Work	Pract/ Oral	Oral	Total						
		Internal Assessment		End Sem Exam										
		Test 1	Test 2	Avg										
BTC301	Applied Mathematics-III	20	20	20	80	3	25	-	125					
BTC302	Microbiology	20	20	20	80	3	-	-	100					
BTC303	Cell Biology	20	20	20	80	3	25	-	125					
BTC304	Biochemistry	20	20	20	80	3	-	-	100					
BTC305	Unit Operations-I	20	20	20	80	3	-	-	100					
BTC306	Process Calculations	20	20	20	80	3	25	-	125					
BTL301	Microbiology Lab						25		25					
BTL302	Biochemistry Lab						25		25					
BTL303	Unit Operations-I Lab							25	25					
	Total			120	480	-	75	50	25					
									750					



Dr. G. T. Thampi
PRINCIPAL



University of Mumbai
Program Structure for B.E. Biotechnology (Revised 2016)
S.E. Semester IV (w.e.f 2017-2018)

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
BTC401	Applied Mathematics-IV	3	-	1	3	-	1	4
BTC402	Molecular Genetics	3	-	1	3	-	1	4
BTC403	Fermentation Technology	4		-	4		-	4
BTC404	Analytical Methods in Biotechnology	4	-	-	4	-	-	4
BTC405	Immunology and Immunotechnology	3	-	1	3	-	1	4
BTC406	Unit Operations -II	3		-	3		-	3
BTL401	Fermentation Technology Lab	-	3	-		1.5	-	1.5
BTL402	Analytical Methods in Biotechnology Lab	-	3	-		1.5	-	1.5
BTL403	Unit Operations -II Lab	-	2	-		1	-	1
	Total	20	8	3	20	4	3	27

Course code	Course Name	Examination Scheme								
		Theory			Term Work	Pract/ Oral	Oral	Total		
		Internal Assessment		End Sem Exam						
		Test 1	Test 2	Avg						
BTC401	Applied Mathematics-IV	20	20	20	80	3	25	-	-	125
BTC402	Molecular Genetics	20	20	20	80	3	25	-	-	125
BTC403	Fermentation Technology	20	20	20	80	3	-	-	-	100
BTC404	Analytical Methods in Biotechnology	20	20	20	80	3	-	-	-	100
BTC405	Immunology and Immunotechnology	20	20	20	80	3	25	-	-	125
BTC406	Unit Operations -II	20	20	20	80	3	-	-	-	100
BTL401	Fermentation Technology Lab		-	-	-	3	-	25		25
BTL402	Analytical Methods in Biotechnology Lab	-	-	-	-	3	-	25	-	25
BTL403	Unit Operations -II Lab	-	-	-	-	-	-	-	25	25
	Total			120	480		75	50	25	750



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UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17

Biotechnology

Second Year with Effect from AY 2017-18

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

Under

FACULTY OF TECHNOLOGY

As per **Choice Based Credit and Grading System**

With effect from the AY 2016-17



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University of Mumbai
Program Structure for B.E. Biotechnology (Revised 2016)
T.E. Semester V (w.e.f 2018-2019)

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			Total
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
BTC501	Bioinformatics	4	-	-	4	-	-	4
BTC502	Genetic Engineering	4	-	-	4	-	-	4
BTC503	Thermodynamics and Biochemical Engineering	3	-	1	3	-	1	4
BTC504	Bioreactor Analysis and Technology	3	-	1	3	-	1	4
BTC505	Business Communication and Ethics	2	-	2	-	-	2	2
BTE501X	Elective I	3	-	1	3	-	1	4
BTL501	Bioinformatics Lab	-	2	-	-	1	-	1
BTL502	Genetic Engineering Lab		3			1.5		1.5
BTL503	Lab I		3			1.5		1.5
	Total	17	12	3	17	6	3	26

Course code	Course Name	Examination Scheme						
		Theory			Term Work	Pract/Oral	Oral	Total
		Internal Assessment		End Sem Exam				
		Test 1	Test 2	Avg				
BTC501	Bioinformatics	20	20	20	80	3	-	- 100
BTC502	Genetic Engineering	20	20	20	80	3	-	- 100
BTC503	Thermodynamics and Biochemical Engineering	20	20	20	80	3	25	- - 125
BTC504	Bioreactor Analysis and Technology	20	20	20	80	3	25	- - 125
BTC505	Business Communication and Ethics	-	-	-	-	-	50	- 50
BTE501X	Department Elective I	20	20	20	80	3	25	- - 125
BTL501	Bioinformatics Lab					2	25	25
BTL502	Genetic Engineering Lab					3	25	25
BTL503	Lab I	-	-	-	-	3	25	- 25
	Total			100	400	-	125	75 - 700

Department Elective I (Sem V)		
Engineering Stream	Advanced Science Stream	Technology Stream
1. Biosensors and Diagnosis (BTE5011)	1.Biophysics (BTE5012) 2.Biostatistics (BTE5013)	Pharmaceutical Technology (BTE5014) Dr. G. T. Thampi

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Program Structure for B.E. Biotechnology (Revised 2016)
T.E. Semester VI (w.e.f 2018-2019)

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			Total
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
BTC601	Food Technology	3	-	1	3	-	1	4
BTC602	Cell & Tissue Culture	4	-	-	4	-	-	4
BTC603	Enzyme Engineering	4	-	-	4	-	-	4
BTC604	IPR, Bioethics and Bio safety	3	-	1	3	-	1	4
BTC605	Process Control & Instrumentation	3	-	1	3	-	1	4
BTE602X	Elective-II	3	-	1	3	-	1	4
BTL601	Lab-II	-	3	-	-	1.5	-	1.5
BTL602	Lab-III	-	3	-	-	1.5	-	1.5
	Total	20	6	4	20	3	4	27

Course code	Course Name	Examination Scheme										
		Theory			Term Work	Pract/ Oral	Oral	Total				
		Internal Assessment		End Sem Exam								
		Test 1	Test 2	Avg								
BTC601	Food Technology	20	20	20	80	3	25	-	-	125		
BTC602	Cell & Tissue Culture	20	20	20	80	3	-	-	-	100		
BTC603	Enzyme Engineering	20	20	20	80	3	-	-	-	100		
BTC604	IPR, Bioethics and Bio safety	20	20	20	80	3	25	-	-	125		
BTC605	Process Control & Instrumentation	20	20	20	80	3	25	-	-	125		
BTE602X	Elective-II	20	20	20	80	3	25	-	-	125		
BTL601	Lab-II	-	-	-	-	3	-	25		25		
BTL602	Lab-III	-	-	-	-	3	-	25	-	25		
	Total			120	480	-	100	50	--	750		

Department Elective II (Sem VI)		
Engineering Stream	Advanced Science Stream	Technology Stream
1. Computational Fluid Dynamics (BTE6021)	1. Protein Engineering (BTE6022) 2. Cancer Biology(BTE6023)	1. Green technology (BTE6024)

Dr. G. T. Thampli

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UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17

Biotechnology

Second Year with Effect from AY 2017-18

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

Under

FACULTY OF TECHNOLOGY

As per **Choice Based Credit and Grading System**

With effect from the AY 2016-17



Dr. G. T. Thampi
PRINCIPAL

Thadomal Shahani Engineering College
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University of Mumbai
Program Structure for B.E. Biotechnology (Revised 2016)
B.E. Semester VII (w.e.f 2019-2020)

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
BTC701	Bioseparation & Downstream Processing Technology-I	4	-	1	4	-	1	5
BTC702	Bioprocess Modelling and Simulation	4	-	1	4	-	1	5
BTC703	Agriculture Biotechnology	3	-	1	3	-	1	4
BTE703X	Department Elective III	3	-	1	3	-	1	4
ILO701X	Institute Level optional Subject I	3	-	-	3	-	-	3
BTP701	Project A	-	-	6	-	-	3	3
BTL701	Lab - IV	-	3	-	-	1.5	-	1.5
BTL702	Lab - V	-	3	-	-	1.5	-	1.5
Total		17	6	10	17	3	7	27

Course code	Course Name	Examination Scheme						
		Theory			Term Work	Pract/Oral	Oral	Total
		Internal Assessment		End Sem Exam				
		Test 1	Test 2	Avg				
BTC701	Bioseparation & Downstream Processing Technology-I	20	20	20	80	3	25	- - 125
BTC702	Bioprocess Modelling and Simulation	20	20	20	80	3	25	- - 125
BTC703	Agriculture Biotechnology	20	20	20	80	3	25	- - 125
BTE703X	Department Elective III	20	20	20	80	3	25	- - 125
ILO701X	Institute Level optional Subject I	20	20	20	80	3	- -	- 100
BTP701	Project A	-	-	-	-	-	100	50 150
BTL701	Lab - IV	-	-	-	-	-	25	- 25
BTL702	Lab - V	-	-	-	-	-	25	- 25
Total				100	400	-	200	50 50 800

Department Elective III (Sem VII)		
Engineering Stream	Advanced Science Stream	Technology Stream
1. Stem Cell & Tissue Engineering (BTE7031)	1. Operation research in Biotechnology (BTE7032) 2. Project Management (BTE7033)	1. Nanotechnology (BTE7034)

Institute Level Optional Subject I (Sem VII)		
1. Product Lifecycle Management (ILO7011)	4. Design of Experiments (ILO7014)	7. Disaster Management and Mitigation Measures (ILO7017)
2. Reliability Engineering (ILO7012)	5. Operation Research (ILO7015)	8. Energy Audit and Management (ILO7018)
3. Management Information System (ILO7013)	6. Cyber Security and Laws (ILO7016) <small>Dr. G. T. Thampli PRINCIPAL</small>	9. Development Engineering (ILO7019)

University of Mumbai
Program Structure for B.E. Biotechnology (Revised 2016)
B.E. Semester VIII (w.e.f 2019-2020)

Course code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			Total
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
BTC801	Environmental Biotechnology	4	-	-	4	-	-	4
BTC802	Bioseparation & Downstream Processing technology-II	4	-	-	4	-	-	4
BTC803	Bioprocess Plant & Equipment design	3	-	1	3	-	1	4
BTE804X	Department Elective IV	3	-	1	3	-	1	4
ILO802X	Institute Level optional Subject II	3	-	-	3	-	-	3
BTP801	Project B	-	-	8	-	-	6	6
BTL801	Lab - VI	-	3	-	-	1.5	-	1.5
BTL802	Lab - VII	-	3	-	-	1.5	-	1.5
	Total	17	6	10	17	3	8	28

Course code	Course Name	Examination Scheme								
		Theory			Term Work	Pract/ Oral	Oral	Total		
		Internal Assessment		End Sem Exam	Exam Duration (in hrs)					
		Test 1	Test 2	Avg						
BTC801	Environmental Biotechnology	20	20	20	80	3	-	-	100	
BTC802	Bioseparation & Downstream Processing technology-II	20	20	20	80	3	-	-	100	
BTC803	Bioprocess Plant & Equipment design	20	20	20	80	3	25	-	125	
BTE804X	Department Elective IV	20	20	20	80	3	25	-	125	
ILO802X	Institute Level optional Subject II	20	20	20	80	3	-	-	100	
BTP801	Project B	-	-	-	-	-	100	-	150	
BTL801	Lab - VI	-	-	-	-	3	-	25	-	25
BTL802	Lab - VII	-	-	-	-	3	-	25	-	25
	Total			100	400	-	150	50	50	750

Department Elective IV (Sem VIII)		
Engineering Stream	Advanced Science Stream	Technology Stream
1. Non-conventional Sources of Energy (BTE8041)	1. Total Quality Management (BTE8042) 2. Entrepreneurship (BTE8043)	1. Advanced Bioinformatics (BTE8044)

Institute Level Optional Subject II (Sem VIII)		
1. Project Management (ILO8021)	4. Human Resource Management (ILO8024) PRINCIPAL G. T. Thampli	7. IPR and Patenting (ILO8027)
2. Finance Management (ILO8022)	5. Professional Ethics and CSR (ILO8025)	8. Digital Business Management (ILO8028)
3. Entrepreneurship Development and Management (ILO8023)	6. Research Methodology (ILO8026)	9. Environmental Management (ILO8029)

AC – 5th May, 2018

Item No. – 4.51

UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17

Under

FACULTY OF TECHNOLOGY

Computer Engineering

Second Year with Effect from AY 2017-18

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

As per **Choice Based Credit and Grading System**
with effect from the AY 2016–17



Program Structure B.E. Computer Engineering, (Rev. 2016) w.e.f. AY 2018-19
T. E. Computer Engineering (Semester-VI)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/ Pract	Tut	Total
CSC601	Software Engineering	4	-	-	4	-	-	4
CSC602	System Programming & Compiler Construction	4	-	-	4	-	-	4
CSC603	Data Warehousing & Mining	4	-	-	4	-	-	4
CSC604	Cryptography & System Security	4	-	-	4	-	-	4
CSDLO 601X	Department Level Optional Course -II	4	-	-	4	-	-	4
CSL601	Software Engineering Lab	-	2	-	-	1	-	1
CSL602	System software Lab	-	2	-	-	1	-	1
CSL603	Data Warehousing & Mining Lab	-	2	-	-	1	-	1
CSL604	System Security Lab	-	2	-	-	1	-	1
CSP605	Mini-Project	-	4	-	-	2	-	2
	Total	20	12	-	20	6	-	26

Course Code	Course Name	Examination Scheme								
		Theory			End Sem. Exam	Exam Duration (in Hrs)	TW	Oral	Oral & Pract	
		Internal Assessment		Avg.						
Test 1	Test 2	Avg.								
CSC601	Software Engineering	20	20	20	80	3	-	-	-	100
CSC602	System Programming & Compiler Construction	20	20	20	80	3	-	-	-	100
CSC603	Data Warehousing & Mining	20	20	20	80	3	-	-	-	100
CSC604	Cryptography & System Security	20	20	20	80	3	-	-	-	100
CSDLO 601X	Department Level Optional Course -II	20	20	20	80	3	-	-	-	100
CSL601	Software Engineering Lab	-	-	-	-	-	25	25	--	50
CSL602	System Software Lab	-	-	-	-	-	25	--	25	50
CSL603	Data Warehousing & Mining Lab	-	-	-	-	-	Dr. G. T. Thampi PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050	25	25	50
CSL604	System Security Lab	-	-	-	-	-	25	---	25	50
CSP605	Mini-Project	-	-	-	-	-	25	---	25	50
	Total	100	100	100	400	-	125	25	100	750

AC –
Item No.

UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17

Under

FACULTY OF TECHNOLOGY

Computer Engineering

Second Year with Effect from AY 2017-18

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

As per **Choice Based Credit and Grading System**
with effect from the AY 2016–17



Program Structure B.E. Computer Engineering, (Rev. 2016) w.e.f. AY 2019-20
B. E. Computer Engineering (Semester-VII)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/ Pract	Tut	Total
CSC701	Digital Signal & Image Processing	4	-	-	4	-	-	4
CSC702	Mobile Communication & Computing	4	-	-	4	-	-	4
CSC703	Artificial Intelligence & Soft Computing	4	-	-	4	-	-	4
CSDLO 701X	Department Level Optional Course -III	4	-	-	4	-	-	4
ILO701X	Institute Level Optional Course-I	3	-	-	3	-	-	3
CSL701	Digital Signal & Image Processing Lab	-	2	-	-	1	-	1
CSL702	Mobile App. Development. Tech. Lab	-	2	-	-	1	-	1
CSL703	Artificial Intelligence & Soft Computing Lab	-	2	-	-	1	-	1
CSL704	Computational Lab-I	-	2	-	-	1	-	1
CSP705	Major Project-I	-	6	-	-	3	-	3
Total		19	14	-	19	7	-	26

Course Code	Course Name	Examination Scheme												
		Theory			End Sem. Exam	Exam Duration (in Hrs)	TW	Oral	Oral & Pract					
		Internal Assessment												
		Test 1	Test 2	Avg.										
CSC701	Digital Signal & Image Processing	20	20	20	80	3	-	--	-	100				
CSC702	Mobile Communication & Computing	20	20	20	80	3	-	--	-	100				
CSC703	Artificial Intelligence & Soft Computing	20	20	20	80	3	-	--	-	100				
CSDLO 701X	Department Level Optional Course -III	20	20	20	80	3	-	--	-	100				
ILO701X	Institute Level Optional Course-I	20	20	20	80	3	--	--	-	100				
CSL701	Digital Signal & Image Processing Lab	-	-	-	-	25	--			25				
CSL702	Mobile App. Development. Tech. Lab	-	-	-	-	25	--			50				
CSL703	Artificial Intelligence & Soft Computing Lab	--	-	-	-	Thadomal Shahani Engineering College, Bandra (W), Mumbai 400 050	PRINCIPAL Thadomal Shahani Engineering College, Bandra (W), Mumbai 400 050 --- Bandra (W), Mumbai 400 050		--	50				
CSL704	Computational Lab-I					25	--	25	25	50				
CSP705	Major Project-I	-	-	-	-	50	-	25	25	75				
Total		100	100	100	400		150	25	75	750				

Sem.	Department Level Optional Course (DLOC)	Institute Level Optional Course (ILOC)
V	CSDLO5011: Multimedia System CSDLO5012: Advance Operating System CSDLO5013: Advance Algorithm	-----
VI	CSDLO6021: Machine Learning CSDLO6022: Advance Database System CSDLO6023: Enterprise Resource Planning CSDLO6024: Advance Computer Network	-----
VII	CSDLO7031: Advance System Security & Digital Forensics CSDLO7032: Big Data & Analytics CSDLO7033: Robotics	ILO7011. Product Lifecycle Management ILO7012. Reliability Engineering ILO7013. Management Information System ILO7014. Design of Experiments ILO7015. Operation Research ILO7016. Cyber Security and Laws ILO7017. Disaster Management & Mitigation Measures ILO7018. Energy Audit and Management ILO7019. Development Engineering
VIII	DLO8011: High Performance Computing DLO8012: Natural Language Processing DLO8013: Adhoc Wireless Network	ILO8021. Project Management ILO8022. Finance Management ILO8023. Entrepreneurship Development and Management ILO8024. Human Resource Management ILO8025. Professional Ethics and CSR ILO8026. Research Methodology ILO8027. IPR and Patenting ILO8028. Digital Business Management ILO8029. Environmental Management

Dr. G. T. Thamhi
PRINCIPAL

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University of Mumbai, B. E. (Computer Engineering), Rev. 2016, Andheri (W), Mumbai - 400 050.

AC –
Item No.

UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17

Under

FACULTY OF TECHNOLOGY

Computer Engineering

Second Year with Effect from AY 2017-18

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

As per **Choice Based Credit and Grading System**
with effect from the AY 2016–17



Program Structure B.E. Computer Engineering, (Rev. 2016) w.e.f. AY 2019-20
B. E. Computer Engineering (Semester-VIII)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/ Pract	Tut	Total
CSC801	Human Machine Interaction	4	-	-	4	-	-	4
CSC802	Distributed Computing	4	-	-	4	-	-	4
CSDLO 801X	Department Level Optional Course -IV	4	-	-	4	-	-	4
ILO801X	Institute Level Optional Course-II	3	-	-	3	-	-	3
CSL801	Human Machine Interaction Lab	-	2	-	-	1		1
CSL802	Distributed Computing Lab		2			1		1
CSL803	Cloud Computing Lab	-	4	-	-	2		2
CSL804	Computational Lab-II	-	2	-		1		1
CSP805	Major Project-II	-	12			6	-	6
	Total	15	22	-	15	11	-	26

Course Code	Course Name	Examination Scheme												
		Theory			End Sem. Exam	Exam Duration (in)	TW	Oral	Oral & Pract					
		Internal Assessment		Avg.										
		Test 1	Test 2											
CSC801	Human Machine Interaction	20	20	20	80	3	-	-	-	100				
CSC802	Distributed Computing	20	20	20	80	3	-	-	-	100				
CSDLO 801X	Department Level Optional Course -IV	20	20	20	80	3	-	-	-	100				
ILO801X	Institute Level Optional Course-II	20	20	20	80	3	-	-	-	100				
CSC801	Human Machine Interaction Lab						25	25	-	50				
CSL802	Distributed Computing Lab	-	-	-	-	-	25	25	25	50				
CSL803	Cloud Computing Lab	-	-	-	-	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Dandia (W), Mumbai - 400 050.	25	25	25	75				
CSL804	Computational Lab-II	-	-	-	-	-	50	--	25	75				
CSP805	Major Project-II						50	--	50	100				
	Total	80	80	80	320	--	200	50	100	750				

Sem.	Department Level Optional Course (DLOC)	Institute Level Optional Course (ILOC)
V	CSDLO5011: Multimedia System CSDLO5012: Advance Operating System CSDLO5013: Advance Algorithm	-----
VI	CSDLO6021: Machine Learning CSDLO6022: Advance Database System CSDLO6023: Enterprise Resource Planning CSDLO6024: Advance Computer Network	-----
VII	CSDLO7031: Advance System Security & Digital Forensics CSDLO7032: Big Data & Analytics CSDLO7033: Robotics	ILO7011. Product Lifecycle Management ILO7012. Reliability Engineering ILO7013. Management Information System ILO7014. Design of Experiments ILO7015. Operation Research ILO7016. Cyber Security and Laws ILO7017. Disaster Management & Mitigation Measures ILO7018. Energy Audit and Management ILO7019. Development Engineering
VIII	DLO8011: High Performance Computing DLO8012: Natural Language Processing DLO8013: Adhoc Wireless Network	ILO8021. Project Management ILO8022. Finance Management ILO8023. Entrepreneurship Development and Management ILO8024. Human Resource Management ILO8025. Professional Ethics and CSR ILO8026. Research Methodology ILO8027. IPR and Patenting ILO8028. Digital Business Management ILO8029. Environmental Management

Dr. G. T. Thamhi
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Thadomal Shahani Engineering College

University of Mumbai, B. E. (Computer Engineering), Rev. 2016, Andheri (W), Mumbai - 400 050.

AC- 5.05.2018
Item No. 4.53

UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17
Under

FACULTY OF TECHNOLOGY

Electronics and Telecommunication Engineering

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

**As per Choice Based Credit and Grading System
with effect from the AY 2016–17**

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Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Semester VI

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned		
		Theory	Pracs	Tut	Theory	TW/ Pracs	Total
ECC601	Microcontrollers & Applications	4	-	--	4	--	4
ECC602	Computer Communication Networks	4	-	-	4	-	4
ECC603	Antenna & Radio Wave Propagation	4	-	-	4	-	4
ECC604	Image Processing and Machine Vision	4	-	--	4	--	4
ECCDLO 602X	Department Level Optional Course II	4	-	-	4	-	4
ECL601	Microcontroller & Applications Lab	-	2	-	-	1	1
ECL602	Computer Communication Network Lab	-	2	-	-	1	1
ECL603	Antenna & Radio Wave Propagation Lab	-	2	-	-	1	1
ECL604	Image Processing and Machine Vision Lab	-	2	-	-	1	1
ECLDLO 602X	Department Level Optional Lab II	-	2	-	-	1	1
Total		20	10	-	20	5	25

Course Code	Course Name	Examination Scheme							
		Theory			End Sem Exam	Exam Duration (Hrs)	TW	Oral & Prac	
		Internal Assessment							
Test1	Test 2	Avg							
ECC601	Microcontroller& Applications	20	20	20	80	03	--	--	100
ECC602	Computer Communication Network	20	20	20	80	03	--	--	100
ECC603	Antenna & Radio Wave Propagation	20	20	20	80	03	--	--	100
ECC604	Image Processing and Machine Vision Lab	20	20	20	80	03	--	--	100
ECCDLO 602X	Department Level Optional Course II	20	20	20	80	03	--	--	100
ECL601	Microcontroller & Applications Lab	--	--	--	--	--	25	25	50
ECL602	Computer Communication Network Lab	--	--	--	--	--	25	25	50
ECL603	Antenna & Radio Wave Propagation Lab	--	--	--	--	--	25	25	50
ECL604	Image Processing and Machine Vision Lab	--	--	--	--	--	25	25	50
ECLDLO 602X	Department Level Optional Lab II	--	--	--	--	--	25	25	50
Total				100	400		125	300	725

Dr. G. T. Thampli
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Panvel (Navi Mumbai) - 410 606

University of Mumbai, B. E. (Electronics & Telecommunication Engineering), Rev 2016

AC- _____
Item No. _____

UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17
Under

FACULTY OF TECHNOLOGY

Electronics and Telecommunication Engineering

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

**As per Choice Based Credit and Grading System
with effect from the AY 2016-17**

A handwritten signature in blue ink, appearing to read "Dr. G. T. Thampi".

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Semester VII

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned		
		Theory	Pracs	Tut	Theory	TW/ Pracs	Total
ECC701	Microwave Engineering	4	-	-	4	-	4
ECC702	Mobile Communication System	4	-	-	4	-	4
ECC703	Optical Communication	4	-	--	4	-	4
ECCDLO 703X	Department Level Optional Course III	4	-	-	4	-	4
ILO701X	Institute Level Optional Course I	3	-	-	3	-	3
ECL701	Microwave Engineering Lab	-	2	-	-	1	1
ECL702	Mobile Communication System Lab	-	2	-	-	1	1
ECL703	Optical Communication Lab	-	2	-	-	1	1
ECLDLO 703X	Department Level Optional Lab III	-	2	-	-	1	1
ECL704	Project-I	-	6	-	-	3	3
Total		19	14	-	19	7	26

Course Code	Course Name	Examination Scheme						
		Theory			TW	Oral & Prac	Total	
		Internal Assessment						
		Test1	Test 2	Avg	End Sem Exam	Exam Duration (Hrs)		
ECC701	Microwave Engineering	20	20	20	80	03	--	100
ECC702	Mobile Communication System	20	20	20	80	03	--	100
ECC703	Optical Communication	20	20	20	80	03	--	100
ECCDLO 703X	Department Level Optional Course III	20	20	20	80	03	--	100
ILO701X	Institute Level Optional Course I	20	20	20	80	03	--	100
ECL701	Microwave Engineering Lab	--	--	--	--	25	25	50
ECL702	Mobile Communication System Lab	--	--	--	--	25	25	50
ECL703	Optical Communication Lab	--	--	--	--	25	25	50
ECLDLO 703X	Department Level Optional Lab III	--	--	--	--	25	25	50
ECL704	Project-I	--	--	--	--	50	50	100
Total			100	400		150	150	800



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Bandra (West), Mumbai - 400 050



University of Mumbai, B. E. (Electronics & Telecommunication Engineering), Rev 2016

Course Code	Department Level Optional Course III	Course Code	Institute Level Optional Course I#
ECCDLO7031	Neural Networks and Fuzzy Logic	ILO7011	Product Lifecycle Management
ECCDLO7032	Big Data Analytics	ILO7012	Reliability Engineering
ECCDLO7033	Internet Communication Engineering	ILO7013	Management Information System
ECCDLO7034	CMOS Mixed Signal VLSI	ILO7014	Design of Experiments
ECCDLO7035	Embedded System	ILO7015	Operation Research
		ILO7016	Cyber Security and Laws
		ILO7017	Disaster Management and Mitigation Measures
		ILO7018	Energy Audit and Management
		ILO7019	Development Engineering

Common with all branches



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Bandra (W), Mumbai - 400 050



University of Mumbai, B. E. (Electronics & Telecommunication Engineering), Rev 2016

AC- _____
Item No. _____

UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17
Under

FACULTY OF TECHNOLOGY

Electronics and Telecommunication Engineering

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

**As per Choice Based Credit and Grading System
with effect from the AY 2016-17**

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PRINCIPAL
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Semester VIII

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned		
		Theory	Pracs	Tut	Theory	TW/ Pracs	Total
ECC801	RF Design	4	-	--	4	--	4
ECC802	Wireless Networks	4	-	-	4	-	4
ECCDLO 804X	Department Level Optional Course IV	4	-	-	4	-	4
ILO802X	Institute Level Optional Course II	3	-	-	3	-	3
ECL801	RF Design Lab	-	2	-	-	1	1
ECL802	Wireless Networks Lab	-	2	-	-	1	1
ECLDLO 804X	Department Level Optional Lab IV	-	2	-	-	1	1
ECL803	Project-II	-	12	-	-	6	6
Total		15	18	-	15	9	24

