

First Year Engineering
Syllabus R-2016

Semester I & II



AC 14/7/2016, Item No. 4.64

UNIVERSITY OF MUMBAI



Bachelor of Engineering

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

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




PRINCIPAL
St. Francis Institute
Of Technology (Engg-College)
Mount Poincur, S. V. P. Road,
Borivli (West), Mumbai - 400 103.


**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			Average of Test 1 & Test 2					
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




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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



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COMPUTER ENGINEERING - R 2016 Syllabus

Semesters III, IV, V, VI, VII & VIII

AC - 11.05.2017

Item No. 4.193



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



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Program Structure B.E. Computer Engineering, (Rev. 2016) w.e.f. AY 2017-18
S. E. Computer Engineering (Semester-III)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/Pract	Tut	Total
CSC301	Applied Mathematics -III	4+1@	-	-	5	-	-	
CSC302	Digital Logic Design and Analysis	4	-	-	4	-	-	
CSC303	Discrete Mathematics	3+1@	-	-	4	-	-	
CSC304	Electronic Circuits and Communication Fundamentals	4	-	-	4	-	-	
CSC305	Data Structures	4	-	-	4	-	-	
CSL301	Digital System Lab	-	2	-	-	1	-	
CSL302	Basic Electronics Lab	-	2	-	-	1	-	
CSL303	Data structure Lab	-	2	-	-	1	-	
CSL304	OOPM(Java) Lab	-	2+2*	-	-	2	-	
	Total	21	10	-	21	5	-	26

@ 1 hour to be taken tutorial as class wise.

*2 hours shown as practical's to be taken class wise and other 2 hours to be taken as batch wise

Course Code	Course Name	Examination Scheme								
		Theory			End Sem. Exam	Exam Duration (in Hrs)	TW	Oral	Oral & Pract	Total
		Internal Assessment	Test 1	Test 2						
CSC301	Applied Mathematics -III	20	20	20	80	3	-	-	-	100
CSC302	Digital Logic Design and Analysis	20	20	20	80	3	-	-	-	100
CSC303	Discrete Structures	20	20	20	80	3	-	-	-	100
CSC304	Electronic Circuits and Communication Fundamentals	20	20	20	80	3	-	-	-	100
CSC305	Data Structures	20	20	20	80	3	-	-	-	100
CSL301	Digital System Lab	-	-	-	-	-	25	-	25	50
CSL302	Basic Electronics Lab	-	-	-	-	-	25	25	-	50
CSL303	Data structure Lab	-	-	-	-	-	25	-	25	50
CSL304	OOPM(Java) Lab	-	-	-	-	-	50	-	50	100
	Total	100	100	100	400	-	125	25	100	750



Program Structure B.E. Computer Engineering, (Rev. 2016) w.e.f. AY 2017-18
S. E. Computer Engineering (Semester-IV)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/Pract	Tut	Total
CSC401	Applied Mathematics- IV	4+1@	-	-	5	-	-	5
CSC402	Analysis of Algorithms	4	-	-	4	-	-	4
CSC403	Computer Organization and Architecture	4	-	-	4	-	-	4
CSC404	Computer Graphics	4	-	-	4	-	-	4
CSC405	Operating System	4	-	-	4	-	-	4
CSL401	Analysis of Algorithms Lab	-	2	-	-	1	-	1
CSL402	Computer Graphics Lab	-	2	-	-	1	-	1
CSL403	Processor Architecture Lab	-	2	-	-	1	-	1
CSL404	Operating System Lab	-	2	-	-	1	-	1
CSL405	Open Source Tech Lab	-	2+2*	-	-	2	-	2
Total		21	12	-	21	6	-	27

@ 1 hour to be taken tutorial as class wise .

*2 hours shown as Practical's to be taken class wise and other 2 hours to be taken as batch wise

Course Code	Course Name	Examination Scheme								
		Theory					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in Hrs)				
Test 1	Test 2	Avg.								
CSC401	Applied Mathematics- IV	20	20	20	80	3	-	-	-	100
CSC402	Analysis of Algorithms	20	20	20	80	3	-	-	-	100
CSC403	Computer Organization and Architecture	20	20	20	80	3	-	-	-	100
CSC404	Computer Graphics	20	20	20	80	3	-	-	-	100
CSC405	Operating System	20	20	20	80	3	-	-	-	100
CSL401	Analysis of Algorithms Lab	-	-	-	-	-	25	-	25	50
CSL402	Computer Graphics Lab	-	-	-	-	-	25	-	25	50
CSL403	Processor Architecture Lab	-	-	-	-	-	25	25	-	50
CSL404	Operating System Lab	-	-	-	-	-	25	-	25	50
CSL405	Open Source Tech Lab	-	-	-	-	-	25	-	25	50
Total		100	100	100	400	-	125	25	100	750



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

T. E. Computer Engineering (Semester-V)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/Pract	Tut	Total
CSC501	Microprocessor	4	-	-	4	-	-	4
CSC502	Database Management System	4	-	-	4	-	-	4
CSC503	Computer Network	4	-	-	4	-	-	4
CSC504	Theory of Computer Science	3+1@	-	-	4	-	-	4
CSDLO 501X	Department Level Optional Course -I	4	-	-	4	-	-	4
CSL501	Microprocessor Lab	-	2	-	-	1	-	1
CSL502	Computer Network Lab	-	2	-	-	1	-	1
CSL503	Database & Info. System Lab	-	2	-	-	1	-	1
CSL504	Web Design Lab	-	2+2*	-	-	2	-	2
CSL505	Business Comm. & Ethics	-	2+2*	-	-	2	-	2
Total		20	14	-	20	7	-	27

@ 1 hour to be taken tutorial as class wise.

