



Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute of Information Technology, Pune-48
 (An Autonomous Institute affiliated to Savitribai Phule Pune University)

S.Y. B. TECH. (E & TC), SEMESTER III (PATTERN 2020)

Course Code	Course Title	Course Type	Teaching Scheme			Examination Scheme					Total	Credits
			L	T	P	CIE	ISE	SCE	ESE	PR/OR/TW		
ES21201ET	Probability and Statistics	TH	3	1	-	20	20	20	40	25	125	4
ETUA21202	Engineering Circuit Analysis	TH	3	-	2	20	20	20	40	25	125	4
ETUA21203	Data Structures	TH	3	-	2	20	20	20	40	25	125	4
ETUA21204	Digital System Design	TH	3	-	2	20	20	20	40	25	125	4
ETUA21205	Signals and Linear Systems	TH	3	-	-	20	20	20	40	-	100	3
ETUA21206	Electronics Workshop	CE	1	-	4	-	-	-	-	50	50	3
ETUA21207	Fundamentals of Electrical Machines and Drives	CE	1	-	2	-	-	-	-	50	50	2
M2	Mandatory Course	AU	-	-	-	-	-	-	-	-	-	-
	Total		17	1	12	100	100	100	200	200	700	24

S.Y. B. TECH. (ETC), SEMESTER IV (PATTERN 2020)

Course Code	Course Title	Course Type	Teaching Scheme			Examination Scheme					Total	Credits
			L	T	P	CIE	ISE	SCE	ESE	PR/OR/TW		
ETUA22201	Control system	TH	3	-	2	20	20	20	40	25	125	4
ETUA22202	Microcontroller and Applications	TH	3	-	2	20	20	20	40	25	125	4
ETUA22203	Analog Circuits	TH	3	-	2	20	20	20	40	25	125	4
ETUA22204	Analog and Digital Communication	TH	3	-	2	20	20	20	40	25	125	4
ES20205	Universal Human values 2	TH	2	1	-	20	20	20	40	25	125	3
ETUA22206	Object Oriented Programming	CE	1	-	4	-	-	-	-	50	50	3
ES22207ET	Soft Skills	CE	1	-	2	-	-	-	-	50	50	2
M2	Mandatory Course	AU	-	-	-	-	-	-	-	-	-	-
	Total		16	1	14	100	100	100	200	225	725	24

List of Mandatory Courses [FYBT: Induction training, SYBT: Environmental Sciences, TYBT: Indian Constitution, and Final Year B.Tech.: Essence of Indian Traditional Knowledge]. Please refer AICTE model curriculum for course contents.

HOD ETC

Dean Academics

Director

DIRECTOR
 Vishwakarma Institute of
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 Pune 411048



Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute of Information Technology, Pune-48
 Department of Electronics & Telecommunication Engineering

**Third Year B. Tech. Electronics & Telecommunication Engineering (TYBT) – Semester V
 (Pattern 2020)**

Course Code	Course	Course Type	Teaching Scheme			Examination Scheme					Total	Credits
			L	T	P	CIE	ISE	SCE	ESE	PR/OR/TW		
ES31201ET	Design and Analysis of Algorithms	TH	3	-	2	20	20	20	40	25	125	4
ETUA31202	Internet of Things	TH	3	-	2	20	20	20	40	25	125	4
ETUA31203	Machine Learning	TH	3	-	2	20	20	20	40	25	125	4
ETUA31204	Operating System	TH	3	-	-	20	20	20	40	-	100	3
ETUA31205	Professional Elective-I	TH	3	-	2	20	20	20	40	25	125	4
ETUA31206	Project-I	CE	-	-	4	-	-	-	-	25	25	2
ETUA31207	Intellectual Property Rights	CE	2	-	-	-	-	50	-	-	50	2
HET31201	Honors Course	TH	4	-	2/-	20	20	20	40	25	125	5/4
M3	Mandatory Course	AU	-	-	-	-	-	-	-	-	-	-
	Total	-	17/4	-	12/2/-	100/20	100/20	150/20	200/40	125/25	675/125	23/5/4

L: 1Hr. = 1 Credit, P: 2 Hrs. = 1 Credit, T: 1 hr. = 1 Credit, Audit Course: No Credits

List of Mandatory Courses [FYBT: Induction training, SYBT: Environmental Sciences, TYBT: Essence of Indian Traditional Knowledge, and Final Year B.Tech.: Indian Constitution].

