Sanjivani Rural Education Society's

Sanjivani College of Engineering, Kopargaon

(An Autonomous Institute Affiliated to Savitribai Phule Pune University, Pune)

B. Tech. Electronics and Computer Engineering

2021 Pattern

Program Structure

(B. Tech. with effect from Academic Year 2021-2022)

(Revised S Y B. Tech. Sem-IV with effect from Academic Year 2022-2023)

At. Sahajanandnagar, Post. Shingnapur Tal. Kopargaon Dist. Ahmednagar,

Maharashtra State, India PIN 423603

List of Abbreviations			
Abbreviation	**Full Form**	**Abbreviation**	**Full Form**
BSC	Basic Science Course	OEC	Open Elective Course
CIA	Continuous Internal Assessment	OR	End-Semester Oral Examination
EFC	Engineering Foundation Course	P	Practical
ESE	End-Semester Evaluation	PCC	Professional Core Course
HSMC	Humanities/Social Sciences/Management Course	PEC	Professional Elective Course
IP	Induction Program	PR	End-Semester Practical Examination
ISE	In-Semester Evaluation	PROJ	Project
L	Lecture	T	Tutorial
MLC	Mandatory Learning Course	TW	Continuous Term Work Evaluation

F. Y. B. TECH. *2021 Pattern* (COMMON)

SEMESTER-I

GROUP A: MECHANICAL, MECHATRONICS, CIVIL, STRUCTURAL

Branch	Course Code	Course Title	Course type	Teaching Scheme			Credits	Evaluation Scheme			
				L	T	P		TW	CIA	ESE	Total
Mechanical Engg. Mechtronics Engg. Civil Engg. Structural Engg.	BS1001	Engineering Mathematics-I	TH	3	1	--	4	--	40	60	100
	BS1002	Engineering Physics	TH	3	--	--	3	--	40	60	100
	ES1001	Engineering Graphics	TH	2	--	--	2	--	20	30	50
	ES1003	Basic Electrical and Electronics Engineering	TH	3	--	--	3	--	40	60	100
	MLC	**Induction Program**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
BRANCH SPECIFIC COURSES(THEORY)											
Mechanical Engg.	ES1006	Basics of Mechanical Engg.	TH	2	--	--	2	--	20	30	50
Mechtronics Engg.	ES1008	Theory of Development and Engineering Thinking	TH		--	--		--			
Civil Engg.	ES1009	Engg. Mechanics-Statics	TH		--	--		--			
Structural Engg.	ES1009	Engg. Mechanics-Statics	TH		--	--		--			
TERM WORK											
Mechanical Engg. Mechtronics Engg. Civil Engg. Structural Engg.	BS1102	Engineering Physics Lab	**TW**	--	--	2	1	25	--	--	25
	ES1101	Engineering Graphics Lab.	**TW**	--	--	2	1				
	ES1103	Basic Electrical and Electronics Engineering Lab.	**TW**	--	--	2	1	25	--	--	25
	HS1101 HS1102 HS1103	Language Proficiency Lab.I (English/German/Japanese)	**TW**	--	--	2	1	50	--	--	50
TERM WORK (BRANCH-SPECIFIC COURSES)											
Mechanical Engg.	ES1106	Basics of Mechanical Engg Lab.	**TW**	--	--	2	1	50	--	--	50
Mechtronics Engg.	ES1108	Theory of Development and Engineering Thinking Lab.	**TW**	--	--				--	--	
Civil Engg.	ES1109	Engg. Mechanics-Statics Lab	**TW**	--	--				--	--	
Structural Engg.	ES1109	Engg. Mechanics-Statics Lab	**TW**	--	--				--	--	
		Total		**13**	**01**	**10**	**19**	**175**	**160**	**240**	**575**