*2 hours shown as Practical's to be taken class wise and other 2 hours to be taken as batch wise

Course Code	Course Name	Examination Scheme							
		Theory			End Sem. Exam	Exam Duration (in Hrs)	TW	Oral & Pract	Total
		Test 1	Test 2	Avg.					
CSC501	Microprocessor	20	20	20	80	3	-	-	100
CSC502	Database Management System	20	20	20	80	3	-	-	100
CSC503	Computer Network	20	20	20	80	3	-	-	100
CSC504	Theory of Computer Science	20	20	20	80	3	-	-	100
CSDLO 501X	Department Level Optional Course -I	20	20	20	80	3	-	-	100
CSL501	Microprocessor Lab	-	-	-	-	-	25	25	50
CSL502	Computer Network Lab	-	-	-	-	-	25	25	50
CSL503	Database & Info. System Lab	-	-	-	-	-	25	25	50
CSL504	Web Design Lab	-	-	-	-	-	25	25	50
CSL505	Business Comm. & Ethics	-	-	-	-	-	50	-	50
Total		100	100	100	400	-	150	100	750



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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					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in Hrs)				
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	-	-	-	-	-	25	-	25	50
CSL604	System Security Lab	-	-	-	-	-	25	-	25	50
CSP605	Mini-Project	-	-	-	-	-	25	-	25	50
Total		100	100	100	400	-	150	25	100	750



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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					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in Hrs)				
		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	25	50	
CSL703	Artificial Intelligence & Soft Computing Lab	-	-	-	-	-	25	25	50	
CSL704	Computational Lab-I	-	-	-	-	-	25	25	50	
CSP705	Major Project-I	-	-	-	-	-	50	25	75	
	Total	100	100	100	400		150	75	750	



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					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in				
		Test 1	Test 2	Avg.						
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	-	50
CSL803	Cloud Computing Lab	-	-	-	-	-	50	-	25	75
CSL804	Computational Lab-II	-	-	-	-	-	50	-	25	75
CSP805	Major Project-II	-	-	-	-	-	50	-	50	100
Total		100	100	100	400	--	150	-	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



3) EXTC_R2016

Electronic & Telecommunication
Engineering - R 2016
Syll



Semesters III, IV, V, VI, VII & VIII

AC-11.05.2017
Item No. 4.210

UNIVERSITY OF MUMBAI



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

FACULTY OF TECHNOLOGY

Electronics and Telecommunication 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



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Program Structure for
B.E. Electronics & Telecommunication Engineering (Rev. 2016)
University of Mumbai
(With Effect from 2017-2018)

Semester III

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned		
		Theory	Pracs	Tut	Theory	TW/ Pracs	Total
ECC301	Applied Mathematics- III	4	-	2@	4	1	5
ECC302	Electronic Devices and Circuits I	4	-	-	4	-	4
ECC303	Digital System Design	4	-	-	4	-	4
ECC304	Circuit Theory and Networks	4	-	2@	4	1	5
ECC305	Electronic Instrumentation and Control	4	-	2@	4	1	5
ECL301	Electronic Devices and Circuits I Laboratory	-	2	-	-	1	1
ECL302	Digital System Design Laboratory	-	2	-	-	1	1
ECL303	OOP using JAVA Laboratory	-	2	-	-	1	1
Total		20	6	6	20	6	26

@ 2 hour to be taken as tutorial classwise

Course Code	Course Name	Examination Scheme							
		Theory			End Sem Exam	Exam Duration (Hrs)	TW	Oral/Prac	Total
		Internal Assessment							
Test1	Test 2	Avg							
ECC301	Applied Mathematics-III	20	20	20	80	03	25	--	125
ECC302	Electronic Devices and Circuits I	20	20	20	80	03	--	--	100
ECC303	Digital System Design	20	20	20	80	03	--	--	100
ECC304	Circuit Theory and Networks	20	20	20	80	03	25	--	125
ECC305	Electronic Instrumentation and Control	20	20	20	80	03	25	--	125
ECL301	Electronic Devices and Circuits I Laboratory	--	--	--	--	--	25	25	50
ECL302	Digital System Design Laboratory	--	--	--	--	--	25	25	50
ECL303	OOP using JAVA Laboratory	--	--	--	--	--	25	25	50
Total				100	400		150	75	725



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Semester IV

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned		
		Theory	Pracs	Tut	Theory	TW/ Pracs	Total
ECC401	Applied Mathematics- IV	4	-	2@	4	1	5
ECC402	Electronic Devices and Circuits II	4	-	-	4	-	4
ECC403	Linear Integrated Circuits	4	-	-	4	-	4
ECC404	Signals & Systems	4	-	2@	4	1	5
ECC405	Principles of Communication Engineering	4	-	-	4	-	4
ECL401	Electronic Devices and Circuits II Laboratory	-	2	-	-	1	1
ECL402	Linear Integrated Circuits Laboratory	-	2	-	-	1	1
ECL403	Principles of Communication Engineering Laboratory	-	2	-	-	1	1
Total		20	6	4	20	5	25

@ 2 hour to be taken as tutorial classwise

Course Code	Course Name	Examination Scheme							
		Theory			End Sem Exam	Exam Duration (Hrs)	TW	Oral & Prac	Total
		Internal Assessment							
Test1	Test 2	Avg							
ECC401	Applied Mathematics- IV	20	20	20	80	03	25	--	125
ECC402	Electronic Devices and Circuits II	20	20	20	80	03	--	--	100
ECC403	Linear Integrated Circuits	20	20	20	80	03	--	--	100
ECC404	Signals & Systems	20	20	20	80	03	25	--	125
ECC405	Principles of Communication Engineering	20	20	20	80	03	--	--	100
ECL401	Electronic Devices and Circuits II Laboratory	--	--	--	--	--	25	25	50
ECL402	Linear Integrated Circuits Laboratory	--	--	--	--	--	25	25	50
ECL403	Principles of Communication Engineering Laboratory	--	--	--	--	--	25	25	50
Total				100	400		125	75	700