Professional Elective-I


ETUA31205A: System Programming
 ETUA31205B: System Design using Verilog
 ETUA31205C: Information Theory and Coding Techniques
 ETUA31205D: Embedded Processors

Honors Course

HET31201A: Inferential Statistics (*Data Science*)
 HET31201B: Robotic System (*Robotic Technologies*)
 HET31201C: Introduction to Internet of Things (*IOT*)


BoS Chairman


Dean Academics


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DIRECTOR
 Vishwakarma Institute of
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 Pune 411048.



**Syllabus for
T.Y.B.Tech.
Electronics & Telecommunication
(Pattern 2020)**

**Department of
Electronics & Telecommunication
Engineering**

VISION:

- Excellence in Electronics & Telecommunication Engineering Education

MISSION:

- Provide excellent blend of theory and practical knowledge
- Establish centre of excellence in post graduate studies and research
- Prepare engineering professionals with highest ethical values and a sense of responsible citizenship

Program Educational Objectives (PEO):

1. Graduates of the program will become competent electronic engineers suitable for industry.
2. Graduates of the program will apply the mathematical and analytical abilities gained through core courses of Electronics and Communication engineering.
3. Graduates of the program will apply problem solving skills to develop hardware and/or software.
4. Graduates of the program will become responsible citizen.

Program Outcomes (PO):

A graduate of the program will have

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSO):

Graduates will be able to

1. Apply and demonstrate the usage of hardware and software platforms for variety of applications.
2. Apply different mathematical and statistical methods for analysis and design of signal processing and communication systems.

Graduate attributes:

1. Engineering knowledge
2. Problem Analysis
3. Design/Development of Solutions
4. Investigations of Complex Problems
5. Modern Tool Usage
6. The Engineer and Society
7. Environment and sustainability
8. Ethics
9. Individual and Teamwork
10. Communication
11. Project management and Finance
12. Life –long Learning



**Third Year B. Tech. Electronics & Telecommunication Engineering (TYBT) – Semester V
 (Pattern 2020)**

Course Code	Course	Course Type	Teaching Scheme			Examination Scheme					Total	Credits
			L	T	P	CIE	ISE	SCE	ESE	PR/OR/TW		
ES31201ET	Design and Analysis of Algorithms	TH	3	-	2	20	30	20	30	25	125	4
ETUA31202	Internet of Things	TH	3	-	2	20	30	20	30	25	125	4
ETUA31203	Machine Learning	TH	3	-	2	20	30	20	30	25	125	4
ETUA31204	Operating System	TH	3	-	-	20	30	20	30	-	100	3
ETUA31205	Professional Elective-I	TH	3	-	2	20	30	20	30	25	125	4
ETUA31206	Project-I	CE	1	-	2	-	-	-	-	25	25	2
ETUA31207	Intellectual Property Rights	CE	2	-	-	-	-	50	-	-	50	2
HET31201	Honors Course	TH	4	-	2/-	20	30	20	30	25	125	5/4
M3	Mandatory Course	AU	-	-	-	-	-	-	-	-	-	-
	Total	-	18/4	-	10/2/-	100/20	150/30	150/20	150/30	125/25	675/125	23/5/4

L: 1Hr. = 1 Credit, P: 2 Hrs. = 1 Credit, T: 1 hr. = 1 Credit, Audit Course: No Credits

List of Mandatory Courses [FYBT: Induction training, SYBT: Environmental Sciences, TYBT: Essence of Indian Traditional Knowledge, and Final Year B.Tech.: Indian Constitution].

