

Scheme of Instruction & Scheme of Examination

Bachelor of Engineering (ECE)

Applicable for the students to be admitted in A.Y. 2020-21 (R-20)



**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS) HYDERABAD
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)

B.E. – ECE : FIRST SEMESTER (2020 - 2021)

B.E (ECE) I Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U20HS110EH	English Language and Communication Skills – I	2	-	-	3	60	40	2
U20BS110MA	Engineering Mathematics – I	3	-	-	3	60	40	3
U20BS010CH	Engineering Chemistry	3	1	-	3	60	40	4
U20ES120CS	Programming for Problem Solving	3	-	-	3	60	40	3
U20ES010CE	Basic Engineering Mechanics	3	-	-	3	60	40	3
PRACTICALS								
U20HS111EH	English Language and Communication Skills Lab – I	-	-	2	3	50	30	1
U20BS011CH	Chemistry Lab	-	-	2	3	50	30	1
U20ES121CS	Programming for Problem Solving Lab	-	-	2	3	50	30	1
U20ES021ME	Engineering Workshop	-	-	2	3	50	30	1
TOTAL		14	1	8		500	320	19
GRAND TOTAL		23				820		
Left over hours will be allocated for : Sports / Library / PDC / Proctorial Interaction / CC / RC / TC								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)
B.E. – ECE : FIRST SEMESTER (2020 - 2021)

B.E I Semester

COURSES OFFERED TO CSE

THEORY

U20ES110EC	Introduction to Electronics Engineering	3	-	-	3	60	40	3
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PRACTICALS

U20ES111EC	Introduction to Electronics Engineering Lab	-	-	2	3	50	30	1
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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)
B.E. – ECE : SECOND SEMESTER (2020 - 2021)

B.E (ECE) II Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U20HS210EH	English Language and Communication Skills – II	2	-	-	3	60	40	2
U20BS210MA	Engineering Mathematics – II	3	-	-	3	60	40	3
U20BS210PH	Quantum Mechanics and Materials Science	3	1	-	3	60	40	4
U20ES220CS	Problem Solving through Object Oriented Programming	3	-	-	3	60	40	3
U20ES250CE	Engineering Drawing	1	-	2	3	60	40	2
U20ES010EE	Basic Electrical Engineering	2	-	-	3	60	40	2
PRACTICALS								
U20HS211EH	English Language and Communication Skills Lab – II	-	-	2	3	50	30	1
U20BS211PH	Engineering Physics Lab	-	-	2	3	50	30	1
U20ES221CS	Problem Solving through Object Oriented Programming Lab	-	-	2	3	50	30	1
U20ES011EE	Basic Electrical Engineering Lab	-	-	2	3	50	30	1
TOTAL		14	1	10		560	360	20
GRAND TOTAL		25				920		
Left over hours will be allocated for : Sports / Library / PDC / Proctorial Interaction / CC / RC / TC								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)
B.E. – ECE : THIRD SEMESTER (2021 - 2022)

B.E (ECE) III Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			
		Hours per Week			Duration in Hrs	Maximum Marks		Credits
		L	T	P/D		SEE	CIE	
THEORY								
U20HS330EH	Skill Development Course – I (Communication Skills – I)	1	-	-	2	40	30	1
U20BS330MA	Skill Development Course – II (Aptitude – I)	1	-	-	2	40	30	1
U20BS310MA	Partial Differential Equations and Numerical Methods	3	-	-	3	60	40	3
U20PC310EC	Electronic Devices	3	-	-	3	60	40	3
U20PC320EC	Digital System Design	3	1	-	3	60	40	4
U20PC330EC	Networks Analysis and Transmission Lines	3	-	-	3	60	40	3
U20OE3XXXX	Open Elective - I	2	-	-	3	60	40	2
U20MC310ME	Introduction to Entrepreneurship	1	-	-	2	40	30	-
U20MC370CE	Environmental Science	2	-	-	3	60	40	-
PRACTICALS								
U20PC311EC	Electronic Devices Lab	-	-	2	3	50	30	1
U20PC321EC	Digital System Design Lab	-	-	2	3	50	30	1
U20PC331EC	Basic Circuits and Networks Lab	-	-	2	3	50	30	1
U20PC341EC	Electronic Workshop	-	-	2	3	50	30	1
TOTAL		19	1	8		680	450	21
GRAND TOTAL		28				1130		
Left over hours will be allocated for : Sports / Library / Proctorial Interaction / CC / RC / TC / ECA / CCA								
Note: Every student should acquire one online course certification equivalent to 2 Credits weightage during III – VII Semester								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)
B.E. – ECE : THIRD SEMESTER (2021 - 2022)