SEMESTER-I

GROUP B : COMPUTER, IT, ECE, ELECTRICAL

Branch	Course Code	Course Title	Course type	Teaching Scheme			Credits	Evaluation Scheme			
				L	T	P		TW	CIA	ESE	Total
1. Computer Engg. **2. IT** **3. Electronics and Computer Engg.** **4. Electrical Engg.**	**BS1001**	Engineering Mathematics-I	TH	3	1	--	4	--	40	60	100
	BS1003	Engineering Chemistry	TH	3	--	--	3	--	40	60	100
	ES1002	Computer Fundamentals and Programming	TH	3	--	--	3	--	40	60	100
	ES1004	IT for Engineers	TH	2	--	--	2	--	20	30	50
	MLC	**Induction Program**	--	--	--	--	--	--	--	--	--
BRANCH SPECIFIC COURSES (THEORY)											
Computer Engg.	**ES1007**	Problem Solving using Python	TH	2	--	--	2	--	20	30	50
IT	**ES1007**	Problem Solving using Python	TH		--	--		--			
Electronics and Computer Engg	**ES1007**	Problem Solving using Python	TH		--	--		--			
Electrical Engg.	**ES1010**	Electrical Technology	TH		--	--		--			
TERM WORK											
1. Computer Engg. **2. IT** **3. Electronics and Computer Engg.** **4. Electrical Engg.**	**BS1103**	Engineering Chemistry Lab.	TW	--	--	2	1	25	--	--	25
	ES1102	Computer Fundamentals and Programming Lab.	TW	--	--	2	1	25	--	--	25
	ES1105	Workshop Practice Lab.	TW	--	--	2	1	25	--	--	25
	HS1101 **HS1102** **HS1103**	Language Proficiency Lab.I (English/German/Japanese)	TW	--	--	2	1	50	--	--	50
TERM WORK (BRANCH-SPECIFIC COURSES)											
Computer Engg.	**ES1107**	Problem Solving using Python Lab.	TW	--	--	2	1	50	--	--	50
IT	**ES1107**	Problem Solving using Python Lab.	TW	--	--				--	--	
Electronics and Computer Engg	**ES1107**	Problem Solving using Python Lab.	TW	--	--				--	--	
Electrical Engg.	**ES1110**	Electrical Technology Lab.	TW	--	--				--	--	
		Total		**13**	**01**	**10**	**19**	**175**	**160**	**240**	**575**

SEMESTER-II

GROUP A: MECHANICAL, MECHATRONICS, CIVIL, STRUCTURAL

Branch	Course Code	Course Title	Course type	Teaching Scheme			Credits	Evaluation Scheme			
				L	T	P		TW	CIA	ESE	Total
Mechanical Engg. Mechtronics Engg. Civil Engg. Structural Engg.	BS2004	Engineering Mathematics-II	TH	3	1	--	4	--	40	60	100
	BS1003	Engineering Chemistry	TH	3	--	--	3	--	40	60	100
	ES1002	Computer Fundamentals and Programming	TH	3	--	--	3	--	40	60	100
	ES1004	IT for Engineers	TH	2	--	--	2	--	20	30	50
	HS2004	Physical Education and Sport	TH	1	--	--	1	--	--	--	--
	MLC	Environmental Science	TH	2	--	--	--	--	--	--	--
BRANCH SPECIFIC COURSES(THEORY)											
Mechanical Engg.	ES2011	Engineering Mechanics	TH	2	--	--	2	--	20	30	50
Mechtronics Engg.	ES2013	Engineering Mechanics	TH		--	--		--			
Civil Engg.	ES2014	Engg. Mechanics-Dynamics	TH		--	--		--			
Structural Engg.	ES2014	Engg. Mechanics-Dynamics	TH		--	--		--			
TERM WORK											
Mechanical Engg. Mechtronics Engg. Civil Engg. Structural Engg.	BS1102	Engineering Chemistry Lab.	TW	--	--	2	1	25	--	--	25
	ES1102	Computer Fundamentals and Programming Lab.	TW	--	--	2	1	25	--	--	25
	HS2101 HS2102 HS2103	Language Proficiency Lab.II (English/German/Japanese)	TW	--	--	2	1	50	--	--	50
	ES1105	Workshop Practice	TW	--	--	2	1	25	--	--	25
	HS2107	Physical Education and Sport	TW	--	--	2	1	50	--	--	50
TERM WORK (BRANCH SPECIFIC COURSES)											
Mechanical Engg.	ES2111	Engineering Mechanics Lab.	TW	--	--	2	1	50	--	--	50
Mechtronics Engg.	ES2113	Engineering Mechanics Lab.	TW	--	--				--	--	
Civil Engg.	ES2114	Engg.Mechanics- Dynamics Lab.	TW	--	--				--	--	
Structural Engg.	ES2114	Engg Mechanics-Dynamics Lab.	TW	--	--				--	--	
		Total		**16**	**01**	**12**	**21**	**225**	**160**	**240**	**625**