Course Code	Course Name	Examination Scheme										
		Theory			Internal Assessment Test1 Test 2 Avg End Sem Exam Exam Duration (Hrs)							
		TW	Oral & Prac	Total								
ECC801	RF Design	20	20	20	80	03	--	--	100			
ECC802	Wireless Networks	20	20	20	80	03	--	--	100			
ECCDLO 804X	Department Level Optional Course IV	20	20	20	80	03	--	--	100			
ILO802X	Institute Level Optional Course II	20	20	20	80	03	--	--	100			
ECL801	RF Design Lab	--	--	--	--	--	25	25	50			
ECL802	Wireless Networks Lab	--	--	--	--	--	25	25	50			
ECLDLO 804X	Department Level Optional Lab IV	--	--	--	--	--	25	25	50			
ECL803	Project-II	--	--	--	--	--	100	50	150			
Total				80	320		175	125	700			



Course Code	Department Level Elective Course IV	Course Code	Institute Level Elective Course II#
ECCDLO8041	Optical Networks	ILO8021	Project Management
ECCDLO8042	Advanced Digital Signal Processing	ILO8022	Finance Management
ECCDLO8043	Satellite Communication	ILO8023	Entrepreneurship Development and Management
ECCDLO8044	Network management in Telecommunication	ILO8024	Human Resource Management
		ILO8025	Professional Ethics and CSR
		ILO8026	Research Methodology
		ILO8027	IPR and Patenting
		ILO8028	Digital Business Management
		ILO8029	Environmental Management

Common with all branches



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UNIVERSITY OF MUMBAI



Bachelor of Engineering

First Year Engineering (Semester I & II), Revised course (REV-2016)from Academic Year 2061 -17,(Common for All Branches of Engineering)

**(As per Choice Based Credit and Grading System
with effect from the A. Y. 2016 - 17)**

Dr. G. T. Thampi
PRINCIPAL
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Bandra (W), Mumbai - 400 050.



**First Year Engineering (Semester I & II), Revised course from Academic Year 2016 -17,
(REV- 2016) (Common for all Branches of Engineering)**

Scheme for FE - Semester – I

Sub. Code	Subject Name	Examination Scheme							Total	
		Theory Marks			End sem. exam	Term Work	Pract .	Oral		
		Internal Assessment		Test 1	Test 2	Average of Test 1 & Test 2				
FEC101	Applied Mathematics-I	20	20	20	80	25	-	-	125	
FEC102	Applied Physics-I	15	15	15	60	25	-	-	100	
FEC103	Applied Chemistry -I	15	15	15	60	25	-	-	100	
FEC104	Engineering Mechanics	20	20	20	80	25	-	25	150	
FEC105	Basic Electrical Engineering	20	20	20	80	25	-	25	150	
FEC106	Environmental studies	15	15	15	60	-	-	-	75	
FEL101	Basic Workshop Practice-I	-	-	-	-	50	-	-	50	
				105	420	175		50	750	

Sub Code	Subject Name	Teaching Scheme				Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total	
FEC101	Applied Mathematics-I	04	-	01	04			01	05
FEC102	Applied Physics-I	03	01	-	03	0.5	-	3.5	
FEC103	Applied Chemistry -I	03	01	-	03	0.5	-	3.5	
FEC104	Engineering Mechanics	05	02	-	05	01	-	06	
FEC105	Basic Electrical Engineering	04	02	-	04	01		05	
FEC106	Environmental studies	02	-	-	02			02	
FEL101	Basic Workshop Practice-I	-	04	-	-	02		02	
		21	10	01	21	05	01	27	

**First Year Engineering (Semester I & II), Revised course from Academic Year 2016 -17,
(REV- 2016) (Common for all Branches of Engineering)**

Scheme for FE - Semester – II

Sub. Code	Subject Name	Examination Scheme							Total	
		Theory marks			End sem. exam	Term Work	Pract.	Oral		
		Internal Assessment		Test 1	Test 2	Average of Test 1 & Test 2				
FEC201	Applied Mathematics-II	20	20	20	80	25	-	-	125	
FEC202	Applied Physics-II	15	15	15	60	25	-	-	100	
FEC203	Applied Chemistry -II	15	15	15	60	25	-	-	100	
FEC204	Engineering Drawing	15	15	15	60	25	50	-	150	
FEC205	Structured Programming Approach	20	20	20	80	25	25	-	150	
FEC206	Communication Skills	10	10	10	40	25	-	-	75	
FEL201	Basic Workshop Practice-II	-	-	-	-	50	-	-	50	
				95	380	200	75		750	

Subject Code	Subject Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
FEC201	Applied Mathematics-II	04	-	01	04		01	05
FEC202	Applied Physics-II	03	01	-	03	0.5	-	3.5
FEC203	Applied Chemistry -II	03	01	-	03	0.5		3.5
FEC204	Engineering Drawing	03	04	-	03	02	-	05
FEC205	Structured Programming Approach	04	02	-	04	01	-	05
FEC206	Communication Skills	02	02	-	02	01	-	03
FEL201	Basic Workshop Practice -II	-	04	-	-	02	-	02
		19	14	01	19	07	01	27

UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17
Under
FACULTY OF TECHNOLOGY

Information Technology

Second Year with Effect from **AY 2017-18**

Third Year with Effect from **AY 2018-19**

Final Year with Effect from **AY 2019-20**

As per **Choice Based Credit and Grading System**

with effect from the **AY 2016-17**

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PRINCIPAL
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Course Code	Course Name	Examination Scheme								
		Theory			End Sem. Exam	Exam Duration (in Hrs)	TW	Oral	Oral & Pract	
		Internal Assessment	Test 1	Test 2						
ITC601	Software Engineering with Project Management	20	20	20	80	3	-	-	-	100
ITC602	Data Mining and Business Intelligence	20	20	20	80	3	-	-	-	100
ITC603	Cloud Computing & Services	20	20	20	80	3	-	-	-	100
ITC604	Wireless Networks	20	20	20	80	3	-	-	-	100
ITDLO-II	Department Level Optional Course -II	20	20	20	80	3	-	-	-	100
ITL601	Software Design Lab	-	-	-	-	-	25	25	--	50
ITL602	Business Intelligence Lab	-	-	-	-	-	25	25	--	50
ITL603	Cloud Service Design Lab	-	-	-	-	-	25	25	--	50
ITL604	Sensor Network Lab	-	-	-	-	-	25	25	--	50
ITM605	Mini-Project	-	-	-	-	-	25	25	--	50
Total		100	100	100	400	-	125	125	--	750

Department Level Optional Course (DLO)

Every student is required to take one Department Elective Course for Semester VI. Different sets of courses will run in both the semesters. Students can take these courses from the list of department electives, which are closely allied to their disciplines.

(DLO-I subjects will have no Labs only Theory)

Subject Code	Department Level Optional Course (DLO)
Semester VI	
ITDLO6021	Advance Internet Programming
ITDLO6022	Software Architecture
ITDLO6023	Digital Forensics
ITDLO6024	Multimedia Systems
ITDLO6025	Green IT

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UNIVERSITY OF MUMBAI



Revised syllabus (Rev- 2016) from Academic Year 2016 -17
Under
FACULTY OF TECHNOLOGY

Information Technology

Second Year with Effect from AY 2017-18

Third Year with Effect from AY 2018-19

Final Year with Effect from AY 2019-20

As per **Choice Based Credit and Grading System**

with effect from the AY 2016-17

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Bandra (W), Mumbai - 400 050.



Course Code	Course Name	Examination Scheme							
		Theory			TW	Oral	Oral & Pract	Total	
		Internal Assessment		End Sem. Exam					
		Test 1	Test 2	Avg.					
ITC701	Enterprise Network Design	20	20	20	80	3	-	-	100
ITC702	Infrastructure Security	20	20	20	80	3	-	-	100
ITC703	Artificial Intelligence	20	20	20	80	3	-	-	100
ITDLO-II	Department Level Optional Course -III	20	20	20	80	3	-	-	100
ILO-I	Institute Level Optional Course-I	20	20	20	80	3	--	-	100
ITL701	Network Design Lab	-	-	-	-	-	25	25	-- 50
ITL702	Advanced Security Lab	-	-	-	-	-	25	25	-- 50
ITL703	Intelligence System Lab	--	-	-	-	--	25	25	-- 50
ITL704	Android Apps Development Lab						25	25	-- 25
ITM705	Project-I	-	-	-	-	-	50	25	-- 75
Total		100	100	100	400		150	125	-- 750

Department Level Optional Course (DLO)

Every student is required to take one Department Elective Course for Semester VII. Different sets of courses will run in both the semesters. Students can take these courses from the list of department electives, which are closely allied to their disciplines.

(DLO-I subjects will have no Labs only Theory)

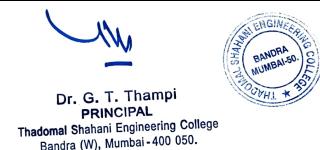
Institute Level Optional Course (ILO)

Every student is required to take one Institute Elective Course for Semester VII, which is not closely allied to their disciplines. Different sets of courses will run in the both the semesters.



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Subject Code	Department Level Optional Course (DLO)	Subject Code	Institute Level Optional Course (ILO)
Semester VII			
ITDLO7031	Storage Area Networks	ILO7011	Product Lifecycle Management
ITDLO7032	Mobile Application Development	ILO7012	Reliability Engineering
ITDLO7033	High Performance Computing	ILO7013	Management Information System
ITDLO7034	Software Testing and Quality Assurance	ILO7014	Design of Experiments
ITDLO7035	Soft Computing	ILO7015	Operation Research
		ILO7016	Cyber Security and Laws
		ILO7017	Disaster Management and Mitigation Measures
		ILO7018	Energy Audit and Management
		ILO7019	Development Engineering



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Bandra (W), Mumbai - 400 050.

Course Code	Course Name	Examination Scheme								
		Theory			End Sem. Exam	Exam Duration (in)	TW	Oral	Oral & Pract	
		Internal Assessment		Avg.						
Test 1	Test 2	Avg.								
ITC801	Big Data Analytics	20	20	20	80	3	-	-	-	100
ITC802	Internet of Everything	20	20	20	80	3	-	-	-	100
ITDLO-IV	Department Level Optional Course-IV	20	20	20	80	3	-	-	-	100
ILO-II	Institute Level Optional Course-II	20	20	20	80	3	-	-	-	100
ITL801	Big Data Lab						25	25	-	50
ITL802	Internet of Everything Lab	-	-	-	-	-	25	25		50
ITL803	DevOps Lab	-	-	-	-	-	25	--	25	50
ITL804	R Programming Lab	-	-	-	-	-	25	--	25	50
ITM805	Project-II						100	50	--	150
Total		80	80	80	320	--	200	100	50	750

Department Level Optional Course (DLO)

Every student is required to take one Department Elective Course for Semester VIII. Different sets of courses will run in both the semesters. Students can take these courses from the list of department electives, which are closely allied to their disciplines.

(DLO-I subjects will have no Labs only Theory)

Institute Level Optional Course (ILO)

Every student is required to take one Institute Elective Course for Semester VIII, which is

not closely allied to their disciplines. Different sets of courses will run in the both the semesters.



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

Subject Code	Department Level Optional Course (DLO)	Subject Code	Institute Level Optional Course (ILO)
Semester VIII			
ITDLO8041	User Interaction Design	ILO8021	Project Management
ITDLO8042	Information Retrieval Systems	ILO8022	Finance Management
ITDLO8043	Knowledge Management	ILO8023	Entrepreneurship Development and Management
ITDLO8044	Robotics	ILO8024	Human Resource Management
ITDLO8045	Enterprise Resource Planning	ILO8025	Professional Ethics and CSR
		ILO8026	Research Methodology
		ILO8027	IPR and Patenting
		ILO8028	Digital Business Management
		ILO8029	Environmental Management



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PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

Revised-12 Curriculum/ Syllabus of the Courses



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI



Bachelor of Engineering

Biomedical Engineering (Second Year - Sem III- IV)

Revised course (Rev- 2012)

From Academic Year 2012 -13

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)



Dr. G. T. Thampi
PRINCIPAL
Diwakar Sankalp Engineering College
Bandra (W), Mumbai - 400 050.

Syllabus Scheme for S.E. Semester III Biomedical Engineering

Sub Code	Subjects	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut	Theory	Pract.	Tut	Total
SEBM301	Applied Mathematics-III\$	4	-	1	4	-	1	5
SEBM302	Electronic Circuits and Design – I	4	2	-	4	1	-	5
SEBM303	Electrical Network Analysis and Synthesis	4	-	1	4	-	1	5
SEBM304	Human Anatomy and Physiology	4	2	-	4	1	-	5
SEBM305	Biomaterials	4	-	1	4	-	1	5
SEBM306	Object Oriented Programming & Methodology \$	-	4#	-	-	2	-	2
	TOTAL	20	8	3	20	4	3	27

Out of 4 hours, 2 hours theory shall be taught to the entire class followed by 2 hrs. practical in batches.

Sub Code	Subject Name	Examination scheme									
		Theory Marks			End Sem exam	Term work	Pract.	Oral			
		Internal Assessment		Test 1							
		Test 1	Test 2	Avg.							
SEBM301	Applied Mathematics-III \$	20	20	20	80	25	-	-	125		
SEBM302	Electronic Circuits and Design – I	20	20	20	80	25	25	-	150		
SEBM303	Electrical Network Analysis and Synthesis	20	20	20	80	25	-	-	125		
SEBM304	Human Anatomy and Physiology	20	20	20	80	25	-	25	150		
SEBM305	Biomaterials	20	20	20	80	25	-	25	150		
SEBM306	Object Oriented Programming & Methodology \$	-	-	-	-	50	50*	-	100		
	TOTAL				100	Dr. G. T. Thampi PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	75	50	800		

*Both Practical and Oral examination

\$ Subject common for Electronics and Telecommunication Engineering, Electronics Engineering, Biomedical Engineering, Electrical Engineering and Instrumentation Engineering.