B.E - III Semester

COURSES OFFERED TO EEE

THEORY

U20ES310EC	Electronics Engineering – I	3	-	-	3	60	40	3
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PRACTICALS

U20ES311EC	Electronics Engineering - I Lab	-	-	2	3	50	30	1
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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)

B.E. – ECE : FOURTH SEMESTER (2021 - 2022)

B.E (ECE) IV Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			
		Hours per Week			Duration in Hrs	Maximum Marks		Credits
		L	T	P/D		SEE	CIE	
THEORY								
U20HS010EH	Human Values and Professional Ethics – I	1	-	-	2	40	30	1
U20BS430MA	Skill Development Course – III : (Aptitude – II)	1	-	-	2	40	30	1
U20PE4XXEC	Skill Development Course – IV : (Technical Skills – I)	1	-	-	2	40	30	1
U20PC410EC	Electronic Circuits	3	-	-	3	60	40	3
U20PC420EC	Signal Analysis & Transform Techniques	3	-	-	3	60	40	3
U20PC430EC	Electromagnetic Theory	3	-	-	3	60	40	3
U20PC440EC	Computer Organization and Architecture	3	-	-	3	60	40	3
U20PC450EC	Probability Theory and Stochastic Process	3	1	-	3	60	40	4
U20OE4XXXX	Open Elective – II	3	-	-	3	60	40	3
PRACTICALS								
U20PC411EC	Electronic Circuits Lab	-	-	2	3	50	30	1
U20PC431EC	Simulation Lab for Signals and Systems	-	-	2	3	50	30	1
U20PW419EC	Mini Project - I	-	-	2	-	-	30	1
TOTAL		21	1	6		580	420	25
GRAND TOTAL		28				1000		
Left over hours will be allocated for : Sports / Library / Proctorial Interaction / CC / RC / TC / ECA / CCA								
Note: Every student should acquire one online course certification equivalent to 2 Credits weightage during III – VII Semester								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)
B.E. – ECE : FOURTH SEMESTER (2021 - 2022)

B.E - IV Semester									
<u>COURSES OFFERED TO EEE</u>									
THEORY									
U20ES410EC	Electronics Engineering – II	3	-	-	3	60	40	3	
PRACTICALS									
U20ES411EC	Electronics Engineering - II Lab	-	-	2	3	50	30	1	

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)
B.E. – ECE : FIFTH SEMESTER (2022 - 2023)

B.E (ECE) V Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U20HS510EH	Skill Development Course – V (Communication Skills – II)	1	-	-	2	40	30	1
U20PE5XXEC	Skill Development Course – VI (Technical Skills – II)	1	-	-	2	40	30	1
U20PC510EC	Microprocessors and Microcontrollers	3	-	-	3	60	40	3
U20PC520EC	Integrated Circuits & Applications	3	-	-	3	60	40	3
U20PC530EC	Analog and Digital Communication	3	-	-	3	60	40	3
U20PC540EC	Antennas and Wave Propagation	3	-	-	3	60	40	3
U20OE5XXXX	Open Elective – III	3	-	-	3	60	40	3
PRACTICALS								
U20PC511EC	Microprocessors and Microcontrollers Lab	-	-	2	3	50	30	1
U20PC521EC	Integrated Circuits and Applications Lab	-	-	2	3	50	30	1
U20PC531EC	Analog & Digital Communication Lab	-	-	2	3	50	30	1
U20PW519EC	Mini Project – II	-	-	2	-	-	30	1
TOTAL		17	-	8		530	380	21
GRAND TOTAL					25			910
Left over hours will be allocated for : Sports / Library / Proctorial Interaction / CC / RC / TC / ECA / CCA								
Note: Every student should acquire one online course certification equivalent to 2 Credits weightage during III – VII Semester								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)
B.E. – ECE : SIXTH SEMESTER (2022 - 2023)