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Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned		
		Theory	Pracs	Tut	Theory	TW/Pracs	Total
ECC501	Microprocessor & Peripherals Interfacing	4	-	-	4	-	4
ECC502	Digital Communication	4	-	-	4	-	4
ECC503	Electromagnetic Engineering	4	-	1@	4	1	5
ECC504	Discrete Time Signal Processing	4	-	-	4	-	4
ECCDLO 501X	Department Level Optional Course I	4	-	-	4	-	4
ECL501	Microprocessor & Peripherals Interfacing Lab	-	2	-	-	1	1
ECL502	Digital Communication Lab	-	2	-	-	1	1
ECL503	Business Communication & Ethics Lab	-	2+2*	-	-	2	2
ECL504	Open Source Technology for Communication Lab	-	2	-	-	1	1
ECLDLO 501X	Department Level Optional Lab I	-	-	2#	-	1	1
Total		20	10	3	20	7	27

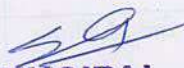
@ 1 hour to be taken as tutorial classwise #2 hours to be taken as either lab or tutorial based on subject requirement
 *2 hours to be taken as tutorial batchwise

Course Code	Course Name	Examination Scheme							
		Theory			End Sem Exam	Exam Duration (Hrs)	TW	Oral/Prac	Total
		Internal Assessment	Test 1	Test 2					
ECC501	Microprocessor & Peripherals Interfacing	20	20	20	80	03	--	--	100
ECC502	Digital Communication	20	20	20	80	03	--	--	100
ECC503	Electromagnetic Engineering	20	20	20	80	03	25	--	125
ECC504	Discrete Time Signal Processing	20	20	20	80	03	--	--	100
ECCDLO 501X	Department Level Optional Course I	20	20	20	80	03	--	--	100
ECL501	Microprocessor & Peripherals Interfacing Lab	--	--	--	--	--	25	25	50
ECL502	Digital Communication Lab	--	--	--	--	--	25	25	50
ECL503	Business Communication & Ethics Lab	--	--	--	--	--	50	--	50
ECL504	Open Source Technology for Communication Lab	--	--	--	--	--	25	25	50
ECLDLO 501X	Department Level Optional Lab I	--	--	--	--	--	25	--	25
Total				100	400		175	75	750



Course Code	Department Level Optional Course I
ECCDLO 5011	Microelectronics
ECCDLO 5012	TV & Video Engineering
ECCDLO 5013	Finite Automata Theory
ECCDLO 5014	Data Compression and Encryption




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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	Total
		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
Total				100	400		125	100	725



Course Code	Department Level Optional Course II
ECCDLO 6021	Digital VLSI Design
ECCDLO 6022	Radar Engineering
ECCDLO 6023	Database Management System
ECCDLO 6024	Audio Processing

Sl. No.	Name of the Candidate	Roll No.	Grade	Semester I		Semester II		Total	Grade
				Theory	Practical	Theory	Practical		
1									
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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			End Sem Exam	Exam Duration (Hrs)			
		Test1	Test 2	Avg					
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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Course Code	Department Level Optional Course III	Course Code	Institute Level Optional Course I [#]
ECCDLO7031	Neurai 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
ECCDLO7034	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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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	-	-	1	1
Total		15	18	-	15	9	24

Course Code	Course Name	Examination Scheme							
		Theory			End Sem Exam	Exam Duration (Hrs)	TW	Oral & Prac	Total
		Internal Assessment							
		Test1	Test 2	Avg					
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



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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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Information Technology R2016 &
Semesters III, IV, V, VI, VII & VIII



AC 11.5.2017

Item No. 4.180

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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Program Structure B.E. Information Technology, (Rev. 2016)

S. E. Information Technology (Semester-III)

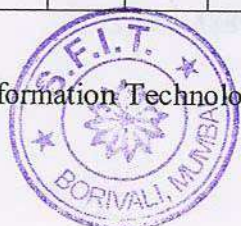
Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/Pract	Tut	Total
ITC301	Applied Mathematics III	4+1@	-	-	5	-	-	5
ITC302	Logic Design	4	-	-	4	-	-	4
ITC303	Data Structures & Analysis	4	-	-	4	-	-	4
ITC304	Database Management System	4	-	-	4	-	-	4
ITC305	Principle of Communications	3+1\$	-	-	4	-	-	4
ITL301	Digital Design Lab	-	2	-	-	1	-	1
ITL302	Data Structures Lab	-	2	-	-	1	-	1
IT303	SQL Lab	-	2	-	-	1	-	1
ITL304	Java Programming Lab	-	2+2*	-	-	2	-	2
	Total	21	10	-	21	5	-	26

Course Code	Course Name	Examination Scheme								
		Theory					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in Hrs)				
		Test 1	Test 2	Avg.						
ITC301	Applied Mathematics III	20	20	20	80	3	-	-	-	100
ITC302	Logic Design	20	20	20	80	3	-	-	-	100
ITC303	Data Structures & Analysis	20	20	20	80	3	-	-	-	100
ITC304	Database Management System	20	20	20	80	3	-	-	-	100
ITC305	Principle of Communications	20	20	20	80	3	--	-	-	100
ITL301	Digital Design Lab	-	-	-	-	-	25	--	25	50
ITL302	Data Structures Lab	-	-	-	-	-	25	--	25	50
IT303	SQL Lab	-	-	-	-	-	25	-	25	50
ITL304	Java Programming Lab	-	-	-	-	-	50	--	50	100
	Total	100	100	100	400	-	125	--	125	750



Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/Pract	Tut	Total
ITC401	Applied Mathematics-IV	4+1@	-	-	5	-	-	5
ITC402	Computer Networks	4	-	-	4	-	-	4
ITC403	Operating Systems	4	-	-	4	-	-	4
ITC404	Computer Organization and Architecture	4	-	-	4	-	-	4
ITC405	Automata Theory	3+1\$	-	-	4	-	-	4
ITL401	Networking Lab	-	2	-	-	1	-	1
ITL402	Unix Lab	-	2	-	-	1	-	1
ITL403	Microprocessor Programming Lab	-	2	-	-	1	-	1
ITL404	Python Lab	-	2+2*	-	-	2	-	2
	Total	21	10	-	21	5	-	26