Professional Elective-I

ETUA31205A: System Programming
 ETUA31205B: System Design using Verilog
 ETUA31205C: Information Theory and Coding Techniques
 ETUA31205D: Embedded Processors

Honors Course

HET31201A: Inferential Statistics (*Data Science*)
 HET31201B: Robotic System (*Robotic Technologies*)
 HET31201C: Introduction to Internet of Things (*IOT*)

BoS Chairman

Dean Academics

Director



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Department of Electronics & Telecommunication Engineering

Third Year B. Tech. Electronics & Telecommunication Engineering (TYBT) - Semester VI
(Pattern 2020)

Course Code	Course	Course Type	Teaching Scheme			Examination Scheme					Total	Credits
			L	T	P	CIE	ISE	SCE	ESE	PR/OR/TW		
ETUA32201	Computer Networks and Security	TH	3	-	2	20	30	20	30	25	125	4
ETUA32202	Power Electronics and Drives	TH	3	-	2	20	30	20	30	25	125	4
ETUA32203	Wireless Networks	TH	3	-	2	20	30	20	30	25	125	4
ETUA32204	Professional Elective-II	TH	3	-	2	20	30	20	30	25	125	4
IOEUA32205	Open Elective - I	TH	3	-	-	20	30	20	30	-	100	3
ETUA32206	Project - II	CE	1	-	2	-	-	-	-	25	25	2
HET32201	Honors Course	TH	4/3	-	2/4	20	30	20	30	25	125	5
M3	Mandatory Course	AU	-	-	-	-	-	-	-	-	-	
	Total	-	16/4/3	-	10/2/4	100/20	150/30	100/20	150/30	125/25	625/125	21/5

L: 1Hr. = 1 Credit, P: 2 Hrs. = 1 Credit, T: 1 hr. = 1 Credit, Audit Course: No Credits

List of Mandatory Courses [FYBT: Induction training, SYBT: Environmental Sciences, TYBT:, Essence of Indian Traditional Knowledge, and Final Year B.Tech.: Indian Constitution].

Professional Elective-II

ETUA32204A: Software Engineering
 ETUA32204B: CMOS IC Design
 ETUA32204C: Mobile Computing
 ETUA32204D: Biomedical Instrumentation

Honors Course

HET32201A: Big Data Analytics (*Data Science*)
 HET32201B: Robotic Drives and Programming (*Robotic Tech*)
 HET32201C: Communication Protocols and Devices in IOT (*IOT*)

Open Elective - I

IOEUA32205A: Social Science & Engineering Economics (*IT*)
 IOEUA32205B: Engineering Economics and FinTech (*Comp*)
 IOEUA32205C: Explainable Artificial Intelligence (XAI) for Engineering Applications (*AI&DS*)
 IOEUA32205D: Management Information System (*E&TC*)
 IOEUA32205E: Professional Practice, Law and Ethics (*Civil*)
 IOEUA32205F: Industrial Engineering (*Mech*)
 IOEUA32205G: Robotics Process Automation (*Mech*)
 IOEUA32205H: Green Software Development for Sustainable IT(*Comp*)
 IOEUA32205I: Industrial Automation (*E&TC*)
 IOEUA32205J: Robotics and Application(*E&TC*)
 IOEUA32205K: Generative AI(*AI&DS*)
 IOEUA32205L: Web 3.0 (*Comp*)

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Final Year B. Tech. Electronics & Telecommunication Engineering (Pattern 2020)
Module II (AY 2023-24)

Course Code	Course Title	Course Type	Teaching Scheme			Examination Scheme					Total	Credits
			L	T	P	CIE	ISE	SCE	ESE	PR/OR/TW		
ETUA40207	Semester Internship (Research / Industry)	CE-PR/OR	-	-	20	100	-	-	-	50	150	10
M4	Mandatory Course	AU	-	-	-	-	-	-	-	-	-	-
	Total		-	-	20	100	-	-	-	50	150	10