Syllabus Scheme for S.E. Semester IV Biomedical Engineering

Sub Code	Subjects	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut	Theory	Pract.	Tut	Total
SEBM401	Applied Mathematics-IV \$	4	-	1	4	-	1	5
SEBM402	Electronic Circuits and Design – II	4	2	-	4	1	-	5
SEBM403	Transducers and Sensors for Medical Applications	4	2	-	4	1	-	5
SEBM404	Logic Circuits	4	2	-	4	1	-	5
SEBM405	Signals and Systems	4	-	1	4	-	1	5
SEBM406	Electronic Instruments and Control System	4	2	-	4	1	-	5
	TOTAL	24	8	2	24	4	2	30

Sub Code	Subject Name	Examination scheme												
		Theory Marks			End Sem exam	Term work	Pract.	Oral	Total					
		Internal Assessment		Test 1										
		Test 1	Test 2											
SEBM401	Applied Mathematics-IV \$	20	20	20	80	25	-	-	125					
SEBM402	Electronic Circuits and Design – II	20	20	20	80	25	25	-	150					
SEBM403	Transducers and Sensors for Medical Applications	20	20	20	80	25	-	25	150					
SEBM404	Logic Circuits	20	20	20	80	25	25	-	150					
SEBM405	Signals and Systems	20	20	20	80	25	-	25	150					
SEBM406	Electronic Instruments and Control System	20	20	20	80	25	-	25	150					
TOTAL				120	480	150	50	75	875					

\$ Subject common for Electronics and Telecommunication Engineering, Electronics Engineering, Biomedical Engineering, Electrical Engineering and Instrumentation Engineering.

Dr. G. T. Thampi
PRINCIPAL
THAMES COLLEGE OF ENGINEERING & TECHNOLOGY
Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI



Bachelor of Engineering

Biomedical Engineering (Third Year Sem V & VI)

Revised Course (Rev- 2012)

With effect from Academic Year 2014 -15

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)



Dr. G. T. Thampli
PRINCIPAL

Syllabus Scheme for T.E. Semester V Biomedical Engineering

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut	Theory	Pract.	Tut	Total
BMC501	Biomedical Instrumentation-I	4	2	-	4	1	-	5
BMC502	Microprocessors	4	2	-	4	1	-	5
BMC503	Analog and Digital Circuits Design	4	2	-	4	1	-	5
BMC504	Biomedical Digital Signal Processing	4	2	-	4	1	-	5
BMC505	Principles of Communication Engineering	4	2	-	4	1	-	5
BML506	Business Communication and Ethics	-	2*+2	-	-	2	-	2
	TOTAL	20	14	-	20	7	-	27

* Theory for entire class to be conducted

Course Code	Course Name	Examination scheme										
		Theory Marks			End Sem exam	Term work	Pract.	Oral				
		Internal Assessment		Avg.								
		Test 1	Test 2									
BMC501	Biomedical Instrumentation-I	20	20	20	80	25	-	25	150			
BMC502	Microprocessors	20	20	20	80	25	-	-	125			
BMC503	Analog and Digital Circuits Design	20	20	20	80	25	25	-	150			
BMC504	Biomedical Digital Signal Processing	20	20	20	80	25	-	25	150			
BMC505	Principles of Communication Engineering	20	20	20	80	25	-	-	125			
BML506	Business Communication and Ethics	-	-	-	50				50			
	TOTAL			100	400	25	50	750				

Syllabus Scheme for T.E. Semester VI Biomedical Engineering

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut	Theory	Pract.	Tut	Total
BMC601	Biomedical Instrumentation –II	4	2	-	4	1	-	5
BMC602	Biostatistics	4	-	1	4	-	1	5
BMC603	Biological Modeling and Simulation	3	2	-	3	1	-	4
BMC604	Microcontrollers and Embedded Systems	4	2	-	4	1	-	5
BMC605	Medical Imaging –I	3	2	-	3	1	-	4
BMC606	Digital Image Processing	4	2	-	4	1	-	5
TOTAL		22	10	1	22	5	1	28

Course Code	Course Name	Examination scheme										
		Theory Marks			End Sem exam	Term work	Pract.	Oral				
		Internal Assessment		Test 1								
		Test 1	Test 2	Avg.								
BMC601	Biomedical Instrumentation –II	20	20	20	80	25	25	-	150			
BMC602	Biostatistics	20	20	20	80	25	-	-	125			
BMC603	Biological Modeling and Simulation	20	20	20	80	25	-	-	125			
BMC604	Microcontrollers and Embedded Systems	20	20	20	80	25	-	25	150			
BMC605	Medical Imaging –I	20	20	20	80	25	-	25	150			
BMC606	Digital Image Processing	20	20	20	80	25	25	-	150			
TOTAL					120	480	150	50	850			

Dr. G. T. Thamhi
 PRINCIPAL
 Thadomal Shahani Engineering College
 Bandra (W), Mumbai -400 050.



UNIVERSITY OF MUMBAI



Bachelor of Engineering

Biomedical Engineering (Fourth Year Sem VII & VIII)

Revised Course (Rev- 2012)

With effect from Academic Year 2015 -16

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)



Syllabus Scheme for B.E. Semester VII Biomedical Engineering

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut	Theory	Pract.	Tut	Total
BMC701	Biomedical Instrumentation-III	4	2	-	4	1	-	5
BMC702	Medical Imaging – II	4	2	-	4	1	-	5
BMC703	Biomechanics Prosthesis and Orthosis	4	2	-	4	1	-	5
BMC704	Very Large Scale Integrated Circuits	4	2	-	4	1	-	5
BMC705	Networking and Information System in Medicine	4	2	-	4	1	-	5
BMP706	Project Stage – I	-	*	-	-	3	-	3
	TOTAL	20	16	-	20	8	-	28

* Learner is allotted 6hrs per week for the project work.

Course Code	Course Name	Examination scheme										
		Theory Marks			End Sem exam	Term work	Pract.	Oral				
		Internal Assessment		Avg.								
		Test 1	Test 2									
BMC701	Biomedical Instrumentation-III	20	20	20	80	25	-	25	150			
BMC702	Medical Imaging – II	20	20	20	80	25	-	25	150			
BMC703	Biomechanics Prosthesis and Orthosis	20	20	20	80	25	-	-	125			
BMC704	Very Large Scale Integrated Circuits	20	20	20	80	25	-	-	125			
BMC705	Networking and Information System in Medicine	20	20	20	80	25	-	25	150			
BMP706	Project Stage – I	-	-	-	-	25	-	25	50			
	TOTAL				100	400	150		100	750		

Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Syllabus Scheme for B.E. Semester VIII Biomedical Engineering

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut	Theory	Pract.	Tut	Total
BMC801	Nuclear Medicine	4	-	1	4	-	1	5
BMC802	Biomedical Microsystems	4	2	-	4	1	-	5
BMC803	Hospital Management	4	-	1	4	-	1	5
BME804	Elective	4	2	-	4	1	-	5
BMP805	Project Stage – II	-	**	-	-	6	-	6
	TOTAL	16	16	2	16	8	2	26

** Learner is allotted 12hrs per week for the project work.

Electives:

- BME8011. Lasers and Fiber Optics
- BME8012. Robotics in Medicine
- BME8013. Health care Informatics
- BME8014. Rehabilitation Engineering

Course Code	Course Name	Examination scheme										
		Theory Marks			End Sem exam	Term work	Pract.	Oral				
		Internal Assessment		Test 1								
		Test 1	Test 2									
BMC801	Nuclear Medicine	20	20	20	80	25	-	25	150			
BMC802	Biomedical Microsystems	20	20	20	80	25	-	25	150			
BMC803	Hospital Management	20	20	20	80	25	-	25	150			
BME804	Elective	20	20	20	80	25	-	25	150			
BMP805	Project Stage – II	-	-	-	Dr. G. T. Thampi PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	200	200	100	150			
	TOTAL				320							
					80	150			750			

UNIVERSITY OF MUMBAI



Revised Syllabus Program - Bachelor of Engineering Course - Biotechnology

(Second Year – Sem.III & IV)

Under

FACULTY OF TECHNOLOGY

(As per Credit Based Semester and Grading System from 2013-14)

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Dr. G. T. Thampi
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Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI
SCHEME OF INSTRUCTION AND EXAMINATION
S.E: SEMESTER-III

Subject Code	Subject Name	Teaching Scheme (Contact Students)			Credits Assigned							
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total				
BTC301	Applied Mathematics-III	3	--	1	3	--	1	4				
BTC302	Microbiology	4	--	--	4	--	--	4				
BTC303	Cell Biology	3	--	--	3	--	--	3				
BTC304	Biochemistry	4	--	--	4	--	--	4				
BTC305	Unit Operations-I	4	--	--	4	--	--	4				
BTC306	Process Calculations	3	--	1	3	--	1	4				
BTL307	Microbiology Lab	--	4	--	--	2	--	2				
BTL308	Biochemistry Lab	--	3	--	--	1.5	--	1.5				
BTL309	Unit Operations-I Lab	--	3	--	--	1.5	--	1.5				
Total		21	10	2	21	5	2	28				
Subject Code	Subject Name	Examination Scheme										
		Theory			End Sem. Exam. Duration (in Hrs)	Term Work	Pract.	Oral				
		Internal Assessment										
		Test 1	Test 2	Avg.								
		20	20	20	80	03	25	--				
BTC301	Applied Mathematics-III	20	20	20	80	03	--	--				
BTC302	Microbiology	20	20	20	80	03	--	--				
BTC303	Cell Biology	20	20	20	80	03	25	--				
BTC304	Biochemistry	20	20	20	80	03	--	--				
BTC305	Unit Operations-I	20	20	20	80	03	25	--				
BTC306	Process Calculations	20	20	20	80	03	25	--				
BTL307	Microbiology Lab	--	--	--	--	--	25	--				
BTL308	Biochemistry Lab	--	--	--	--	--	25	--				
BTL309	Unit Operations-I Lab	--	--	--	--	100	50	--				
Total		--	--	120	480	--	50	750				

Dr. G. T. Thampi
PRINCIPAL
 Thadomal Shahani Engineering College
 Bandra (W), Mumbai - 400 050.

Student Contact Hrs Per week: 33

UNIVERSITY OF MUMBAI
SCHEME OF INSTRUCTION AND EXAMINATION
S.E: SEMESTER-IV

Subject Code	Subject Name	Teaching Scheme (Contact Students)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
BTC401	Applied Mathematics-IV	3	--	1	3	--	1	4
BTC402	Molecular Genetics	3	--	1	3	--	1	4
BTC403	Fermentation Technology	4	--	--	4	--	--	4
BTC404	Analytical Methods in Biotechnology	4	--	--	4	--	--	4
BTC405	Immunology and Immunotechnology	4	--	--	4	--	--	4
BTC406	Unit Operations-II	4	--	--	4	--	--	4
BTL407	Fermentation Technology Lab	--	4	--	--	2	--	2
BTL408	Analytical Methods in Biotechnology Lab	--	3	--	--	1.5	--	1.5
BTL409	Unit Operations-II Lab	--	3	--	--	1.5	--	1.5
Total		22	10	2	22	5	2	29
Subject Code	Subject Name	Examination Scheme						
		Theory Marks			Term Work	Pract.	Oral	Total
Test1	Test 2	Avg.	End Sem. Exam.	Exam. Duration (in Hrs)				
BTC401	Applied Mathematics-IV	20	20	20	80	03	25	--
BTC402	Molecular Genetics	20	20	20	80	03	25	--
BTC403	Fermentation Technology	20	20	20	80	03	--	--
BTC404	Analytical Methods in Biotechnology	20	20	20	80	03	--	--
BTC405	Immunology and Immunotechnology	20	20	20	80	03	25	--
BTC406	Unit Operations-II	20	20	20	80	03	25	--
BTL407	Fermentation Technology Lab	--	--	--	--	--	25	--
BTL408	Analytical Methods in Biotechnology Lab	--	--	--	--	--	25	--
BTL409	Unit Operations-II Lab	--	--	--	--	--	--	--
Total		--	--	120	480	--	50	750

Student Contact Hrs Per week: 34

Dr. G. T. Thampi
 PRINCIPAL
 Thadomal Shahani Engineering College
 Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI



Revised Syllabus
Program - Bachelor of Engineering
Course - **Biotechnology**
(Third year - Sem V and VI)

under
Faculty of Technology
(As per Credit Based Semester and Grading System from 2014-15)


Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

University of Mumbai

Scheme for TE: Semester-V

Course Code	Course Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
BTC501	Bioinformatics-1	04	—	—	4.0	—	—	4.0
BTC502	Genetic Engineering	04	—	—	4.0	—	—	4.0
BTC503	Biophysics	03	—	01	3.0	—	1.0	4.0
BTC504	Thermodynamics & Biochemical Engineering	03	—	01	3.0	—	1.0	4.0
BTC505	Bioreactor Analysis & technology	03	—	01	3.0	—	1.0	4.0
BTC506	Business Communication & Ethics	—	02* + 02	—	—	2.0	—	2.0
BTL507	Lab – I	—	03	—	—	1.5	—	1.5
BTL508	Lab – II	—	03	—	—	1.5	—	1.5
Total		17	10	03	17.0	5.0	3.0	25.0

*Theory for entire class.