SEMESTER-II

GROUP B : COMPUTER, IT, ECE, ELECTRICAL

Branch	Course Code	Course Title	Course type	Teaching Scheme			Credits	Evaluation Scheme			
				L	T	P		TW	CIA	ESE	Total
1. Computer Engg. **2. IT** **3. Electronics and Computer Engg.** **4. Electrical Engg.**	BS2004	Engineering Mathematics-II	TH	3	1	--	4	--	40	60	100
	BS1002	Engineering Physics	TH	3	--	--	3	--	40	60	100
	ES1001	Engineering Graphics	TH	2	--	--	2	--	20	30	50
	ES1003	Basic Electrical and Electronics Engineering	TH	3	--	--	3	--	40	60	100
	HS2007	Physical Education and Sport	TH	1	--	--	1	--	--	--	--
	MLC	Environmental Science	TH	2	--	--	--	--	--	--	--
BRANCH SPECIFIC COURSES(THEORY)											
Computer Engg.	ES2012	Fundamentals of Data Structure	TH	2	--	--	2	--	20	30	50
IT	ES2012		TH		--	--		--			
Electronics and Computer Engg	ES2012		TH		--	--		--			
Electrical Engg.	ES2012		TH		--	--		--			
TERM WORK											
1. Computer Engg. **2. IT** **3. Electronics and Computer Engg.** **4. Electrical Engg.**	BS1102	Engineering Physics Lab.	TW	--	--	**2**	1	25	--	--	25
	ES1101	Engineering Graphics Lab.	TW	--	--	**2**	1	25	--	--	25
	ES1103	Basic Electrical and Electronics Engineering Lab.	TW	--	--	**2**	1	25	--	--	25
	HS2104 HS2105 HS2106	Language Proficiency Lab.II (English/German/Japanese)	TW	--	--	**2**	1	50	--	--	50
	HS2107	Physical Education and Sport	TW	--	--	**2**	1	50	--	--	50
TERM WORK (BRANCH SPECIFIC COURSES)											
Computer Engg.	ES2112	Fundamentals of Data Structure Lab.	TW	--	--	2	1	50	--	--	50
IT	ES2112		TW	--	--				--	--	
Electronics and Computer Engg	ES2112		TW	--	--				--	--	
Electrical Engg.	ES2112		TW	--	--				--	--	
		Total		**16**	**01**	**12**	**21**	**225**	**160**	**240**	**625**

Total Credits: 40 **Total Marks: 1200**

S. Y. B. TECH. *2021 Pattern* (Electronics and Computer Engineering) SEMESTER-III

Course			Teaching Scheme (Hours/week)				Evaluation Scheme- Marks					
							Theory					
Cat	Code	Title	L	T	P	Credits	CIA	ESE	OR	PR	TW	Total
BSC	EC201	Discrete Mathematics and Information Theory	3	-	-	3	40	60	-	-	-	100
PCC	EC202	Electronic Devices and Circuits	4	-	-	4	40	60	-	-	-	100
PCC	EC203	Digital Design and HD Language	4	-	-	4	40	60	-	-	-	100
PCC	EC204	Computer Organization and Architecture	3	-	-	3	40	60	-	-	-	100
HSMC	HS205	Universal Human Values & Ethics	3	-	-	3	40	60	-	-	-	100
LC	EC206	Discrete Mathematics and Information Theory Tutorial		1		1					50	50
LC	EC207	Electronic Devices and Circuits Laboratory	-	-	2	1	-	-	-	50	-	50
LC	EC208	Digital Design and HDL Laboratory	-	-	2	1	-	-	-	50	-	50
LC	EC209	Electronics and Computer Workshop	-	-	2	1	-	-	50	-	-	50
MC	MC210	Mandatory Course-III Constitution of India – Basic features and fundamental principles	2	-	-	Non Credit	-	-	-	-	-	Pass/ Fail
		Total	**19**	**1**	**6**	**21**	**300**	**200**	**50**	**100**	**50**	**700**