Final Year B. Tech. Electronics & Telecommunication Engineering (Pattern 2020)
Module III (AY 2023-24)


Course Code	Course Title	Course Type	Teaching Scheme			Examination Scheme					Total	Credits
			L	T	P	CIE	ISE	SCE	ESE	TW PR/OR		
ETUA42201	Professional Elective IV	TH	3	-	2	20	20	20	40	25	125	4
OEUA42202	Open Elective IV	TH	3	-	-	20	20	20	40	25	125	3
IOEUA42203	Open Elective V	TH	3	-	-	20	20	20	40	25	125	3
M4	Mandatory Course	AU	-	-	-	-	-	-	-	-	-	-
			9	-	2	60	60	60	120	75	375	10

Professional Elective IV
High Performance Computing

Open Elective IV
Supply Chain Management

Open Elective V
Natural language Processing


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Final Year B.Tech (Pattern 2020)



Final Year B. Tech. Electronics & Telecommunication Engineering (Pattern 2020)
Module IV (AY 2023-24)

Course Code	Course Title	Course Type	Teaching Scheme			Examination Scheme					Total	Credits
			L	T	P	CIE	ISE	SCE	ESE	PR/OR/TW		
ETUA40207	Semester Internship (Research / Industry)	CE-PR/OR	-	-	20	100	-	-	-	50	150	10
M4	Mandatory Course	AU	-	-	-	-	-	-	-	-	-	-
	Total		-	-	20	100	-	-	-	50	150	10

NOTE:

Students who will register for Module-I in Semester VII have to register either of Module-III or Module-IV in Semester VIII.

Students who will register for Module-II in Semester VII have to register for Module-V in Semester VIII.

BoS Chairman

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Final Year B. Tech. Electronics & Telecommunication Engineering (Pattern 2020)
Module V (AY 2023-24)

Course Code	Course Title	Course Type	Teaching Scheme			Examination Scheme					Total	Credits
			L	T	P	CIE	ISE	SCE	ESE	OR		
ETUA40201	Deep Learning and Edge AI	TH	2	-	-	20	20	20	40	-	100	2
ETUA40202	Professional Elective III	TH	2	-	-	20	20	20	40	-	100	2
IOEUA40203	Open Elective II	TH	2	-	-	20	20	20	40	-	100	2
IOEUA40204	Open Elective III	TH	2	-	-	20	20	20	40	-	50	2
ETUA40205	Research Methodology and IPR	CE	2	-	-		-	50	-	-		
ETUA40206	Major Project	CE-PR/OR			20	100				50	150	10
M4	Mandatory Course	AU	-	-	-	-	-	-	-	-	-	-
	Total		10	-	20	180	80	130	160	50	600	20

L: 1Hr. = 1 Credit, P: 2 Hrs. = 1 Credit, T: 1 hr. = 1 Credit, Audit Course: No Credits

List of Mandatory Courses [FYBT: Induction training, SYBT: Environmental Sciences, TYBT: Essence of Indian Traditional Knowledge, and Final Year B.Tech.: Indian Constitution].

Open Elective -II	Open Elective -III
IOEUA40203A: Introduction to Industry 4.0 and Industrial IOT	IOEUA40204A: Social Media Analytics
IOEUA40203B: Software Testing and Quality Assurance	IOEUA40204B: Organizational Behavior
IOEUA40203C : Data Centric AI	IOEUA40204C : Data Ethics
IOEUA40203D : Computer Vision	IOEUA40204D : Business Intelligence
IOEUA40203E : Project Management: Planning, Execution, Evaluation and Control	IOEUA40204E : Business Analytics
IOEUA40203F : Solar and Wind Energy	IOEUA40204F : Project management and Economics

Professional Elective -III
ETUA40202A: Analog IC Design
ETUA40202B: Smart Antennas
ETUA40202C : Power Electronics for Electric Vehicle
ETUA40202D : Image and Video Processing

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Final Year B.Tech (Pattern 2020)

E & TC Engineering

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