

AC- 23/07/2020

Item No. - 123

UNIVERSITY OF MUMBAI



Scheme

for

Bachelor of Engineering

in

Electronics & Computer Science

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)

Program Structure for Second Year Electronics and Computer Science

UNIVERSITY OF MUMBAI

(With Effect from 2020-2021)

Semester III

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		TH	PR	Tut	TH	Pract	Tut	Total
ECC 301	Engineering Mathematics - III	3	-	1	3	-	1	4
ECC 302	Electronic Devices	3	-	-	3	-	-	3
ECC 303	Digital Electronics	3	-	-	3	-	-	3
ECC 304	Data Structures and Algorithms	3	-	-	3	-	-	3
ECC 305	Database Management Systems	3	-	-	3	-	-	3
ECL301	Electronic Devices Lab	-	2	-	-	1	-	1
ECL302	Digital Electronics Lab	-	2	-	-	1	-	1
ECL303	Data Structures and Algorithms Lab	-	2	-	-	1	-	1
ECL304	Database Management Systems lab	-	2	-	-	1	-	1
ECL305	Skill-base Lab - OOPM: (C++ and Java)	-	4	-	-	2	-	2
ECM301	Mini project - 1A	-	4\$	-	-	2	-	2
Total		15	16	1	15	08	1	24

\$ indicates workload of learner(Not faculty), for mini-project

Course Code	Course Name	Examination Scheme							
		Theory					TW	Pract/Oral	Total
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)			
		Test 1	Test 2	Av					
ECC 301	Engineering Mathematics - III	20	20	20	80	03	25	-	125
ECC 302	Electronic Devices	20	20	20	80	03	-	-	100
ECC 303	Digital Electronics	20	20	20	80	03	-	-	100
ECC 304	Data Structures and Algorithms	20	20	20	80	03	-	-	100
ECC 305	Database Management Systems	20	20	20	80	03	-	-	100
ECL 301	Electronic Devices Lab	-	-	-	-	-	25	25	50
ECL 302	Digital Electronics Lab	-	-	-	-	-	25	25	50
ECL 303	Data Structures and Algorithms Lab	-	-	--	-	-	25	25	50
ECL 304	Database Management systems lab	-	-	-	-	-	25	25	50
ECL 305	Skill base Lab - OOPM: (C++ and Java)	-	-	-	-	-	50	-	50
ECM301	Mini Project -1A	-	-	-	-	-	25	25	50
Total		-	-	100	400	-	200	125	825

Program Structure for Second Year Electronics and Computer Science

UNIVERSITY OF MUMBAI

(With Effect from 2020-2021)

Semester IV

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		TH	PR	Tut	TH	Pract	Tut	Total
ECC 401	Engineering Mathematics - IV	3	-	1	3	-	1	4
ECC 402	Electronic Circuits	3	-	-	3	-	-	3
ECC 403	Controls and Instrumentation	3	-	-	3	-	-	3
ECC 404	Microprocessors and Microcontrollers	3	-	-	3	-	-	3
ECC 405	Discrete Structures and Automata Theory	3	-	-	3	-	-	3
ECL401	Electronic Circuits Lab	-	2	-	-	1	-	1
ECL402	Controls and Instrumentation Lab	-	2	-	-	1	-	1
ECL403	Microprocessors and Microcontrollers Lab	-	2	-	-	1	-	1
ECL404	Skill base Lab: <i>Python programming</i>	-	4	-	-	2	-	2
ECM401	Mini project - 1B	-	4\$	-	-	2	-	2
Total		15	14	1	15	7	1	23

\$ indicates workload of learner(Not faculty), for mini project

Course Code	Course Name	Examination Scheme							
		Theory					TW	Pract/ Oral	Total
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)			
		Test 1	Test 2	Av					
ECC 401	Engineering Mathematics - IV	20	20	20	80	03	25	-	125
ECC 402	Electronic Circuits	20	20	20	80	0a3	-	-	100
ECC 403	Controls and Instrumentation	20	20	20	80	03	-	-	100
ECC 404	Microprocessors and Microcontrollers	20	20	20	80	03	-	-	100
ECC 405	Discrete structures and Automata Theory	20	20	20	80	03	-	-	100
ECL 401	Electronic Circuits Lab	-	-	-	-	-	25	25	50
ECL 402	Controls and Instrumentation Lab	-	-	-	--	-	25	25	50
ECL 403	Microprocessors and Microcontrollers Lab	-	-	--	-	-	25	25	50
ECL 404	Skill-base Lab: <i>Python programming</i>						50	-	50
ECM 401	Mini-project - 1 B						25	25	50
Total		-	-	100	400	-	175	100	775