B.E (ECE) VI Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U20HS020EH	Human Values & Professional Ethics - II	1	-	-	2	40	30	1
U20HS040EH	Economics and Finance for Engineers	2	-	-	3	60	40	2
U20BS610MA	Skill Development Course - VII : (Aptitude – III)	1	-	-	2	40	30	1
U20PE6XXEC	Skill Development Course - VIII : (Technical Skills – III)	1	-	-	2	40	30	1
U20PC610EC	Control Systems Engineering	3	-	-	3	60	40	3
U20PC620EC	Digital Signal Processing	3	-	-	3	60	40	3
U20PC630EC	Computer Networks	3	-	-	3	60	40	3
U20PE6XXEC	Professional Elective – I	3	-	-	3	60	40	3
U20OE6XXXX	Open Elective – IV	3	-	-	3	60	40	3
PRACTICALS								
U20PC611EC	Control Systems Engineering Lab	-	-	2	3	50	30	1
U20PC621EC	Digital Signal Processing Lab	-	-	2	3	50	30	1
U20PC631EC	Computer Networks Lab	-	-	2	3	50	30	1
U20PW619EC	Theme Based Project	-	-	2	-	-	30	1
TOTAL		20	-	8		630	450	24
GRAND TOTAL		28				1080		
Left over hours will be allocated for : Sports / Library / Proctorial Interaction / CC / RC / TC / ECA / CCA								
Note: Every student should acquire one online course certification equivalent to 2 Credits weightage during III – VII Semester								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)
B.E. – ECE : SEVENTH SEMESTER (2023 - 2024)

B.E VII Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U20PC710EC	Microwave Engineering	3	-	-	3	60	40	3
U20PC720EC	VLSI Design	3	-	-	3	60	40	3
U20PE7XXEC	Professional Elective – II	3	-	-	3	60	40	3
U20PE7XXEC	Professional Elective – III	3	-	-	3	60	40	3
U20PE7XXEC	Professional Elective – IV	3	-	-	3	60	40	3
PRACTICALS								
U20PC711EC	Microwave Engineering Lab	-	-	2	3	50	30	1
U20PC721EC	VLSI System Design Lab	-	-	2	3	50	30	1
U20PW719EC	Project Seminar	-	-	2	-	-	30	1
	TOTAL	15	-	6	-	400	290	18
	GRAND TOTAL	21				690		
Left over hours will be allocated for : Sports / Library / Proctorial Interaction / CC / RC / TC								
Note: Every student should acquire one online course certification equivalent to 2 Credits weightage during III – VII Semester								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-20)
B.E. – ECE : EIGHTH SEMESTER (2023 - 2024)

B.E VIII Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			
		Hours per Week			Duration in Hrs	Maximum Marks		Credits
		L	T	P/D		SEE	CIE	
THEORY								
U20PE8XXEC	Professional Elective – V	3	-	-	3	60	40	3
U20PE8XXEC	Professional Elective – VI	3	-	-	3	60	40	3
PRACTICALS								
U20PW819EC	Project / Internship	-	-	12	Viva-Voce	50	50	6
TOTAL		6	-	12		170	130	12
GRAND TOTAL		18				300		

OPEN ELECTIVES OFFERED BY ECE DEPARTMENT (R-20)

B.E. III SEMESTER				
S.No.	Elective	Code	Title	credits
1	OE – I	U20OE310EC	Introduction to Signals & Systems	2
2		U20OE320EC	Basics of Electronic Communication	2
3		U20OE320EC	Python Programming	2
B.E. IV SEMESTER				
1	OE – II	U20OE410EC	Mathematical Programming for Engineers	3
2		U20OE420EC	Introduction to Communication Systems	3
B.E. V SEMESTER				
1	OE – III	U20OE510EC	Sensors for Engineering Applications	3
B.E. VI SEMESTER				
1	OE – IV	U20OE610EC	Internet of Things and Applications	3
2		U20OE620EC	Introduction to Mobile communications	3

Professional Electives **(R-20)**

(Students can opt for all professional electives from single stream or several streams)