Examination Scheme

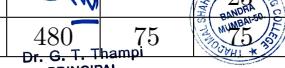
Course Code	Course Name	Examination Scheme						
		Theory marks			End Sem. Exam	Term Work	Pract.	Oral
		Internal Assessment		Test 1				
BTC501	Bioinformatics-1	20	20	20	80	—	—	—
BTC502	Genetic Engineering	20	20	20	80	—	—	—
BTC503	Biophysics	20	20	20	80	25	—	—
BTC504	Thermodynamics & Biochemical Engineering	20	20	20	80	25	—	—
BTC505	Bioreactor Analysis & technology	20	20	20	80	25	—	—
BTC506	Business Communication & Ethics	—	—	—	—	50	—	—
BTL507	Lab – I	—	—	—	—	—	—	25
BTL508	Lab – II	—	—	—	Dr. G. T. Thampi PRINCIPAL	25	25	50
Total			100	100	Thadomal Shahani Engineering College Bandra (E) Mumbai - 400 058	125	50	25
								700

University of Mumbai

Scheme for TE: Semester-VI

Subject Code	Subject Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
CHC601	Bioinformatics-II	03	—	—	3.0	—	—	3.0
CHC602	Cell & Tissue Culture	04	—	—	4.0	—	—	4.0
CHC603	Enzyme Engineering	03	—	—	3.0	—	—	3.0
CHC604	IPR,Bioethics & Biosafety	03	—	01	3.0	—	1.0	4.0
CHC605	Process Control & Instrumentation	03	—	01	3.0	—	1.0	4.0
CHE606	Elective – I	03	—	01	3.0	—	1.0	4.0
CHL607	Lab – III	—	03	—	—	1.5	—	1.5
CHL608	Lab – IV	—	03	—	—	1.5	—	1.5
CHL609	Lab – V	—	02	—	—	1.0	—	1.0
Total		19	08	03	19.0	4.0	3.0	26.0

Examination Scheme

Subject Code	Subject Name	Examination Scheme												
		Theory marks			End Sem. Exam	Term Work	Pract.	Oral	Total					
		Internal Assessment		Test 1										
		Test 1	Test 2											
CHC601	Bioinformatics-II	20	20	20	80	—	—	—	100					
CHC602	Cell & Tissue Culture	20	20	20	80	—	—	—	100					
CHC603	Enzyme Engineering	20	20	20	80	—	—	—	100					
CHC604	IPR,Bioethics & Biosafety	20	20	20	80	25	—	—	125					
CHC605	Process Control & Instrumentation	20	20	20	80	25	—	—	125					
CHE606	Elective – I	20	20	20	80	25	—	—	125					
CHL607	Lab – III	—	—	—	—	—	25	—	25					
CHL609	Lab – IV	—	—	—	—	—	25	—	25					
CHL610	Lab – V	—	—	—	—	—	—	—	25					
		Total		120	480	75			750					

Elective Streams(CHE606)

PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

- | |
|---|
| a Research Methodology and Scientific writing |
| b Stem Cell Biology |
| c Good Laboratory Practices (GLP) & Process Safety |

UNIVERSITY OF MUMBAI



Revised Syllabus
Program – Bachelor of Engineering
Course – Biotechnology Engineering
(Final Year – Sem VII and VIII)

under
Faculty of Technology
(As per Credit Based Semester and Grading System from 2015-16)


Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

University of Mumbai

Scheme for BE: Semester-VII

Subject Code	Subject Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
BTC701	Bioseparation & Downstream Processing Technology-I	04	—	01	04	—	01	05
BTC702	Bioprocess Modeling & Simulation	04	—	01	04	—	01	05
BTC703	Seminar	—	—	03	—	—	03	03
BTE704	Elective-II	04	—	01	04	—	01	05
BTP705	Project-A	—	—	06	—	—	03	03
BTL706	LAB VI	—	04	—	—	02	—	02
BTL707	LAB VII	—	04	—	—	02	—	02
Total		12	08	12	12	04	09	25

Examination Scheme

Subject Code	Subject Name	Examination Scheme							
		Theory marks			End Sem. Exam	Term Work	Pract.	Oral	Total
		Internal Assessment		Test 1 (A)	Test 2 (B)	Avg.of (A) & (B)			
BTC701	Bioseparation & Downstream Processing Technology-I	20	20	20	80	25	—	—	125
BTC702	Bioprocess Modeling & Simulation	20	20	20	80	25	—	—	125
BTC703	Seminar	—	—	—	—	50	—	—	50
BTE704	Elective – II	20	20	20	80	25	—	25	150
BTP705	Project-A	—	—	—	—	50	—	50	100
BTL706	LAB VI	—	—	—	—	—	25	—	25
BTL707	LAB VII	—	—	—	—	—	25	—	25
Total		60	240	175	50	75	600		

Elective Streams(BTE704)

Sem.VII	Elective II	<ul style="list-style-type: none"> • Food Biotechnology • Pharmaceutical Technology • Nanotechnology
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Dr. G. T. Thampi

PRINCIPAL

Thadomal Shahani Engineering College

Bandra (W), Mumbai - 400 050.



Scheme for BE: Semester-VIII

Subject Code	Subject Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
BTC801	Environmental Biotechnology	04	—	—	04	—	—	04
BTC802	Bioseparation & Downstream Processing Technology-II	04	—	—	04	—	—	04
BTC803	Bioprocess Plant & Equipment Design	03	—	01	03	—	01	04
BTE804	Elective-III	03	—	01	03	—	01	04
BTP805	Project-B	—	—	08	—	—	06	06
BTL806	LAB VIII	—	03	—	—	1.5	—	1.5
BTL807	LAB IX	—	03	—	—	1.5	—	1.5
Total		14	06	10	14	03	08	25

Examination Scheme

Subject Code	Subject Name	Examination Scheme							
		Theory marks			Term Work	Pract.	Oral	Total	
		Internal Assessment	Test 1 (A)	Test 2 (B)					
BTC801	Environmental Biotechnology	20	20	20	80	—	—	—	100
BTC802	Bioseparation & Downstream Processing Technology-II	20	20	20	80	—	—	—	100
BTC803	Bioprocess Plant & Equipment Design	20	20	20	80	25	—	—	125
BTE804	Elective-III	20	20	20	80	25	—	—	125
BTP805	Project-B	—	—	—	—	50	—	100	150
BTL806	LAB VIII	—	—	—	—	—	25	—	25
BTL807	LAB IX	—	—	—	—	—	25	—	25
Total		80	320	100	50	100	650		

Elective Streams(BTE804)

Sem.VIII	Elective III	<ul style="list-style-type: none"> • Non Conventional Sources of Energy • Biosensor & Diagnostics • Protein Engineering • Agriculture Biotechnology <p align="right">Dr. G. T. Thampi PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.</p>
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UNIVERSITY OF MUMBAI



Bachelor of Engineering

**Chemical Engineering (Second Year – Sem.III& IV), Revised
course**

(REV- 2012)from Academic Year 2012 -13,

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



University of Mumbai
Scheme for SE: Semester-III

Teaching Scheme

Subject Code	Subject Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tutorial	Theory	Pract	Tut	Total
CHC301	Applied Mathematics-III	03	-	01	3.0	-	1.0	4.0
CHC302	Engineering Chemistry-I	04	-	-	4.0	-	-	4.0
CHC303	Fluid Flow (FF)	03	-	01	3.0	-	1.0	4.0
CHC304	Computer Programming & Numerical Methods	03	-	01	3.0	-	1.0	4.0
CHC305	Process Calculations	03	-	01	3.0	-	1.0	4.0
CHC306	Chemical Engineering Economics	03	-	01	3.0	-	1.0	4.0
CHL307	Chem. Engg. Lab (FF)	-	03	-	-	1.5	-	1.5
CHL308	Engineering Chemistry Lab I	-	03	-	-	1.5	-	1.5
CHL309	Computer Programming & Numerical Methods Lab	-	02	-	-	1.0	-	1.0
Total		19	08	05	19	4.0	5.0	28

Examination Scheme

Subject Code	Subject Name	Examination Scheme										
		Theory Marks			End Sem. Exam	Term Work	Pract.	Oral				
		Internal Assessment										
		Test 1	Test 2	Average of Test 1 and Test 2								
CHC301	Applied Mathematics-III	20	20	20	80	25	-	-	125			
CHC302	Engineering Chemistry-I	20	20	20	80	-	-	-	100			
CHC303	Fluid Flow (FF)	20	20	20	80	25	-	-	125			
CHC304	Computer Programming & Numerical Methods	20	20	20	80	25	-	-	125			
CHC305	Process Calculations	20	20	20	80	25	-	-	125			
CHC306	Chemical Engineering Economics	20	20	20	80	25	-	-	125			
CHL307	Chem. Engg. Lab (FF)	-	-	-	-	-	25	25	25			
CHL308	Engineering Chemistry Lab I	-	-	-	-	25	25	25	25			
CHL309	Computer Programming & Numerical Methods Lab	-	-	-	-	25	-	-	25			
Total				120	480	125	75	-	800			



University of Mumbai
Scheme for SE: Semester-IV

Teaching Scheme

Subject Code	Subject Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tutorial	Theory	Pract	Tut	Total
CHC401	Applied Mathematics-IV	03	-	1.0	3.0	-	1.0	4.0
CHC402	Engineering Chemistry-II	04	-	-	4.0	-	-	4.0
CHC403	Chemical Engg. Thermodynamics - I	03	-	1.0	3.0	-	1.0	4.0
CHC404	Material Science &Engineering	03	-	1.0	3.0	-	1.0	4.0
CHC405	Mechanical Equipment Design (MED)	03	-	1.0	3.0	-	1.0	4.0
CHC406	Solid Fluid Mechanical Operations (SFMO)	03	-	1.0	3.0	-	1.0	4.0
CHL407	Engineering Chemistry Lab II	-	03	-	-	1.5	-	1.5
CHL408	Chemical Engg Lab (SFMO)	-	03	-	-	1.5	-	1.5
CHL409	MED Lab	-	02	-	-	1.0	-	1.0
Total		19	08	05	19	4.0	5.0	28

Examination Scheme

Subject Code	Subject Name	Examination Scheme										
		Theory Marks			End Sem. Exam	Term Work	Pract.	Oral				
		Internal Assessment										
		Test 1	Test 2	Average of Test 1 and Test 2								
CHC401	Applied Mathematics-IV	20	20	20	80	25	-	-	125			
CHC402	Engineering Chemistry-II	20	20	20	80	-	-	-	100			
CHC403	Chemical Engg. Thermodynamics – I	20	20	20	80	25	-	-	125			
CHC404	Material Science Engineering	20	20	20	80	25	-	-	125			
CHC405	Mechanical Equipment Design (MED)	20	20	20	80	25	-	-	125			
CHC406	Solid Fluid Mechanical Operations (SFMO)	20	20	20	80	25	 Dr. G. T. Thampli PRINCIPAL	 Tadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	125			
CHL407	Engineering Chemistry Lab II	-	-	-	-	25			25			
CHL408	Chemical Engg Lab (SFMO)	-	-	-	-	-	25	-	25			
CHL409	MED Lab	-	-	-	-	-	-	25	25			
Total				120	480	125	50	25	800			

UNIVERSITY OF MUMBAI



Revised Syllabus
Program - Bachelor of Engineering
Course - Chemical Engineering
(Third year - Sem V and VI)

under
Faculty of Technology
(As per Credit Based Semester and Grading System from 2014-15)


Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

University of Mumbai

Scheme for TE: Semester-V

Course Code	Course Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
CHC501	Chemical Engineering Thermodynamics - II	03	–	01	3.0	–	1.0	4.0
CHC502	Mass Transfer Operations - I (MTO-I)	03	–	01	3.0	–	1.0	4.0
CHC503	Heat Transfer Operations – I (HTO-I)	03	–	01	3.0	–	1.0	4.0
CHC504	Chemical Reaction Engineering - I (CRE-I)	03	–	01	3.0	–	1.0	4.0
CHC505	Chemical Technology	03	–	–	3.0	–	–	3.0
CHC506	Business Communication & Ethics	–	02* + 02	–	–	–	–	2.0
CHL507	Chemical Engg Lab (MTO-I)	–	03	–	–	1.5	–	1.5
CHL508	Chemical Engg Lab (CRE-I)	–	03	–	–	1.5	–	1.5
CHL509	Chemical Engg Lab (HTO-I)	–	03	–	–	1.5	–	1.5
CHL510	Chemical Engg Lab (Synthesis)	–	03	–	–	1.5	–	1.5
Total		15	16	04	15.0	6.0	6.0	27.0

*Theory for entire class.

Examination Scheme

Course Code	Course Name	Examination Scheme							
		Theory marks			End Sem. Exam	Term Work	Pract.	Oral	
		Internal Assessment		Test 1					
CHC501	Chemical Engineering Thermodynamics - II	20	20	20	80	25	–	–	125
CHC502	Mass Transfer Operations - I (MTO-I)	20	20	20	80	25	–	–	125
CHC503	Heat Transfer Operations – I (HTO-I)	20	20	20	80	25	–	–	125
CHC504	Chemical Reaction Engineering - I (CRE-I)	20	20	20	Dr. G. T. Thampi 25 PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	25	–	–	125
CHC505	Chemical Technology	20	20	20	80	–	–	–	100
CHC506	Business Communication & Ethics	–	–	–	–	50	–	–	50
CHL507	Chemical Engg Lab (MTO-I)	–	–	–	–	–	25	–	25
CHL508	Chemical Engg Lab (CRE-I)	–	–	–	–	–	25	–	25
CHL509	Chemical Engg Lab (HTO-I)	–	–	–	–	–	25	–	25
CHL510	Chemical Engg Lab (Synthesis)	–	–	–	–	–	–	25	25
Total		100	400	100	75	75	75	750	

University of Mumbai

Scheme for TE: Semester-VI

Subject Code	Subject Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
CHC601	Instrumentation	03	—	01	3.0	—	1.0	4.0
CHC602	Mass Transfer Operations – II (MTO-II)	03	—	01	3.0	—	1.0	4.0
CHC603	Heat Transfer Operations – II (HTO-II)	03	—	01	3.0	—	1.0	4.0
CHC604	Chemical Reaction Engineering – II (CRE-II)	03	—	01	3.0	—	1.0	4.0
CHC605	Plant Engineering	04	—	—	4.0	—	—	4.0
CHE606	Elective – I	04	—	—	4.0	—	—	4.0
CHL607	Chemical Engg Lab (MTO-II)	—	03	—	—	1.5	—	1.5
CHL608	Chemical Engg Lab (CRE-II)	—	03	—	—	1.5	—	1.5
CHL609	Chemical Engg Lab (HTO-II)	—	02	—	—	1.0	—	1.0
Total		20	08	04	20.0	4.0	4.0	28.0