Program Structure for Third Year Electronics and Computer Science

UNIVERSITY OF MUMBAI

(With Effect from 2021-2022)

Semester V

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		TH	PR	Tut	TH	Pract	Tut	Total
ECC 501	Communication Engineering	3	-	-	3	-	-	3
ECC 502	Computer Organization and Architecture	3	-	-	3	-	-	3
ECC 503	Software Engineering	3	-	-	3	-	-	3
ECC 504	Web Technologies	3	-	-	3	-	-	3
ECC DO501	Department Optional (Course - I)	3	-	-	3	-	-	3
ECL501	Communication Engineering Lab	-	2	-	-	1	-	1
ECL502	Software Engineering and Web Technologies Lab	-	2	-	-	1	-	1
ECL503	Department Optional (Course - I) Lab	-	2	-	-	1	-	1
ECL504	Business Communication and Ethics	-	4	-	-	2	-	2
ECM501	Mini project - 2A	-	4\$	-	-	2	-	2
Total		15	14	-	15	7	-	22

*Theory class; \$ indicates workload of learner(Not faculty), for mini-project

Course Code	Course Name	Examination Scheme							
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)	TW	Pract/ Oral	Total
		Test 1	Test 2	Av					
ECC 501	Communication Engineering	20	20	20	80	03	-	-	100
ECC 502	Computer Organization and Architecture	20	20	20	80	03	-	-	100
ECC 503	Software Engineering	20	20	20	80	03	-	-	100
ECC 504	Web Technologies	20	20	20	80	03	-	-	100
ECC DO501	Department Level Optional Course - I	20	20	20	80	03	-	-	100
ECL501	Communication Engineering Lab	-	-	-	-	-	25	25	50
ECL502	Software Engineering and Web Technologies lab	-	-	-	-	-	25	25	50
ECL503	Department Optional Course -I lab	-	-	-	-	-	25	25	50
ECL504	Business Communication and Ethics	-	-	-	-	-	50	-	50
ECM501	Mini project - 2A						25	25	50
Total				100	400	-	150	100	750

Department Level Optional Course - I (DO 501):

1. Software Testing and Quality Assurance	3. Information Theory and Coding
2. ASIC Verification	4. Sensors and Applications

Program Structure for Third Year Electronics and Computer Science

UNIVERSITY OF MUMBAI

(With Effect from 2021-2022)

Semester VI

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		TH	PR	Tut	TH	Pract	Tut	Total
ECC 601	Embedded Systems and RTOS	3	-	-	3	-	-	3
ECC 602	Artificial Intelligence	3	-	-	3	-	-	3
ECC 603	Computer Networks	3	-	-	3	-	-	3
ECC 604	Data Warehousing and Mining	3	-	-	3	-	-	3
ECC DO601	Department Level Optional Course -II	3	-	-	3	-	-	3
ECL 601	Embedded Systems Lab	-	2			1		1
ECL602	Artificial Intelligence and Computer Networks Lab	-	2	-	-	1	-	1
ECL603	Data Warehousing and Mining Lab	-	2	-	-	1	-	1
ECL 604	Skill base Lab:(DLO-II) Lab	-	4	-	-	2	-	2
ECM601	Mini Project 2B	-	4\$	-	-	2	-	2
Total		15	14	-	15	7	-	22

\$ indicates workload of learner(Not faculty), for mini-project

Course Code	Course Name	Examination Scheme							
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)	TW	Pract/ Oral	Total
		Test 1	Test 2	Av					
ECC 601	Embedded Systems and RTOS	20	20	20	80	03	-	-	100
ECC 602	Artificial Intelligence	20	20	20	80	03	-	-	100
ECC 603	Computer Networks	20	20	20	80	03	-	-	100
ECC 604	Data Warehousing and Mining	20	20	20	80	03	-	-	100
ECC DO601	Department Level Optional Course -II	20	20	20	80	03	-	-	100
ECL 601	Embedded Systems Lab	-	-	-	-	-	25	25	50
ECL602	Artificial Intelligence and Computer Networks Lab	-	-	-	-	-	25	25	50
ECL603	Data Warehousing and Mining Lab	-	-	-	-	-	25	25	50
ECL 604	Skill base Lab:(DLO-II) Lab	-	-	-	-	-	50	-	50
ECM601	Mini Project - 2B						25	25	50
Total				100	400	-	150	100	750

Department Level Optional Course - II (DO 601):

1. Machine Learning	3. Digital Signal Processing
2. Industrial Automation	4. Electronic Product Design

Program Structure for Final Year Electronics and Computer Science

UNIVERSITY OF MUMBAI

(With Effect from 2022-2023)