Course Code	Course Name	Examination Scheme								
		Theory					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in Hrs)				
		Test 1	Test 2	Avg.						
ITC401	Applied Mathematics-IV	20	20	20	80	3	-	-	-	100
ITC402	Computer Networks	20	20	20	80	3	-	-	-	100
ITC403	Operating Systems	20	20	20	80	3	-	-	-	100
ITC404	Computer Organization and Architecture	20	20	20	80	3	-	-	-	100
ITC405	Automata Theory	20	20	20	80	3	-	-	-	100
ITL401	Networking Lab	-	-	-	-	-	25	25	-	50
ITL402	Unix Lab	-	-	-	-	-	25	-	25	50
ITL403	Microprocessor Programming Lab	-	-	-	-	-	25	25	-	50
ITL404	Python Lab	-	-	-	-	-	50	-	50	100
	Total	100	100	100	400	-	125	50	75	750



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Program Structure B.E. Information Technology, (Rev. 2016)

T. E. Information Technology (Semester-V)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/Pract	Tut	Total
ITC501	✓ Microcontroller and Embedded Programming	4	-	-	4	-	-	4
ITC502	✓ Internet Programming	4	-	-	4	-	-	4
ITC503	Advanced Data Management Technology	4	-	-	4	-	-	4
ITC504	✓ Cryptography & Network Security	4	-	-	4	-	-	4
ITDLO-I	Department Level Optional Course-I	4	-	-	4	-	-	4
ITL501	Internet Programming Lab	-	2	-	-	1	-	1
ITL502	Security Lab	-	2	-	-	1	-	1
ITL503	OLAP Lab	-	2	-	-	1	-	1
ITL504	IOT (Mini Project) Lab	-	2	-	-	1	-	1
ITL505	Business Communication and Ethics	-	2+2*	-	-	2	-	2
	Total	20	14	-	20	7	-	26

Course Code	Course Name	Examination Scheme								
		Theory					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in Hrs)				
		Test 1	Test 2	Avg.						
ITC501	Microcontroller and Embedded Programming	20	20	20	80	3	-	-	100	
ITC502	Internet Programming	20	20	20	80	3	-	-	100	
ITC503	Advanced Data Management Technology	20	20	20	80	3	-	-	100	
ITC504	Cryptography & Network Security	20	20	20	80	3	-	-	100	
ITDLO-I	Department Level Optional Course-I	20	20	20	80	3	--	-	100	
ITL501	Internet Programming Lab	-	-	-	-	-	25	--	25	50
ITL502	Security Lab	-	-	-	-	-	25	25	--	50
ITL503	OLAP Lab	-	-	-	-	-	25	25	--	50



ITL504	IOT (Mini Project) Lab	-	-	-	-	-	25	25	--	50
ITL505	Business Communication and Ethics	-	-	-	-	-	50	--	--	50
Total		100	100	100	400	-	150	75	25	750

Department Level Optional Course (DLO)

Every student is required to take one Department Elective Course for Semester V. 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 V	
ITDLO5011	Advanced Data Structures & Analysis of Algorithms - 2020
ITDLO5012	Image Processing 2018
ITDLO5013	E-Commerce & E-Business 2018, 2019, 2020
ITDLO5014	IT Enabled Services
ITDLO5015	Computer Graphics & Virtual Reality 2018, 2019



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Program Structure B.E. Information Technology, (Rev. 2016)

T. E. Information Technology (Semester-VI)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/Pract	Tut	Total
ITC601	Software Engineering with Project Management	4	-	-	4	-	-	4
ITC602	Data Mining and Business Intelligence	4	-	-	4	-	-	4
ITC603	Cloud Computing & Services	4	-	-	4	-	-	4
ITC604	Wireless Networks	4	-	-	4	-	-	4
ITDLO-II	Department Level Optional Course -II	4	-	-	4	-	-	4
ITL601	Software Design Lab	-	2	-	-	1	-	1
ITL602	Business Intelligence Lab	-	2	-	-	1	-	1
ITL603	Cloud Service Design Lab	-	2	-	-	1	-	1
ITL604	Sensor Network Lab	-	2	-	-	1	-	1
ITM605	Mini-project	-	4	-	-	2	-	2
	Total	20	12	-	20	6	-	26



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Course Code	Course Name	Examination Scheme								
		Theory					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in Hrs)				
		Test 1	Test 2	Avg.						
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 - 2019, 2020, 2021
ITDLO6022	Software Architecture
ITDLO6023	Digital Forensics - 2019, 2020, 2021
ITDLO6024	Multimedia Systems
ITDLO6025	Green IT





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Item No. 4.180

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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Program Structure B.E. Information Technology, (Rev. 2016)

B. E. Information Technology (Semester-VII)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/Pract	Tut	Total
ITC701	Enterprise Network Design	4	-	-	4	-	-	4
ITC702	Infrastructure Security	4	-	-	4	-	-	4
ITC703	Artificial Intelligence	4	-	-	4	-	-	4
ITDLO-II	Department Level Optional Course -III	4	-	-	4	-	-	4
ILO-I	Institute Level Optional Course-I	3	-	-	3	-	-	3
ITL701	Network Design Lab	-	2	-	-	1	-	1
ITL702	Advanced Security Lab	-	2	-	-	1	-	1
ITL703	Intelligence System Lab	-	2	-	-	1	-	1
ITL704	Android Apps Development Lab	-	2	-	-	1	-	1
ITM705	Project-I	-	6/8	-	-	3	-	3
	Total	19	14	-	19	7	-	26



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Course Code	Course Name	Examination Scheme								
		Theory					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in Hrs)				
		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	50	
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 - 2019 - 2020 2021
ITDLO7034	Software Testing and Quality Assurance	ILO7014	Design of Experiments
ITDLO7035	Soft Computing - 2020	ILO7015	Operation Research - 2019 2021 2020
		ILO7016	Cyber Security and Laws 2021
		ILO7017	Disaster Management and Mitigation Measures
		ILO7018	Energy Audit and Management
		ILO7019	Development Engineering