SEMESTER-IV

Course			Teaching Scheme (Hours/week)				Evaluation Scheme- Marks					
							Theory					
Cat	Code	Title	L	T	P	Credits	CIA	ESE	OR	PR	TW	Total
BSC	BS202	Engineering Mathematics - III	3	1	-	4	40	60	-	-	-	100
PCC	EC212	Principles of Communication	3	-	-	3	40	60	-	-	-	100
PCC	EC213	Fundamentals of DSP	3	-	-	3	40	60	-	-	-	100
PCC	EC214	Microcontroller & Microprocessor	3	-	-	3	40	60	-	-	-	100
PCC	EC215	Software Engineering, modeling and design	4	-	-	4	40	60	-	-	-	100
HSMC	HS216	Corporate Readiness-I	-	-	2	1					50	50
LC	EC217	Principles of Communication Laboratory	-	-	2	1	-	-	-	25	-	25
LC	EC218	S & DSP Laboratory	-	-	2	1	-	-		25		25
PROJ	EC219	Microcontroller & Microprocessor Laboratory	-	-	2	1	-	-	-	-	50	50
PROJ	EC220	P B L/Choice Based Subject	1	-	2	2	-	-	50	-	-	50
MC	MC221	Mandatory Course-IV Innovation - Project based – Sc., Tech, Social, Design & Innovation	2	-	-	Non Credit	-	-	-	-	-	Pass/ Fail
		Total	**19**	**1**	**10**	**23**	**300**	**200**	**50**	**50**	**100**	**700**

Total Credits: 44 **Total Marks: 1400**

T. Y. B. TECH. *2021 Pattern* (Electronics and Computer Engineering) SEMESTER-V

Course			Teaching Scheme (Hours/week)				Evaluation Scheme/ Max Marks					
							Theory					
Cat	Code	Title	L	T	P	Credits	CIA	ESE	OR	PR	TW	Total
PCC	EC301	Design and analysis of Algorithms	4		-	4	40	60	-	-	-	100
PCC	EC302	Analog Circuits and Control Systems	3	-	-	3	40	60	-	-	-	100
PCC	EC303	DBMS and SQL	3	-	-	3	40	60	-	-	-	100
PCC	EC304	Theory of Computations	4	-	-	4	40	60	-	-	-	100
PEC	EC305	Refer List of PEC1	3	-	-	3	40	60	-	-	-	100
LC	EC206	Analog Circuits and Control Systems Laboratory	-	-	2	1	-	-	-	50	-	50
LC	EC307	DBMS & SQL Laboratory	-	-	2	1	-	-	50	-	-	50
LC	EC308	Theory of Computation Tutorial	-	1	-	1	-	-	-	-	50	50
PROJ	EC309	Skill Based Credit Course	1	-	-	1	-	50	-	-	-	50
MC	MC310	Mandatory Course-V: Sanjivani ECE Talks	1	-	-	Non Credit	-	-	-	-	-	Pass/ Fail
		Total	**19**	**-**	**6**	**21**	**300**	**250**	**50**	**50**	**50**	**700**