Examination Scheme

Subject Code	Subject Name	Examination Scheme										
		Theory marks			End Sem. Exam	Term Work	Pract.	Oral				
		Internal Assessment		Test 1								
		Test 1	Test 2									
CHC601	Instrumentation	20	20	20	80	25	—	—	125			
CHC602	Mass Transfer Operations – II (MTO-II)	20	20	20	80	25	—	—	125			
CHC603	Heat Transfer Operations – II (HTO-II)	20	20	20	80	25	—	—	125			
CHC604	Chemical Reaction Engineering – II (CRE-II)	20	20	20	80	25	—	—	125			
CHC605	Plant Engineering	20	20	20	80	—	—	—	100			
CHE606	Elective – I	20	20	20	80	—	—	—	100			
CHL607	Chemical Engg Lab (MTO-II)	—	—	—	—	Dr. G. T. Thampi PRINCIPAL	—	25	50			
CHL608	Chemical Engg Lab (CRE-II)	—	—	—	—	Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	25	—	25			
CHL609	Chemical Engg Lab (HTO-II)	—	—	—	—	—	25	—	25			
Total		120	480	100	75	25	25	800				

Elective Streams(CHE606)

Sem.	Management Stream	Technology Stream	Process System Engineering Stream
VI	Operations Research	Advanced Material	Computational Fluid Dynamics

UNIVERSITY OF MUMBAI



Revised Syllabus
Program – Bachelor of Engineering
Course – Chemical Engineering
(Final Year – Sem VII and VIII)

under
Faculty of Technology
(As per Credit Based Semester and Grading System from 2015-16)


Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

University of Mumbai

Scheme for BE: Semester-VII

Subject Code	Subject Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
CHC701	Process Equipment Design (PED)	03	—	01	3.0	—	1.0	4.0
CHC702	Process Engineering	03	—	01	3.0	—	1.0	4.0
CHC703	Process Dynamics & Control (PDC)	03	—	01	3.0	—	1.0	4.0
CHE704	Elective – II	04	—	—	4.0	—	—	4.0
CHP705	Project – A	—	—	08	—	—	3.0	3.0
CHS706	Seminar	—	—	03	—	—	3.0	3.0
CHL707	Chemical Engg Lab (PED)	—	03	—	—	1.5	—	1.5
CHL708	Chemical Engg Lab (PDC)	—	03	—	—	1.5	—	1.5
Total		13	06	14	13.0	3.0	9.0	25.0

Examination Scheme

Subject Code	Subject Name	Examination Scheme										
		Theory marks			End Sem. Exam	Term Work	Pract.	Oral				
		Internal Assessment		Test 1 (A)								
		Test 2 (B)	Avg.of (A) & (B)									
CHC701	Process Equipment Design (PED)	20	20	20	80	25	—	—	125			
CHC702	Process Engineering	20	20	20	80	25	—	—	125			
CHC703	Process Dynamics & Control (PDC)	20	20	20	80	25	—	—	125			
CHE704	Elective – II	20	20	20	80	—	—	—	100			
CHP705	Project – A	—	—	—	—	100	—	50	150			
CHS706	Seminar	—	—	—	—	50	—	—	50			
CHL707	Chemical Engg Lab (PED)	—	—	—	—	—	—	25	25			
CHL708	Chemical Engg Lab (PDC)	—	—	—	—	—	25	25	50			
Total		80	320	225			100	750				

Dr. G. T. Thampi
PRINCIPAL

Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

Elective Streams(CHE704)



Sem.	Management Stream	Technology Stream	Process System Engineering Stream
VII	High Performance Leadership	<ul style="list-style-type: none"> • Polymer Technology • Petroleum Refining Technology 	<ul style="list-style-type: none"> • Advanced Process Simulation

Scheme for BE: Semester-VIII

Subject Code	Subject Name	Teaching Scheme			Credit Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
CHC801	Modelling, Simulation & Optimization (MSO)	03	—	01	3.0	—	1.0	4.0
CHC802	Project Engineering & Entrepreneurship Management	03	—	01	3.0	—	1.0	4.0
CHC803	Environmental Engineering (EE)	04	—	—	4.0	—	—	4.0
CHC804	Energy System Design	03	—	01	3.0	—	1.0	4.0
CHE805	Elective – III	04	—	—	4.0	—	—	4.0
CHP806	Project – B	—	—	08	—	—	6.0	6.0
CHL807	Chemical Engineering Lab (EE)	—	02	—	—	1.0	—	1.0
CHL808	Chemical Engg Lab (MSO)	—	02	—	—	1.0	—	1.0
Total		17	04	11	17.0	2.0	9.0	28.0

Examination Scheme

Subject Code	Subject Name	Examination Scheme							
		Theory marks			Term Work	Pract.	Oral	Total	
		Internal Assessment	Test 1 (A)	Test 2 (B)					
CHC801	Modelling, Simulation & Optimization (MSO)	20	20	20	80	25	—	—	125
CHC802	Project Engineering & Entrepreneurship Management	20	20	20	80	25	—	—	125
CHC803	Environmental Engineering (EE)	20	20	20	80	—	—	—	100
CHC804	Energy System Design	20	20	20	80	25	—	—	125
CHE805	Elective – III	20	20	20	80	—	—	—	100
CHP806	Project – B	—	—	—	—	100	—	50	150
CHL807	Chemical Engineering Lab (EE)	—	—	—	—	—	25	25	50
CHL808	Chemical Engg Lab (MSO)	—	—	—	—	—	—	25	25
Total		100	—	—	175	50	75	800	


 Dr. G. T. Thampi
 PRINCIPAL
 Thadomal Shahani Engineering College
 Bandra (W), Mumbai - 400 059.

Elective Streams(CHE805)

Sem.	Management Stream	Technology Stream	Process System Engineering Stream
VIII	Total Quality Management	<ul style="list-style-type: none"> • Advanced Separation Technology • Biotechnology • Nanotechnology 	<ul style="list-style-type: none"> • Advanced Process Control • Advanced Transport Phenomenon

UNIVERSITY OF MUMBAI



Bachelor of Engineering

Computer Engineering (Second Year – Sem. III & IV)

Revised course

(REV- 2012) from

Academic Year 2012 -13

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)

A handwritten signature in blue ink, appearing to read "Dr. G. T. Thampli".

Dr. G. T. Thampli

PRINCIPAL

Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Program Structure for B.E. Computer Engineering

Second Year (Computer) (Semester III)

(REV 2012)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/ Pract	Tut	Total
CSC301	Applied Mathematics III*	4	-	1#	4	-	1	5
CSC 302	Object Oriented Programming Methodology*	4	2	-	4	1	-	5
CSC303	Data Structures	4	2	-	4	1	-	5
CSC304	Digital Logic Design and Analysis	3	2	-	3	1	-	4
CSC305	Discrete Structures	4	-	-	4	-	-	4
CSC306	Electronic Circuits and Communication Fundamentals	4	2	-	4	1	-	5
	Total	23	8	1	23	4	1	28

Course Code	Course Name	Examination Scheme						
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)	TW	Pract / oral
		Test 1	Test 2	Avg				
CSC301	Applied Mathematics III*	20	20	20	80	03	25!	-
CSC302	Object Oriented Programming Methodology*	20	20	20	80	03	25	25
CSC303	Data Structures	20	20	20	80	03	25	25
CSC304	Digital Logic Design and Analysis	20	20	20	80	03	25	-
CSC305	Discrete Structures	20	20	20	80	03	25	-
CSC306	Electronic Circuits and Communication Fundamentals	20	20	20	80	03	25	25
	Total	-	-	120	480	-	125	75
Dr. C. T. Thampi PRINCIPAL Hadimai Shahani Engineering College Bandra (W), Mumbai - 400 050. 								

* Common Subjects with IT # Tutorial to be taken class wise ! **Tutorials will be evaluated as Term work**

Program Structure for B.E. Computer Engineering
Second Year (Computer) (Semester IV)

(REV 2012)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/ Pract	Tut	Total
CSC401	Applied Mathematics IV*	4	-	1	4	-	1#	5
CSC402	Analysis of Algorithms	4	2	-	4	1	-	5
CSC403	Computer Organization and Architecture*	4	2	-	4	1	-	5
CSC404	Data Base Management systems	4	2	-	4	1	-	5
CSC405	Theoretical Computer Science	4	-		4	-	-	4
CSC406	Computer Graphics	3	2	-	3	1	-	4
	Total	23	8	1	23	4	1	28

Course Code	Course Name	Examination Scheme							
		Internal Assessment							
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)	TW	Prac / oral	Tot
Test 1	Test 2	Avg							
CSC401	Applied Mathematics IV*	20	20	20	80	03	25!	-	125
CSC402	Analysis of Algorithms	20	20	20	80	03	25	25	150
CSC403	Computer Organization and Architecture*	20	20	20	80	03	25	25	150
CSC404	Data Base Management systems	20	20	20	80	03	25	25	150
CSC405	Theoretical Computer Science	20	20	20	80	03	-	-	100
CSC406	Computer Graphics	20	20	20	80	03	25	25	150
	Total	-	-	120	480	Dr G. T. Thampi PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	125	100	825

* Common Subjects with IT # Tutorial to be taken class wise
Tutorials will be evaluated as Term work

AC 7/6/2014
Item 4.26

UNIVERSITY OF MUMBAI



Bachelor of Engineering

Computer Engineering (Third Year Year – Sem. V & VI),
Revised course
(REV- 2012) from Academic Year 2014 -15,
Under

FACULTY OF TECHNOLOGY
(As per Semester Based Credit and ~~N~~Grading System)

Dr. G. T. Thamhi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Program Structure for B.E. Computer Engineering

Third Year (Computer)
(Semester V)

(REV 2012)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/ Pract	Tut	Total
CPC501	Microprocessor	4	2	-	4	1	-	5
CPC502	Operating Systems	4	2	-	4	1	-	5
CPC503	Structured and Object Oriented Analysis and Design	4	2	-	4	1	-	5
CPC504	Computer Networks	4	2	-	4	1	-	5
CPL501	Web Technologies Laboratory	-	4	-	-	2	-	2
CPL502	Business Communication and Ethics*	-	2+ 2*	-	-	2	-	2
Total		16	16	-	16	8	-	24

* 2 hours shown as Practicals to be taken class wise and other 2 hours to be taken as batch wise

Course Code	Course Name	Examination Scheme								
		Internal Assessment				End Sem Exam	Exam Duration (in Hrs)	TW	Oral / Pract	Total
		Test 1	Test 2	Avg						
CPC501	Microprocessor	20	20	20	80	03	25	25 (prac)	150	
CPC502	Operating Systems	20	20	20	80	03	25	25 (prac)	150	
CPC503	Structured and Object Oriented Analysis and Design	20	20	20	80	03	25	25 (oral)	150	
CPC504	Computer Networks	20	20	20	80	03	25	25 (pract)	150	
CPL501	Web Technologies Laboratory	-	-	-	-	Dr. G. T. Thampi	25	50	75	
CPL502	Business Communication and Ethics	-	-	-	-	PRINCIPAL Thadomal Shahani Engineering College, Bandra (W), Mumbai - 400 050.	50	-	50	
Total		-	-	80	320		175	150	725	

Program Structure for B.E. Computer Engineering

Third Year (Computer) (Semester VI)

(REV 2012)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/ Pract	Tut	Total
CPC601	System Programming and Compiler Construction	4	2	-	4	1	-	5
CPC602	Software Engineering	4	2	-	4	1	-	5
CPC603	Distributed Databases	4	2	-	4	1	-	5
CPC604	Mobile Communication and Computing	4	2	-	4	1	-	5
CPE6011	Elective-I	-	2+2*	-	-	2	-	2
CPL601	Network Programming Laboratory	-	4	-	-	2	-	2
Total		16	16	-	16	8	-	24

* Hours shown as Practicals to be taken class wise

Course Code	Course Name	Examination Scheme						
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)	TW	oral / pract
		Test 1	Test 2	Avg				
CPC601	System Programming and Compiler Construction	20	20	20	80	03	25	25 (pract)
CPC602	Software Engineering	20	20	20	80	03	25	25 (oral)
CPC603	Distributed Databases	20	20	20	80	03	25	25 (oral)
CPC604	Mobile Communication and Computing	20	20	20	80	03	25	25 (pract)
CPE601X	Elective-I	-	-	-	-	-	50	-
CPL601	Network Programming Laboratory	-	-	-	-	-	25	25 (oral)
Total		-	-	80	320	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai-400 056	175	150
Total		-	-	80	320	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai-400 056	175	150
Total		-	-	80	320	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai-400 056	175	150
Total		-	-	80	320	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai-400 056	175	150
Total		-	-	80	320	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai-400 056	175	150
Total		-	-	80	320	Dr. G. T. Thampli PRINCIPAL Thadomal Shahani Engineering College Bandra (W), Mumbai-400 056	175	150

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UNIVERSITY OF MUMBAI



Bachelor of Engineering

Computer Engineering (Final Year – Sem. VII & VIII),
Revised course

(REV- 2012) from Academic Year 2015 - 16,
Under

FACULTY OF TECHNOLOGY

Dr. G. T. Thampi
PRINCIPAL
Thakomal Shahani Engineering College
Bandra (W), Mumbai-400 050.