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University of Mumbai

Program Structure B.E. Information Technology, (Rev. 2016)

B. E. Information Technology (Semester-VIII)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/Pract	Tut	Total
ITC801	Big Data Analytics	4	-	-	4	-	-	4
ITC802	Internet of Everything	4	-	-	4	-	-	4
ITDLO-IV	Department Level Optional Course-IV	4	-	-	4	-	-	4
ILO-II	Institute Level Optional Course-II	3	-	-	3	-	-	3
ITL801	Big Data Lab	-	2	-	-	1	-	1
ITL802	Internet of Everything Lab	-	2	-	-	1	-	1
ITL803	DevOps Lab	-	2	-	-	1	-	1
ITL804	R Programming Lab	-	2	-	-	1	-	1
ITM805	Project-II	-	16	-	-	8	-	8
	Total	15	24	-	15	12	-	27



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Course Code	Course Name	Examination Scheme								
		Theory					TW	Oral	Oral & Pract	Total
		Internal Assessment			End Sem. Exam	Exam Duration (in				
		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.



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Subject Code	Department Level Optional Course (DLO)	Subject Code	Institute Level Optional Course (ILO)
Semester VIII			
✓ ITDLO8041	User Interaction Design 2020	ILO8021	Project Management 2020
ITDLO8042	Information Retrieval Systems	✓ ILO8022	Finance Management 2022 2020, 2021
ITDLO8043	Knowledge Management	ILO8023	Entrepreneurship Development and Management
ITDLO8044	Robotics	ILO8024	Human Resource Management
✓ ITDLO8045	Enterprise Resource Planning 2020 2021	ILO8025	Professional Ethics and CSR
		ILO8026	Research Methodology
		ILO8027	IPR and Patenting
		✓ ILO8028	Digital Business Management 2022 2020, 2021
		✓ ILO8029	Environmental Management 2020 2021




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AC 05/05/2018

Item No. 4.52



UNIVERSITY OF MUMBAI



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

Under

FACULTY OF TECHNOLOGY

Electrical Engineering

Third Year with Effect from AY 2018-19

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




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**Program Structure for
TE Electrical Engineering
University of Mumbai
(With Effect from 2018-19)**

Scheme for Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			Total
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
EEC501	Power System - II	4	-	1	4	-	1	5
EEC502	Electrical Machines - III	4	-	-	4	-	-	4
EEC503	Control System - I	4	-	-	4	-	-	4
EEC504	Power Electronics	4	-	-	4	-	-	4
EEDLO501X	Department Level Optional Course-I	3	-	1	3	-	1	4
EEL501	Business Communication and Ethics	-	4**	-	-	2	-	2
EEL502	Control System Lab	-	2	-	-	1	-	1
EEL503	Electrical Machines Lab - III	-	2	-	-	1	-	1
EEL504	Power Electronics Lab	-	2	-	-	1	-	1
Total		19	10	2	19	5	2	26

**** Out of four hours, 2 hours theory shall be taught to entire class and 2 hours practical in batches**



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Examination Scheme for Semester V

Course Code	Course Name	Examination Scheme														Total Marks
		Theory				Term Work		Practical		Oral		Pract./Oral				
		External (UA)		Internal (CA)		Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks		
		Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks		
EEC501	Power System - II	80	32	20	8	25	10	-	-	-	-	-	-	-	125	
EEC502	Electrical Machines - III	80	32	20	8	-	-	-	-	-	-	-	-	-	100	
EEC503	Control System - I	80	32	20	8	-	-	-	-	-	-	-	-	-	100	
EEC504	Power Electronics	80	32	20	8	-	-	-	-	-	-	-	-	-	100	
EEDLO 501X	Department Level Optional Course-I	80	32	20	8	25	10	-	-	-	-	-	-	-	125	
EEL501	Business Communication and Ethics	-	-	-	-	50	20	-	-	-	-	-	-	-	50	
EEL502	Control System Lab	-	-	-	-	25	10	-	-	25	10	-	-	-	50	
EEL503	Electrical Machines Lab - III	-	-	-	-	25	10	-	-	-	-	25	10	50		
EEL504	Power Electronics Lab	-	-	-	-	25	10	-	-	-	-	25	10	50		
Total		400	-	100	-	175	-	-	-	25	-	50	-	750		

(Signature)



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**Program Structure for
TE Electrical Engineering
University of Mumbai
(With Effect from 2018-19)**

Scheme for Semester VI

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			Total
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
EEEC601	Protection and Switchgear Engineering	3	-	-	3	-	-	3
EEEC602	Electrical Machines - IV	4	-	-	4	-	-	4
EEEC603	Signal processing	3	-	1	3	-	1	4
EEEC604	Microcontroller and its Applications	4	-	-	4	-	-	4
EEEC605	Control System - II	4	-	-	4	-	-	4
EEDLO602X	Department Level Optional Course-II	3	-	1	3	-	1	4
EEL601	Electrical Protection Lab	-	2	-	-	1	-	1
EEL602	Electrical Machines Lab - IV	-	2	-	-	1	-	1
EEL603	Microcontroller Lab	-	2	-	-	1	-	1
EEL604	Simulation Lab - II	-	2	-	-	1	-	1
Total		21	8	2	21	4	2	27



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Examination Scheme for Semester VI