SEMESTER-VI

Course			Teaching Scheme (Hours/week)				Evaluation Scheme/ Max Marks					
							Theory					
Cat	Code	Title	L	T	P	Credits	CIA	ESE	OR	PR	TW	Total
PCC	EC311	Embedded Systems and RTOS	4	-	-	4	40	60	-	-	-	100
PCC	EC312	System Programming and Operating System	3	-	-	3	40	60	-	-	-	100
PCC	EC313	Web Technology and APP Design	3	-	-	3	40	60	-	-	-	100
PEC	EC314	Refer List of PEC2	3	-	-	3	40	60	-	-	-	100
HSMC	EC315	Corporate Readiness	1	-	2	2	-	-	-	-	50	50
PROJ	EC316	IPR & EDP	2	-	-	2	20	30	-	-	-	50
LC	EC317	Embedded Systems and RTOS Laboratory	-	-	2	1	-	-	-	50	-	50
LC	EC318	System Programming and Operating System Laboratory	-	-	2	1	-	-	-	50	-	50
LC	EC319	PEC2 Laboratory	-	-	2	1	-	-	50	-	-	50
LC	EC320	Creational Activity	-	-	2	1	-	-	-	-	50	50
MC	MC321	Mandatory Course-VI:	1	-	-	Non Credit	-	-	-	-	-	Pass/ Fail
		Total	**17**	**-**	**10**	**21**	**180**	**270**	**50**	**100**	**100**	**700**

Professional Elective Course 1 (PEC1):		Professional Elective Course 2 (PEC2):	
EC305A	Electromagnetics	EC314A	Advanced Digital Signal Processing
EC305B	Network Theory and Analysis	EC314B	Power Electronics and Drives
EC305C	Software Testing and Quality Assurance	EC314C	Autonomous Vehicles

Total Credits: 42 **Total Marks: 1400**

Final Year B. TECH. *2021 Pattern* (Electronics and Computer Engineering)

SEMESTER-VII

Course			Teaching Scheme (Hours/week)				Evaluation Scheme/Max Marks					
							Theory					
Cat	Code	Title	L	T	P	Credits	CIA	ESE	OR	PR	TW	Total
PCC	EC401	Big Data & Cloud Computing	3	-	-	3	40	60	-	-	-	100
PCC	EC402	IoT & WSN	3	-	-	3	40	60	-	-	-	100
PCC	EC403	Computer Networks and Cyber security	3	-	-	3	40	60	-			100
PEC	EC404	Refer List of PEC3	4	-	-	4	40	60	-	-	-	100
PEC	EC405	Refer List of PEC4	3	-	-	3	40	60	-	-	-	100
LC	EC406	Computer Networks and Cyber security Laboratory	-	-	2	1	-	-	50	-	-	50
LC	EC407	IoT & WSN Laboratory	-	-	2	1	-	-	-	50	-	50
LC	EC408	Big Data & Cloud Computing Laboratory	-	-	2	1	-	-	-	50	-	50
PROJ	EC409	Project Stage I & Seminar	-	-	2	1	-	-	-	-	50	50
MC	MC410	Mandatory Course-VII :	1	-	-	Non Credit	-	-	-	-	-	Pass/ Fail
		Total	**17**	**-**	**8**	**20**	**200**	**300**	**50**	**100**	**50**	**700**

Professional Elective Course 3 (PEC3):		Professional Elective Course 4 (PEC4):	
EC404A	Communication I	EC405A	Communication II
EC404B	Image Processing and Pattern Recognition	EC405B	Block Chain
EC404C	Distributed Computing	EC405C	Data Mining

SEMESTER-VIII

Course			Teaching Scheme (Hours/week)				Evaluation Scheme/Max Marks					
							Theory					
Cat	Code	Title	L	T	P	Credits	CIA	ESE	OR	PR	TW	Total
OEC	EC411	OE-I: Artificial Intelligence	3	-	-	3	40	60	-	-	-	100
OEC	EC412	OE-II: Machine Learning	3	-	-	3	40	60	-	-	-	100
OEC	EC413	OE-III :Online Through MOOCs	2	-	-	2	100	-	-	-	-	100
PROJ	EC414	Project stage II & Seminar	-	-	08	4	100	-	-	-	-	100
PROJ	EC415	Research Project OR Industrial Internship OR Entrepreneurship Development Project	-	-	12	6	-	-	50	-	50	100
MC	MC416	Mandatory Course-VIII:	1	-	-	Non Credit	-	-	-	-	-	Pass/ Fail
		Total	**9**	**-**	**20**	**18**	**280**	**120**	**50**	**-**	**50**	**500**

Total Credits: 38 **Total Marks: 1200**