(As per Semester Based Credit and Grading System)

Program Structure B.E. Computer Engineering

Fourth Year (Computer) (Semester VII)

(REV 2012)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/ Pract	Tut	Total
CPC701	Digital Signal Processing	4	2	-	4	1	-	5
CPC702	Cryptography and System Security	4	2	-	4	1	-	5
CPC703	Artificial Intelligence	4	2	-	4	1	-	5
CPE7042X	Elective-II	4	2	-	4	1	-	5
CPP701	Project I	-	6#	-	-	3	-	3
CPL701	Network Threats and Attacks Laboratory	-	4	-	-	2	-	2
Total		16	18	-	16	9	-	25

Course Code	Course Name	Examination Scheme								
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)	TW	oral		
		Test 1	Test 2	Avg						
CPC701	Digital Signal Processing	20	20	20	80	03	25	-	125	
CPC702	Cryptography and System Security	20	20	20	80	03	25	25	150	
CPC703	Artificial Intelligence	20	20	20	80	03	25	25	150	
CPE7042X	Elective-II	20	20	20	80	03	25	25	150	
CPP701	Project I	-	-	-	-	-	50	50	100	
CPL701	Network Threats and Attacks Laboratory	-	-	-	-	Dr. G. T. Thampi	Shahani Engineering College, Banda (W), Mumbai - 400 050.	75	750	
Total		-	-	80	320	PRINCIPAL		175	175	750

Program Structure for B.E. Computer Engineering

Second Year (Computer) (Semester VIII)

(REV 2012)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tu t	Theory	TW/ Pract	Tut	Total
CPC801	Data Warehouse and Mining	4	2	-	4	1	-	5
CPC802	Human Machine Interaction	4	2	-	4	1	-	5
CPC803	Parallel and distributed Systems	4	2	-	4	1	-	5
CPE803X	Elective-III	4	2	-	4	1	-	5
CPP802	Project II	-	12 #	-	-	6	-	6
CPL801	Cloud Computing Laboratory	-	2	-	-	1	-	1
	Total	16	22	-	16	11	-	27

Course Code	Course Name	Examination Scheme							
		Internal Assesment			End Sem Exam	Exam Duration (in Hrs)	TW	oral	
		Test 1	Test 2	Avg					
CPC801	Data Warehouse and Mining	20	20	20	80	03	25	25	150
CPC802	Human Machine Interaction	20	20	20	80	03	25	25	150
CPC803	Parallel and distributed Systems	20	20	20	80	03	25	25	150
CPE803X	Elective-III	20	20	20	80	03	25	25	150
CPP802	Project II	-	-	-	-	-	50	50	100
CPL801	Cloud Computing Laboratory	-	-	-	-	Dr. G. T. Thampi PRINCIPAL	25	25	25
	Total			80	320	Shahani Engineering College Bandra (W), Mumbai-400 050	175	150	725

Indicate workload for Learner and not for Faculty in semester VII and VIII

Elective II Sem 7

System Group	CPE7021	Advance Algorithms
	CPE7022	Computer Simulation and Modeling
Electronics Group	CPE7023	Image Processing
Software Group	CPE7024	Software Architecture
	CPE7025	Soft Computing
DB Group	CPE7026	ERP and Supply Chain Management

Elective III - Sem 8

Electronics Group	CPE8031	Machine Learning
Digital Group	CPE8032	Embedded Systems
Network Group	CPE8033	Adhoc wireless networks
	CPE8034	Digital Forensic
DB Group	CPE8035	Big data Analytics



Dr. G. T. Thampi
PRINCIPAL
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Bandra (W), Mumbai-400 050.

UNIVERSITY OF MUMBAI



Bachelor of Engineering

Electronics & Telecommunication Engineering
(Second Year – Sem. III & IV), Revised course
(REV- 2012) from Academic Year 2012 -13.

Under
FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)

A blue ink signature of Dr. G. T. Thampli.

Dr. G. T. Thampli
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Programme structure B.E.(Electronics & Telecommunication)
S.E. (Electronics & Telecommunication) Sem III

Sub Code	Subject Name	Teaching Scheme (Hrs.)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
ETS301	Applied Mathematics III	04	--	01	04	--	01	05
ETC302	Analog Electronics I	04	--	--	04	--	--	04
ETC303	Digital Electronics	04	--	--	04	--	--	04
ETC304	Circuits and Transmission Lines	04	--	--	04	--	--	04
ETC305	Electronic Instruments and Measurements	04	--	--	04	--	--	04
ETS306	Object Oriented Programming Methodology	--	--	--	--	--	--	--
ETL301	Analog Electronics I Laboratory	--	02	--	--	01	--	01
ETL302	Digital Electronics Laboratory	--	02	--	--	01	--	01
ETL303	Circuits and Measurements Laboratory	--	02	--	--	01	--	01
ETSL304	Object Oriented Programming Methodology Laboratory	--	*04	--	--	01	--	01
Total		20	10	01	20	04	01	25

*-Out of four hours, 2 hours theory shall be taught to entire class followed by 2 hrs. practical in batches.

Subject Code	Subject Name	Examination Scheme							
		Theory Marks			End Sem. Exam	Term Work	Practical and Oral	Oral	
		Internal assessment		Test 1					
ETS301	Applied Mathematics III	20	20	20	80	25	--	--	125
ETC302	Analog Electronics I	20	20	20	80	--	--	--	100
ETC303	Digital Electronics	20	20	20	80	--	--	--	100
ETC304	Circuits and Transmission Lines	20	20	20	80	--	--	--	100
ETC305	Electronic Instruments and Measurements	20	20	20	80	--	--	--	100
ETS306	Object Oriented Programming Methodology	--	--	--	--	--	--	--	--
ETL301	Analog Electronics I Laboratory	--	--	--	--	25	25	--	50
ETL302	Digital Electronics Laboratory	--	--	--	--	25	25	--	50
ETL303	Circuits and Measurements Laboratory	--	--	--	--	25	--	--	25
ETSL304	Object Oriented Programming Methodology Laboratory	--	--	--	--	25	50	--	75
Total		--	--	100	Dr. G. T. 400amp	125	100	--	725

PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

Programme Structure B.E. (Electronics & Telecommunication)
S.E. (Electronics & Telecommunication) Sem IV

Sub Code	Subject Name	Teaching Scheme(Hrs.)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
ETS401	Applied Mathematics IV	04	--	01	04	--	01	05
ETC402	Analog Electronics II	04	--	--	04	--	--	04
ETC403	Microprocessors and Peripherals	04	--	--	04	--	--	04
ETC404	Wave Theory and Propagation	04	--	--	04	--	-	04
ETC 405	Signals and Systems	04	--	01	04	-	01	05
ETC406	Control Systems	04	--	--	04	--	-	04
ETL401	Analog Electronics II Laboratory	--	02	--	--	01	--	01
ETL402	Microprocessors and Peripherals Laboratory	--	02	--	--	01	--	01
ETL403	Software Simulation Laboratory	--	02	--	--	01	--	01
Total		24	06	02	24	03	02	29

Subject Code	Subject Name	Examination Scheme								
		Theory Marks				End Sem. Exam	Term Work	Practical and Oral	Oral	Total
		Internal assessment								
Test 1	Test 2	Avg. Of Test 1 and Test 2								
ETS401	Applied Mathematics IV	20	20	20	80	25	--	--	125	
ETC402	Analog Electronics II	20	20	20	80	--	--	--	100	
ETC403	Microprocessors and Peripherals	20	20	20	80	--	--	--	100	
ETC404	Wave Theory and Propagation	20	20	20	80	--	--	--	100	
ETC 405	Signals and Systems	20	20	20	80	25	--	--	125	
ETC406	Control Systems	20	20	20	80	--	--	--	100	
ETL401	Analog Electronics II Laboratory	--	--	--	--	25	25	--	50	
ETL402	Microprocessors and Peripherals Laboratory	--	--	--	--	25	25	--	50	
ETL403	Software Simulation Laboratory	--	--	--	--	25	25	--	50	
Total		--	--	120	480	125	75	--	800	



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI



Bachelor of Engineering Electronics and Telecommunication Engineering

Third Year Engineering
(Sem. V and Sem. VI), (Rev-2012)
effective from Academic Year 2014 -15

Under
FACULTY OF TECHNOLOGY

(As per Semester Based Credit and ~~Grading~~ Grading System)

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



SEMESTER V

Course Code	Course Name	Teaching Scheme (Hrs.)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
ETC501	Microcontrollers and Applications	04	--	--	04	--	--	04
ETC502	Analog Communication	04	--	--	04	--	--	04
ETC503	Random Signal Analysis	04	--	01	04	--	01	05
ETC504	RF Modeling and Antennas	04	--	--	04	--	--	04
ETC505	Integrated Circuits	04	--	--	04	--	--	04
ETS506	Business Communication and Ethics	--	04 *	--	--	02	--	02
ETL501	Microcontrollers and Applications Laboratory	--	02	--	--	01	--	01
ETL502	Communication Engineering Laboratory I		02			01	--	01
ETL503	Communication Engineering Laboratory II	--	02	--	--	01	--	01
ETL504	Mini Project I	--	02	--	--	01	--	01
Total		20	12	01	20	06	01	27

* Out of 4 hours, 2 hours class wise theory and 2 hours batch wise practical

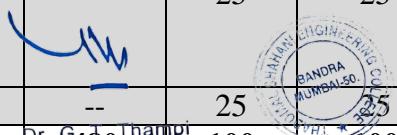
Course Code	Course Name	Examination Scheme							
		Theory Marks			End Sem. Exam	Term Work	Practical and Oral	Oral	
		Internal assessment		Test 1					
ETC501	Microcontrollers and Applications	20	20	20	80	--	--	--	100
ETC502	Analog Communication	20	20	20	80	--	--	--	100
ETC503	Random Signal Analysis	20	20	20	80	25	--	--	125
ETC504	RF Modeling and Antennas	20	20	20	80	--	--	--	100
ETC505	Integrated Circuits	20	20	20	80	--	--	--	100
ETS506	Business Communication and Ethics	--	--	--	--	50	Dr. G. T. Thampi	BANDRA MUMBAI-50 TECHNICAL UNIVERSITY	50
ETL501	Microcontrollers and Applications Laboratory	--	--	--	--	25	25	--	50
ETL502	Communication Engineering Laboratory I	--	--	--	--	25	25	--	50
ETL503	Communication Engineering Laboratory II	--	--	--	--	25	25	--	50
ETL504	Mini Project I	--	--	--	--	25	25	--	50
Total		100	100	100	400	175	100	--	775

SEMESTER VI

Course Code	Course Name	Teaching Scheme (Hrs.)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
ETC601	Digital Communication	04	--	--	04	--	--	04
ETC602	Discrete Time Signal Processing	04	--	--	04	--	--	04
ETC603	Computer Communication and Telecom Networks	04	--	--	04	--	--	04
ETC604	Television Engineering	04	--	--	04	--	--	04
ETC605	Operating Systems	04	--	--	04	--	--	04
ETC606	VLSI Design	04	--	--	04	--	--	04
ETL601	Discrete Time Signal Processing Laboratory	--	02	--	--	01	--	01
ETL602	Communication Engineering Laboratory III		02			01	--	01
ETL603	Communication Engineering Laboratory IV	--	02	--	--	01	--	01
ETL604	Mini Project II	--	02	--	--	01	--	01
Total		24	08	--	24	04	--	28

Course Code	Course Name	Examination Scheme							
		Theory Marks			End Sem. Exam	Term Work	Practical And Oral	Oral	
		Internal assessment		Test 1					
ETC601	Digital Communication	20	20	20	80	--	--	--	100
ETC602	Discrete Time Signal Processing	20	20	20	80	--	--	--	100
ETC603	Computer Communication and Telecom Networks	20	20	20	80	--	--	--	100
ETC604	Television Engineering	20	20	20	80	--	--	--	100
ETC605	Operating Systems	20	20	20	80	--	--	--	100
ETC606	VLSI Design	20	20	20	80	--	--	--	100
ETL601	Discrete Time Signal Processing Laboratory	--	--	--	--	25	25	--	50
ETL602	Communication Engineering Laboratory III	--	--	--	--	25	25	--	50
ETL603	Communication Engineering Laboratory IV	--	--	--	--	25	25	--	50
ETL604	Mini Project II	--	--	--	--	25	25	--	50
Total		120	120	120	480	100	100	--	800

Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI



Bachelor of Engineering Electronics and Telecommunication Engineering

Final Year Engineering
(Sem. VII and VIII), Revised Course
(REV- 2012) effective from Academic Year 2015 -16

Under
FACULTY OF TECHNOLOGY

(As per Semester Based Credit and ~~Grading~~ System)

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shah Engineering College
Bandra (W), Mumbai - 400 050.



Semester VII

Course Code	Course Name	Teaching Scheme (Hrs.)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
ETC701	Image and Video Processing	04	--	--	04	--	--	04
ETC702	Mobile Communication	04	--	--	04	--	--	04
ETC703	Optical Communication and Networks	04	--	-	04	--	-	04
ETC704	Microwave and Radar Engineering	04	--	--	04	--	--	04
ETE70X	Elective	04	--	--	04	--	--	04
ETL701	Image and Video Processing Laboratory	--	02	--	--	01	--	01
ETL702	Advanced communication Engineering. Laboratory I	--	02	--	--	01	--	01
ETL703	Advanced communication Engineering. Laboratory II	--	02	--	--	01	--	01
ETEL70X	Elective	--	02	--	--	01	--	01
ETP701	Project (Stage I)	--	*	--	--	03	--	03
Total		20	08	--	20	07	--	27

Course Code (ETE70X)	Sem. VII Elective
ETE 701	Data Compression and Encryption
ETE 702	Statistical Signal Processing
ETE 703	Neural Network and Fuzzy Logic
ETE 704	Analog and Mixed Signal VLSI



Dr. G. T. Thampi
PRINCIPAL

Thadomal Shahani Engineering College

Opp. KEM Hospital, Mumbai - 400050.

- Work load of learner in Semester VII is equivalent to 6 hours/week

Semester VII

Course Code	Course Name	Examination Scheme										
		Theory Marks			End Sem. Exam	Term Work	Practical and Oral	Total				
		Internal assessment		Test 1								
		Ave. of Test 1 & Test 2	Test 2									
ETC701	Image and Video Processing	20	20	20	80	--	--	100				
ETC702	Mobile Communication	20	20	20	80	--	--	100				
ETC703	Optical Communication and Networks	20	20	20	80	-	--	100				
ETC704	Microwave and Radar Engineering	20	20	20	80	--	--	100				
ETE70X	Elective	20	20	20	80	--	--	100				
ETL701	Image and Video Processing Laboratory	--	--	--	--	25	25	50				
ETL702	Advanced communication Engineering. Laboratory I	--	--	--	--	25	25	50				
ETL703	Advanced Communication Engineering. Laboratory II	--	--	--	--	25	25	50				
ETEL70X	Elective	--	--	--	--	25	25	50				
ETP701	Project (Stage I)					25	25	50				
Total		100	100	100	400	125	125	750				



Dr. G. T. Thampi
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Bandra (W), Mumbai - 400 050.