		Examination Scheme												Total Marks		
Course Code	Course Name	Theory						Term Work		Practical		Oral			Pract./Oral	
		External (UA)		Internal (CA)		Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks		Max Marks	
		Max Marks	Min Marks	Max Marks	Min Marks											
		EEEC601	Protection and Switchgear Engineering	80	32	20	8	-	-	-	-	-	-	-	-	-
EEEC602	Electrical Machines - IV	80	32	20	8	-	-	-	-	-	-	-	-	-	-	100
EEEC603	Signal processing	80	32	20	8	25	10	-	-	-	-	-	-	-	-	125
EEEC604	Microcontroller and its Applications	80	32	20	8	-	-	-	-	-	-	-	-	-	-	100
EEEC605	Control System - II	80	32	20	8	-	-	-	-	-	-	-	-	-	-	100
EEDLO602 X	Department Level Optional Course-II	80	32	20	8	25	10	-	-	-	-	-	-	-	-	125
EEL601	Electrical Protection Lab	-	-	-	-	25	10	-	-	25	10	-	-	-	-	50
EEL602	Electrical Machines Lab - IV	-	-	-	-	25	10	-	-	-	-	-	-	25	10	50
EEL603	Microcontroller Lab	-	-	-	-	25	10	-	-	-	-	-	-	25	10	50
EEL604	Simulation Lab - II	-	-	-	-	25	10	-	-	25	10	-	-	-	-	50
Total		480	-	120	-	150	-	-	-	50	-	-	50	-	-	500




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List of Department Level Optional Courses

Course Code	Department Level Optional Course - I
EEDLO5011	Communication Engineering
EEDLO5012	Renewable Energy and Energy Storage, - 2020
EEDLO5013	Utilization of Electrical Energy - 2020

Course Code	Department Level Optional Course - II
EEDLO6021	Digital Communication Engineering
EEDLO6022	Micro-grid
EEDLO6023	Advanced Power Electronics




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**Program Structure for
BE Electrical Engineering
University of Mumbai
(With Effect from 2019-20)**

Scheme for Semester VII

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned				
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total	
EEEC701	Power System - III	4	-	1	4	-	1	5	
EEEC702	Drives and Control	4	-	-	4	-	-	4	
EEEC703	High Voltage Direct Current Transmission	4	-	-	4	-	-	4	
EEDLO703X	Department Level Optional Course-III	3	-	1	3	-	1	4	
ILO701X	Institute Level Optional Course-I	3	-	-	3	-	-	3	
EEL701	Simulation Lab - III	-	2	-	-	1	-	1	
EEL702	Drives and Control Lab	-	2	-	-	1	-	1	
EEL703	Project-I	-	6	-	-	3	-	3	
Total		18	10	2	18	5	2	25	



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Examination Scheme for Semester VII

Course Code	Course Name	Examination Scheme												Total Marks		
		Theory						Practical								
		External (UA)			Internal (CA)			Term Work		Practical		Oral			Pract./Oral	
		Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks		Max Marks	Min Marks
EEEC701	Power System - III	80	32	20	8	25	10	-	-	-	-	-	-	-	-	125
EEEC702	Drives and Control	80	32	20	8	-	-	-	-	-	-	-	-	-	-	100
EEEC703	High Voltage Direct Current Transmission	80	32	20	8	-	-	-	-	-	-	-	-	-	-	100
EEDLO 703X	Department Level Optional Course-III	80	32	20	8	25	10	-	-	-	-	-	-	-	-	125
ILO701 X	Institute Level Optional Course-I	80	32	20	8	-	-	-	-	-	-	-	-	-	-	100
EEL701	Simulation Lab - III	-	-	-	-	25	10	-	-	25	10	-	25	10	-	50
EEL702	Drives and Control Lab	-	-	-	-	25	10	-	-	-	-	-	-	25	10	50
EEL703	Project-I	-	-	-	-	25	10	-	-	25	10	-	25	10	-	50
Total		400	-	100	-	125	-	-	-	50	-	-	25	-	-	700




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**Program Structure for
BE Electrical Engineering
University of Mumbai
(With Effect from 2019-20)**

Scheme for Semester VIII

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
EEC801	Design, Management and Auditing of Electrical Systems	4	-	1	4	-	1	5
EEC802	Flexible AC Transmission System	4	-	-	4	-	-	4
EEDLO804X	Department Level Optional Course-IV	3	-	1	3	-	1	4
ILO802X	Institute Level Optional Course-II	3	-	-	3	-	-	3
EEL801	Simulation Lab - IV	-	2	-	-	1	-	1
EEL802	Electrical System Design Lab	-	2	-	-	1	-	1
EEL803	Project-II	-	12	-	-	6	-	6
Total		14	16	2	14	8	2	24



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Examination Scheme for Semester VIII

Course Code	Course Name	Examination Scheme												Total Marks	
		Theory			Term Work		Practical		Oral		Pract./Oral		Total Marks		
		External (UA)		Internal (CA)	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks			Max Marks
		Max Marks	Min Marks	Max Marks											
EEEC801	Design, Management and Auditing of Electrical Systems	80	32	20	8	25	10	-	-	-	-	-	-	125	
EEEC802	Flexible AC Transmission System	80	32	20	8	-	-	-	-	-	-	-	-	100	
EEDLO 804X	Department Level Optional Course-IV	80	32	20	8	25	10	-	-	-	-	-	-	125	
ILO802 X	Institute Level Optional Course-II	80	32	20	8	-	-	-	-	-	-	-	-	100	
EEL801	Simulation Lab - IV	-	-	-	-	25	10	-	-	25	10	-	-	50	
EEL802	Electrical System Design Lab	-	-	-	-	25	10	-	-	25	10	-	-	50	
EEL803	Project-II	-	-	-	-	50	20	-	-	50	20	-	-	100	
Total		320	-	80	-	150	-	-	-	100	-	-	-	650	




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Mechanical Engineering R-2016 Syllabus
Semesters III, IV, V, VI, VII & VIII

AC 11.05.2017
Item No. 4.173

UNIVERSITY OF MUMBAI




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

FACULTY OF TECHNOLOGY

Mechanical 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.