Semester VII

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		TH	PR	Tut	TH	Pract	Tut	Total
ECC 701	VLSI Design	3	-	-	3	-	-	3
ECC 702	Internet of Things	3	-	-	3	-	-	3
ECC DO701	Department Level Optional Course - III	3	-	-	3	-	-	3
ECC DO702	Department Level Optional Course - IV	3	-	-	3	-	-	3
ECC IO701	Institute Level Optional Course - I	3	-	-	3	-	-	3
ECL701	VLSI Design Lab	-	2	-	-	1	-	1
ECL702	Internet of Things Lab	-	2	-	-	1	-	1
ECL703	Department Level Optional Course - III Lab	-	2	-	-	1	-	1
ECP701	Major Project - I	-	6	-	-	3	-	3
Total		15	12	-	15	6	-	21

Course Code	Course Name	Examination Scheme							
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)	TW	Pract/ Oral	Total
		Test 1	Test 2	Av					
ECC 701	VLSI Design	20	20	20	80	03	-	-	100
ECC 702	Internet of Things	20	20	20	80	03	-	-	100
ECC DO701	Department Level Optional Course - III	20	20	20	80	03	-	-	100
ECC DO702	Department Level Optional Course - IV	20	20	20	80	03	-	-	100
ECC IO701	Institute Level Optional Course - I	20	20	20	80	03	-	-	100
ECL701	VLSI Design Lab	-	-	-	-	-	25	25	50
ECL702	Internet of Things Lab	-	-	-	-	-	25	25	50
ECL703	Department Level Optional Course - III Lab	-	-	-	-	-	25	25	50
ECP701	Major Project - I	-	-	-	-	-	50	-	50
Total				100	400	-	125	75	700

Department Level Optional Courses:

Department Level Optional Course -III (DO701)	Department Level Optional Course -IV (DO702)
1. Deep Learning	1. Cloud Computing
2. Image Processing	2. Mobile Communication
3. Big Data Analytics	3. Cyber Security
4. Advanced Database Management Systems	4. BlockChain Technology

Program Structure for Final Year Electronics and Computer Science

UNIVERSITY OF MUMBAI

(With Effect from 2022-2023)

Semester VIII

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		TH	PR	Tut	TH	Pract	Tut	Total
ECC 801	Robotics	3	-	-	3	-	-	3
ECC DO801	Department Level Optional Course -V	3	-	-	3	-	-	3
ECC DO802	Department Level Optional Course -VI	3	-	-	3	-	-	3
ECC IO801	Institute Level Optional Course - II	3	-	-	3	-	-	3
ECL 801	Robotics Lab	-	2	-	-	1	-	1
ECL 802	Department Level Optional Course - V Lab	-	2	-	-	1	-	1
ECP 801	Major Project II	-	12	-	-	6	-	6
Total		12	16	-	12	8	-	20

Course Code	Course Name	Examination Scheme							
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)	TW	Pract/ Oral	Total
		Test 1	Test 2	Av					
ECC 801	Robotics	20	20	20	80	03	-	-	100
ECC DO801	Department Level Optional Course -V	20	20	20	80	03	-	-	100
ECC DO802	Department Level Optional Course -VI	20	20	20	80	03	-	-	100
ECC IO801	Institute Level Optional Course - II	20	20	20	80	03	-	-	100
ECL 801	Robotics Lab	-	-	-	-	03	25	25	50
ECL 802	Department Level Optional Course - V Lab	-	-	-	-	-	25	25	50
ECP 801	Major Project II	-	-	-	-	-	50	100	150
Total				80	320	-	100	150	650

Department Level Optional Courses:

Department Level Optional Course -V (DO801)	Department Level Optional Course -VI (DO802)
1. MEMS Technology	1. Advanced Networking Technologies
2. Natural Language Processing	2. Multimedia and Virtual Reality
3. 3-D Printing and Design	3. Quantum Computing
4. Advanced Algorithms	4. System Security

Note:

1. Students group and load of faculty per week.

Mini Project 1 and 2:

Students can form groups with minimum 2 (Two) and not more than 4 (Four)

Faculty Load: 1 hour per week per four groups

Major Project 1 and 2:

Students can form groups with minimum 2 (Two) and not more than 4 (Four)

Faculty Load: In Semester VII– ½ hour per week per project group

In Semester VIII – 1 hour per week per project group

2. Out of 4 hours/week allotted for the mini-projects 1-A and 1-B, an expert lecture of at least one hour per week from industry/institute or a field visit to nearby domain specific industry should be arranged.
3. Mini-projects 2-A and 2-B should be based on DLOs.