Semester VIII

Course Code	Course Name	Teaching Scheme (Hrs.)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
ETC801	Wireless Networks	04	--	--	04	--	--	04
ETC802	Satellite communication and Networks	04	--	--	04	--	--	04
ETC803	Internet and Voice Communication	04	--	--	04	--	--	04
ETE80X	Elective	04	--	--	04	--	--	04
ETL801	Wireless Networks Laboratory	--	02	--	--	01		01
ETL802	Satellite communication and Networks Laboratory	--	02	--	--	01		01
ETL803	Internet and Voice Communication Laboratory	--	02	--	--	01		01
ETEL80X	Elective Laboratory	--	02	--	--	01		01
ETP801	Project (Stage II)	--	**	--	--	06		06
Total		16	08	--	16	10		26

Course Code (ETE 80X)	Sem. VIII Elective
ETE 801	Speech Processing
ETE 802	Telecom Network Management
ETE 803	Microwave Integrated Circuits
ETE 804	Ultra Wideband Communication

** Work load of learner in Semester VIII is equivalent to 12 hours /week.



Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.

Semester VIII

Course Code	Course Name	Examination Scheme							
		Theory Marks			End Sem. Exam	Term Work	Practical and Oral	Oral	
		Internal assessment		Test 1					
ETC801	Wireless Networks	20	20	20	80	--	--	--	100
ETC802	Satellite communication and Networks	20	20	20	80	--	--	--	100
ETC803	Internet and Voice Communication	20	20	20	80	--	--	--	100
ETE80X	Elective	20	20	20	80	--	--	--	100
ETL801	Wireless Networks Laboratory	--	--	--	--	25	--	25	50
ETL802	Satellite communication and Networks Laboratory	--	--	--	--	25	--	25	50
ETL803	Internet and Voice Communication Laboratory	--	--	--	--	25	--	25	50
ETEL80X	Elective Laboratory	--	--	--	--	25	--	25	50
ETP801	Project (Stage II)	--	--	--	--	50	--	50	100
Total		80	80	80	320	150		150	700

Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



UNIVERSITY OF MUMBAI



Bachelor of Engineering

Information Technology (Second Year – Sem. III & IV)

Revised course (REV- 2012)

From Academic Year 2013 -14

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)



Dr. G. T. Thampli
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



S. E. (Information Technology) Sem.-III

Course Code	Course Name	Teaching Scheme				Credits Assigned		
		Theory	Pract.	Tut	Theory	TW/Pract	Tut	Total
SEITC301	Applied Mathematics – III *	4		1	4		1	5
SEITC302	Data Structure and Algorithm Analysis	4			4			5
SEITC303	Object Oriented Programming Methodology*	4			4			5
SEITC304	Analog and Digital Circuits	4			4			5
SEITC305	Database Management Systems	3			3			4
SEITC306	Principles of Analog and Digital Communication.	3			3			4
SEITL302	Data Structure and Algorithm Analysis			2			1	
SEITL303	Object Oriented Programming Methodology*			2			1	
SEITL304	Analog and Digital Circuits			2			1	
SEITL305	Database Management Systems			2			1	
SEITL306	Principles of Analog and Digital Communication			2			1	
	TOTAL	22	10	1	22	5	1	28

Examination Scheme

Course Code	Course Name	Theory					Term work	Pract /Oral .	Total			
		Internal Assessment			End sem exam	Exam duration (in Hrs)						
		TEST1	TEST 2	AVG.								
SEITC301	Applied Mathematics-III*	20	20	20	80	3	25	--	125			
SEITC302	Data Structure & Algorithm Analysis	20	20	20	80	3	25	25	150			
SEITC303	Object Oriented Programming Methodology*	20	20	20	80	3	25	25	150			
SEITC304	Analog & Digital Circuits	20	20	20	80	3	25	25	150			
SEITC305	Database Management Systems	20	20	20	80	3	25	25	150			
SEITC306	Principles of Analog & Digital Communication.	20	20	20	80	3	25	25	150			
	Total	120	120	120	480		150	125	875			

* Common with Computer Engineering.

Tutorials will be conducted class wise and will be evaluated as term work.

S. E. (Information Technology) Sem.-IV

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Th	Pract	Tut	Th.	Pract/	Tut	Total
SEITC401	Applied Mathematics-IV*	4		1	4		1	5
SEITC402	Computer Networks	4			4			5
SEITC403	Computer Organization and Architecture	3			1	3		4
SEITC404	Automata Theory	3			1	3		4
SEITC405	Web Programming	4				4		5
SEITC406	Information Theory and Coding	4			1	4		5
SEITL402	Computer Networks			2			1	
SEITL405	Web Programming			2			1	
	Total	22	4	4	22	2	4	28

Examination Scheme

Course Code	Course Name	Theory					Term work	Pract/ Oral	Total			
		Internal Assessment			END SEM EXAM	EXAM DURATION (in Hrs)						
		TEST1	TEST 2	AVG.								
SEITC401	Applied Mathematics-IV*	20	20	20	80	3	25	--	125			
SEITC402	Computer Networks	20	20	20	80	3	25	25	150			
SEITC403	Computer Organization and Architecture	20	20	20	80	3	25	25	150			
SEITC404	Automata Theory	20	20	20	80	3	25	--	125			
SEITC405	Web Programming	20	20	20	80	3	25	25	150			
SEITC406	Information Theory and Coding	20	20	20	80	3	25	--	125			
	Total	120	120	120	480	Dr. G. T. Thampi PRINCIPAL	Thadomal Shahani Engineering College Bandra (W), Mumbai - 400 050.	150	75	825		

* Common with Computer Engineering.

Tutorials will be conducted class wise and will be evaluated as term work.

UNIVERSITY OF MUMBAI



Bachelor of Engineering

Information Technology (Third Year – Sem. V & VI)

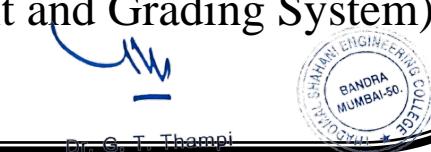
Revised course

(REV- 2012) from Academic Year 2014 -15

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)



Dr. G. T. Thampi

PRINCIPAL

Thadomal Shahani Engineering College
Bandra (W), Mumbai - 400 050.



Third Year Engineering (Semester V)
Revised course for Information Technology
Academic Year 2014-15 (REV- 2012)

Sub Code	Subject Name	Teaching Scheme (hrs/week)			Credits Assigned			
		Theory	Practical	Tut.	Theory	TW/ Practical	Tut.	Total
TEITC501	Computer Graphics and Virtual Reality	4			4			4
TEITC502	Operating Systems	4			4			4
TEITC503	Microcontroller and Embedded Systems	4			4			4
TEITC504	Advanced Database Management Systems	4			4			4
TEITC505	Open Source Technologies	3			3			3
TEITC506	Business Communication and Ethics*		2**+2			2		2
TEITL501	Computer Graphics and Virtual Reality		2			1		1
TEITL502	Operating Systems		2			1		1
TEITL503	Microcontroller and Embedded Systems		2			1		1
TEITL504	Advanced Database Management Systems		2			1		1
TEITL505	Open Source Technologies		2			1		1
	Total	19	12		19	07		26

***Common for all programs.**

****Theory class to be conducted for entire class.**

Note: During third year of engineering learners can be exposed to industrial environment by arranging an industrial visit.



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Examination Scheme

Course Code	Course Name	Theory					Term work	Pract/ Oral	Total			
		Internal Assessment			End sem exam	Exam duration (in Hrs)						
		TEST 1	TEST 2	AVG.								
TEITC501	Computer Graphics and Virtual Reality	20	20	20	80	3	25	25	150			
TEITC502	Operating Systems	20	20	20	80	3	25	25	150			
TEITC503	Microcontroller and Embedded Systems	20	20	20	80	3	25	25	150			
TEITC504	Advanced Database Management Systems	20	20	20	80	3	25	25	150			
TEITC505	Open Source Technologies	20	20	20	80	3	25	25	150			
TEITC506	Business Communication and Ethics*	---	---	---	---	---	25	25	050			
	Total	100	100	100	400	15	150	150	800			

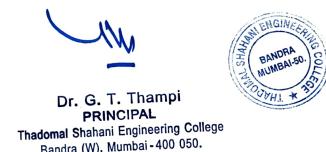


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Third Year Engineering (Semester VI)
Revised course for Information Technology

Academic Year 2014 -15 (REV- 2012)

Subject Code	Subject Name	Teaching Scheme (hrs/week)			Credits Assigned			
		Theory	Practical	Tut.	Theory	TW/Pract.	Tut.	Total
TEITC601	Software Engineering	4			4			4
TEITC602	Distributed Systems	4			4			4
TEITC603	System and Web Security	4			4			4
TEITC604	Data Mining and Business Intelligence	4			4			4
TEITC605	Advance Internet Technology	4			4			4
TEITL601	Software Engineering		2			1		1
TEITL602	Distributed Systems		2			1		1
TEITL603	System and Web Security		2			1		1
TEITL604	Data Mining and Business Intelligence		2			1		1
TEITL605	Advance Internet Technology		2			1		1
	Total	20	10		20	05		25



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Examination Scheme

Course Code	Course Name	Theory				Term work	Practical /Oral	Total		
		Internal Assessment			End Sem exam	Exam duration (in Hrs)				
		TEST 1	TEST 2	AVG.						
TEITC601	Software Engineering	20	20	20	80	3	25	150		
TEITC602	Distributed Systems	20	20	20	80	3	25	150		
TEITC603	System & Web Security	20	20	20	80	3	25	150		
TEITC604	Data Mining & Business Intelligence	20	20	20	80	3	25	150		
TEITC605	Advance Internet Technology	20	20	20	80	3	25	150		
	Total	100	100	100	400	15	125	750		



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UNIVERSITY OF MUMBAI



Bachelor of Engineering

Information Technology (Final Year – Sem.VII & VIII)

Revised course (REV- 2012)

From Academic Year 2015 -16

Under

FACULTY OF TECHNOLOGY



Dr. G. T. Thampli
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai-400 050.

(As per Semester Based Credit and Grading System)

B.E. Engineering (Semester VII)
Revised course for Information Technology
Academic Year 2015 -16 (REV- 2012)

Course Code	Course Name	Teaching Scheme (hrs/week)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Prac	Tut.	Total
ITC701	Software Project Management	4			4			4
ITC702	Cloud Computing	3			3			3
ITC703	Intelligent System	4			4			4
ITC704	Wireless Technology	4			4			4
ITC705	Elective - I	4			4			4
ITL701	Software Project Management		2			1		1
ITL702	Cloud Computing		2			1		1
ITL703	Intelligent System		2			1		1
ITL704	Wireless Technology		2			1		1
ITT705	Elective - I		2			1		1
ITP706	Project-I		*			3		3
	Total	19	10		19	08		27

*Work load of the teacher in semester VII is equivalent to 6 hrs/week.

Elective –I (Semester VII)	
ITC7051	Image Processing
ITC7052	Software Architecture
ITC7053	E-Commerce & E-Business Dr. G. T. Thampi Principal Thadomal Shahani Engineering College Bandra (W), Mumbai-400 050.
ITC7054	Multimedia Systems
ITC7055	Usability Engineering
ITC7056	Ubiquitous Computing

Examination Scheme

Course Code	Course Name	Theory					Term work	Pract/ Oral	Total			
		Internal Assessment			End sem exam	Exam duration (in Hrs)						
		TEST 1	TEST 2	AVG.								
ITC701	Software Project Management	20	20	20	80	3	25	25	150			
ITC702	Cloud Computing	20	20	20	80	3	25	25	150			
ITC703	Intelligent System	20	20	20	80	3	25	25	150			
ITC704	Wireless Technology	20	20	20	80	3	25	25	150			
ITC705	Elective - I	20	20	20	80	3	25	25	150			
ITP706	Project-I						25	25	050			
	Total	100	100	100	400	15	150	150	800			



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B.E. Engineering (Semester VIII)
Revised course for Information Technology from
Academic Year 2015 -16, (REV- 2012)

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
ITC801	Storage Network Management and Retrieval	4			4			4
ITC802	Big Data Analytics	4			4			4
ITC803	Computer Simulation and Modeling	4			4			4
ITC804	Elective -II	4			4			4
ITL801	Storage Network Management and Retrieval		2			1		1
ITL802	Big Data Analytics		2			1		1
ITL803	Computer Simulation and Modeling		2			1		1
ITL804	Elective -II		2			1		1
ITP805	Project - II		**			6		6
	Total	16	08		16	10		26

**Workload of the teacher in semester VIII is equivalent to 12 hrs/week.

Elective –II (Semester VIII)	
ITC8041	Enterprise Resource Planning
ITC8042	Wireless Sensor Networks
ITC8043	Geographical Information Systems Dr. G. T. Thampi PRINCIPAL Theodore Stevens Engineering College Bandra (W), Mumbai-400 050.
ITC8044	Robotics
ITC8045	Soft Computing
ITC8046	Software Testing & Quality Assurance

Examination Scheme

Course Code	Course Name	Theory				Term work	Pract/ Oral	Total		
		Internal Assessment			End sem exam	Exam duration (in Hrs)				
		TEST 1	TEST 2	AVG . .						
ITC801	Storage Network Management and Retrieval	20	20	20	80	3	25	25	150	
ITC802	Big Data Analytics	20	20	20	80	3	25	25	150	
ITC803	Computer Simulation and Modeling	20	20	20	80	3	25	25	150	
ITC804	Elective -II	20	20	20	80	3	25	25	150	
ITP805	Project - II						50	50	100	
	Total	80	80	80	320	12	150	150	700	



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- HR & CSR ● Reporting ● College ● PR/Corpcom & CSR
- Thadomal Shahani Engineering College ● BANDRA MUMBAI COHAI ● Mumbai, 400 050
- Project Management ● Sustainability ● Supply Chain
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info@casiglobal.us | info@csrandsustainability.com | casi.institute@gmail.com | www.casiglobal.us | www.csrandsustainability.com

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201