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Program Structure for
B.E. in Mechanical Engineering
University of Mumbai
(With Effect from 2017-2018)

Semester III

Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned		
		Theory	Pract	Theory	Pract	Total
MEC301	Applied Mathematics III**	04	--	04	--	04
MEC302	Thermodynamics*	04	--	04	--	04
MEC303	Strength of Materials*	04	--	04	--	04
MEC304	Production Process I*	04	--	04	--	04
MEC305	Material Technology*	03	--	03	--	03
MEL301	Computer Aided Machine Drawing*	--	(2 ³ +4)	--	03	03
MEL302	Strength of Material*	--	02	--	01	01
MEL303	Material Technology*	--	02	--	01	01
MEL304	Machine Shop Practice I*	--	04	--	02	02
Total		19	14	19	07	26

Course Code	Course Name	Examination Scheme							Total				
		Theory					End Sem Exam	Exam Duration (Hrs)		Term Work	Pract/ Oral		
		Internal Assessment			End Sem Exam	Exam Duration (Hrs)						Term Work	Pract/ Oral
		Test1	Test 2	Avg									
MEC301	Applied Mathematics III**	20	20	20	80	03	--	--	100				
MEC302	Thermodynamics*	20	20	20	80	03	--	--	100				
MEC303	Strength of Materials*	20	20	20	80	03	--	--	100				
MEC304	Production Process I*	20	20	20	80	03	--	--	100				
MEC305	Material Technology*	20	20	20	80	03	--	--	100				
MEL301	Computer Aided Machine Drawing*	--	--	--	--	--	50	50	100				
MEL302	Strength of Material*	--	--	--	--	--	25	25	50				
MEL303	Material Technology*	--	--	--	--	--	25	--	25				
MEL304	Machine Shop Practice I*	--	--	--	--	--	50	--	50				
Total				100	400		150	75	725				

* Common with Automobile Engineering

** Common with Automobile Engineering, Production Engineering and Civil Engineering

⁵ Theory for entire class to be conducted

Semester IV

Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned		
		Theory	Pract	Theory	Pract	Total
MEC401	Applied Mathematics IV**	04	--	04	--	04
MEC402	Fluid Mechanics*	04	--	04	--	04
MEC403	Industrial Electronics*	03	--	03	--	03
MEC404	Production Process II*	04	--	04	--	04
MEC405	Kinematics of Machinery*	04	--	04	--	04
MEL401	Data Base and Information Retrieval*	--	2 ⁵ +2	--	02	02
MEL402	Fluid Mechanics*	--	02	--	01	01
MEL403	Industrial Electronics*	--	02	--	01	01
MEL404	Kinematics of Machinery*	--	02	--	01	01
MEL405	Machine Shop Practice II*	--	04	--	02	02
Total		19	14	19	07	26

Course Code	Course Name	Examination Scheme						
		Theory			End Sem Exam	Exam Duration (Hrs)	Term Work	Pract/ Oral
		Internal Assessment						
Test1	Test 2	Avg						
MEC401	Applied Mathematics IV**	20	20	20	80	03	--	--
MEC402	Fluid Mechanics*	20	20	20	80	03	--	--
MEC403	Industrial Electronics*	20	20	20	80	03	--	--
MEC404	Production Process II*	20	20	20	80	03	--	--
MEC405	Kinematics of Machinery*	20	20	20	80	03	--	--
MEL401	Data Base and Information Retrieval*	--	--	--	--	--	50	50
MEL402	Fluid Mechanics*	--	--	--	--	--	25	25
MEL403	Industrial Electronics*	--	--	--	--	--	25	25
MEL404	Kinematics of Machinery*	--	--	--	--	--	25	--
MEL405	Machine Shop Practice II*	--	--	--	--	--	50	50
Total				100	400		175	150

* Common with Automobile Engineering

** Common with Automobile Engineering, Production Engineering and Civil Engineering

⁵ Theory for entire class to be conducted



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Semester V


Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned		
		Theory	Pract	Theory	Pract	Total
MEC501	Internal Combustion Engines*	04	--	04	--	04
MEC502	Mechanical Measurements and Control*	04	--	04	--	04
MEC503	Heat Transfer*	04	--	04	--	04
MEC504	Dynamics of Machinery	04	--	04	--	04
MEDLO 501X	Department Level Optional Course I	04	--	04	--	04
MEL501	Internal Combustion Engines	--	02	--	01	01
MEL502	Mechanical Measurements and Control	--	02	--	01	01
MEL503	Heat Transfer	--	02	--	01	01
MEL504	Dynamics of Machinery	--	02	--	01	01
MEL505	Manufacturing Sciences Lab	--	02	--	01	01
MEL506	Business Communication and Ethics	--	02 ⁵ +02	--	02	02
Total		20	14	20	07	27

Course Code	Course Name	Examination Scheme							Total
		Theory			End Sem Exam	Exam Duration (Hrs)	Term Work	Pract/ Oral	
		Internal Assessment							
Test1	Test 2	Avg							
MEC501	Internal Combustion Engines	20	20	20	80	03	--	--	100
MEC502	Mechanical Measurements and Control	20	20	20	80	03	--	--	100
MEC503	Heat Transfer	20	20	20	80	03	--	--	100
MEC504	Dynamics of Machinery	20	20	20	80	03	--	--	100
MEDLO 501X	Department Level Optional Course I	20	20	20	80	03	--	--	100
MEL501	Internal Combustion Engines	--	--	--	--	--	25	25	50
MEL502	Mechanical Measurements and Control	--	--	--	--	--	25	25	50
MEL503	Heat Transfer	--	--	--	--	--	25	25	50
MEL504	Dynamics of Machinery	--	--	--	--	--	25	25	50
MEL505	Manufacturing Sciences Lab	--	--	--	--	--	25	--	25
MEL506	Business Communication and Ethics	--	--	--	--	--	50	--	50
Total				100	400		175	100	775

⁵ Theory classes shall be conducted for entire class

Course Code	Department Level Elective Course I
MEDLO5011	Press Tool Design
MEDLO5012	Machining Sciences and Tool Design
MEDLO5013	Design of Jigs and Fixtures