Professional Elective Stream	Semester – VI	Semester – VII			Semester – VIII	
	Professional Elective – I	Professional Elective – II	Professional Elective – III	Professional Elective – IV	Professional Elective – V	Professional Elective – VI
Embedded Systems and VLSI Stream	IoT Architectures and protocols (U20PE610EC)	Advanced Embedded Systems (U20PE710EC)	Field Programmable Gate Arrays (FPGA) Architectures (U20PE720EC)	Electronic Instrumentation (U20PE730EC)	Low Power VLSI Design (U20PE810EC)	Real Time Systems (U20 PE820EC)
Communication Engineering Stream	Mobile Cellular Communication (U20 PE620EC)	Optical Fiber Communication (U20 PE740EC)	Coding theory and Techniques (U20PE750EC)	Satellite communication (U20 PE760EC)	Global Positioning System (U20 PE830EC)	Radar and Navigation Systems (U20PE840EC)
Signal Processing Stream	DSP Processors and Architectures (U20PE630EC)	Speech and Audio Signal Processing (U20 PE770EC)	Digital Image and Video Processing (U20 PE780EC)	Biomedical Signal Processing (U20 PE790EC)	Image and Video processing using Machine Learning (U20PE850EC)	Adaptive Signal Processing (U20 PE860EC)
Networking Stream	Wireless Sensor Networks (U20PE640EC)	Network Security (U20PE711EC)	Network Management (U20 PE721EC)	Voice and Data Networks (U20 PE731EC)	Optical Networks (U20PE870EC)	Software Defined and Cognitive Radio networks (U20PE880EC)

Semester wise break up of Credits (R-20)

	Sem. - I	Sem. - II	Sem. - III	Sem. - IV	Sem. - V	Sem. - VI	Sem. - VII	Sem. - VIII	Proposed Scheme	AICTE Scheme
HS	3	3	2	3	1	4	-	-	16	12
BS	8	8	3	-	-	-	-	-	19	25
ES	8	9	-	-	-	-	-	-	17	24
PC	-	-	14	18	15	12	8	-	67	48
PE	-	-	-	-	1	4	9	6	20	18
OE	-	-	2	3	3	3	-	-	11	18
MC	-	-	✓	-	-	-	-	-	✓	✓
Project	-	-	-	1	1	1	1	6	10	15
MOOCs Course	-	-	-	-	-	-	-	2	2	-
Total	19	20	21	25	21	24	21	14	162	160

Proposed Open Elective Streams for ECE Students				
S.No.	Open Elective Streams	Open Electives Titles	No. of Credits	Semester
1	Basic Sciences (Maths)	Basics of Cryptology	2	III
		Linear Algebra and its Applications	3	IV
		Discrete Mathematics for Engineers	3	VI
2	Basic Sciences (Physics)	Smart Materials and Applications	2	III
		Fundamentals of Thin Film Technology and Applications	3	IV
3	Basic Sciences (Chemistry)	Battery Science and Technology	2	III
		Corrosion Science and its Applications	2	III
4	H&SS (English)	Basics of Entrepreneurship	3	IV
		Advances in Entrepreneurship	3	V
		Technical Writing and Professional Presentation	3	V
		Technical Writing and Professional Presentation	3	VI
		English for Competitive Exams	3	VI
5	Civil Engg. Stream	Green Buildings	2	III
		Disaster Management	3	IV
		Spatial Information Technologies	3	V
		Project Management	3	VI
6	CSE Stream	Introduction to Python Programming	2	III
		Introduction to Data Structures	3	IV
		Introduction to Object Oriented Programming	3	V
		Introduction to Data Base Management Systems	3	VI
7	IT Stream	Introduction to Linux	2	III
		Introduction to Scripting Languages	3	IV
		Introduction to Statistical Programming	3	V
		Machine Learning	3	VI
8	EEE Stream	Non Conventional Energy Sources	2	III
		Solar Power & Applications	3	IV
		Basics of Electrical Power Generation	3	V
		Electrical Installation and Safety	3	VI
9	Mech. Engg. Stream	Geometric Modelling	2	III
		Basics of Thermodynamics	2	III
		Optimization Methods	3	IV
		Introduction to Automobile Engineering	3	V
		Introduction to Robotics	3	V
		Additive Manufacturing and Applications	3	VI
		Industrial Administration & Financial Management	3	VI