University of Mumbai, B. E. (Mechanical Engineering), Rev 2016

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Semester VI

Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned		
		Theory	Pract	Theory	Pract	Total
MEC601	Metrology and Quality engineering	04	--	04	--	04
MEC602	Machine Design I	04	--	04	--	04
MEC603	Finite Element analysis	04	--	04	--	04
MEC604	Refrigeration and Air Conditioning	04	--	04	--	04
MEDLO 602X	Department Level Optional Course II	04	--	04	--	04
MEL601	Metrology and Quality Engineering	--	02	--	01	01
MEL602	Machine Design I	--	02	--	01	01
MEL603	Finite Element Analysis	--	02	--	01	01
MEL604	Refrigeration and Air Conditioning	--	02	--	01	01
MEL605	Mechatronics Lab	--	02	--	01	01
Total		20	10	20	05	25

Course Code	Course Name	Examination Scheme							
		Theory			End Sem Exam	Exam Duration (Hrs)	Term Work	Pract/ Oral	Total
		Internal Assessment							
Test1	Test 2	Avg							
MEC601	Metrology and Quality engineering	20	20	20	80	03	--	--	100
MEC602	Machine Design I	20	20	20	80	03	--	--	100
MEC603	Finite Element Analysis	20	20	20	80	03	--	--	100
MEC604	Refrigeration and Air Conditioning	20	20	20	80	03	--	--	100
MEDLO 602X	Department Level Optional Course II	20	20	20	80	03	--	--	100
MEL601	Metrology and Quality engineering	--	--	--	--	--	25	25	50
MEL602	Machine Design I	--	--	--	--	--	25	--	25
MEL603	Finite Element analysis	--	--	--	--	--	25	25	50
MEL604	Refrigeration and Air Conditioning	--	--	--	--	--	25	25	50
MEL605	Mechatronics Lab	--	--	--	--	--	25	25	50
Total				100	400		125	100	725

Course Code	Department Level Optional Course II
MEDLO6021	Mechatronics
MEDLO6022	Robotics
MEDLO6023	Industrial Automation



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Semester VII

Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned		
		Theory	Pract	Theory	Pract	Total
MEC701	Machine Design II	04	--	04	--	04
MEC702	CAD/CAM/CAE	04	--	04	--	04
MEC703	Production Planning and Control	04	--	04	--	04
MEDLO 703X	Department Level Optional Course III	04	--	04	--	04
ILO701X	Institute Level Optional Course I [#]	03	--	03	--	03
MEL701	Machine Design II	--	02	--	01	01
MEL702	CAD/CAM/CAE	--	02	--	01	01
MEL703	Production Planning and Control	--	02	--	01	01
MEL704	Project I	--	06	--	03	03
Total		19	12	19	06	25

Course Code	Course Name	Examination Scheme							Total
		Theory			End Sem Exam	Exam Duration (Hrs)	Term Work	Pract/Oral	
		Internal Assessment							
		Test 1	Test 2	Avg					
MEC701	Machine Design II	20	20	20	80	03	--	--	100
MEC702	CAD/CAM/CAE	20	20	20	80	03	--	--	100
MEC703	Production Planning and Control	20	20	20	80	03	--	--	100
MEDLO 703X	Department Level Optional Course III	20	20	20	80	03	--	--	100
ILO701X	Institute Level Optional Course I [#]	20	20	20	80	03	--	--	100
MEL701	Machine Design II	--	--	--	--	--	25	25	50
MEL702	CAD/CAM/CAE	--	--	--	--	--	25	25	50
MEL703	Production Planning and Control	--	--	--	--	--	25	25	50
MEP701	Project I	--	--	--	--	--	50	--	50
Total				100	400		125	75	700

Course Code	Department Level Optional Course III	Course Code	Institute Level Optional Course I [#]
MEDLO7031	Mechanical Vibrations	ILO7011	Product Lifecycle Management
MEDLO7032	Automobile Engineering	ILO7012	Reliability Engineering
MEDLO7033	Pumps, Compressors and Fans	ILO7013	Management Information System
MEDLO7034	Computational Fluid Dynamics	ILO7014	Design of Experiments
		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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Semester VIII

Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned		
		Theory	Pract	Theory	Pract	Total
MEC801	Design of Mechanical Systems	04	--	04	--	04
MEC802	Industrial Engineering and Management	04	--	04	--	04
MEC803	Power Engineering	04	--	04	--	04
MEDLO 804X	Department Level Optional Course IV	04	--	04	--	04
ILO802X	Institute Level Optional Course II [#]	03	--	03	--	03
MEL801	Design of Mechanical Systems	--	02	--	01	01
MEL802	Power Engineering	--	02	--	01	01
MEP801	Project II	--	12	--	06	06
Total		19	16	19	08	27

Course Code	Course Name	Examination Scheme							Total
		Theory			End Sem Exam	Exam Duration (Hrs)	Term Work	Pract/ Oral	
		Internal Assessment	Test 1	Test 2					
MEC801	Design of Mechanical Systems	20	20	20	80	03	--	--	100
MEC802	Industrial Engineering and Management	20	20	20	80	03	--	--	100
MEC803	Power Engineering	20	20	20	80	03	--	--	100
MEDLO 804X	Department Level Optional Course IV	20	20	20	80	03	--	--	100
ILO802X	Institute Level Optional Course II [#]	20	20	20	80	03	--	--	100
MEL801	Design of Mechanical Systems	--	--	--	--	--	25	25	50
MEL802	Power Engineering	--	--	--	--	--	25	25	50
MEL803	Project II	--	--	--	--	--	50	100	150
Total				100	400		100	150	750

Course Code	Department Level Elective Course IV	Course Code	Institute Level Elective Course II [#]
MEDLO8041	Power Plant Engineering	ILO8021	Project Management
MEDLO8042	Rapid Prototyping	ILO8022	Finance Management
MEDLO8043	Renewable Energy Systems	ILO8023	Entrepreneurship Development and Management
MEDLO8044	Energy Management in Utility Systems	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

