

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus Structure: B. Tech. (Electronics Engg.)

S.Y. B. Tech (Electronics Engineering) w.e.f. Academic Year 2019-20
T.Y. B. Tech (Electronics Engineering) w.e.f. Academic Year 2020-21
Final Year B. Tech (Electronics Engineering) w.e.f. Academic Year 2021-22

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
FACULTY OF SCIENCE & TECHNOLOGY
Electronics Engineering

Programme Educational Objectives and Outcomes

A. Program Educational Objectives

1. To make students competent for professional career in Electronics & allied fields.
2. To build strong fundamental knowledge amongst student to pursue higher education and continue professional development in Electronics & other fields
3. To imbibe professional ethics, develop team spirit and effective communication skills to be successful leaders and managers with a holistic approach.
4. To nurture students to be sensitive to ethical, societal & environmental issues while conducting their professional work.

B. Program Outcomes

Engineering Graduate will be able to –

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.

C. Program Specific Outcomes

1. **Algorithms :** Graduate can design, realize and validate algorithms for different analog and digital electronic systems
2. **Systems:** Graduate can design, implement and test different analog and digital electronic systems
3. **Self-Learning:** Graduate with his sound fundamentals is prepared to comprehend applications of the Electronics engineering through self-learning mode



PAH SOLAPUR UNIVERSITY, SOLAPUR
Faculty of Science & Technology (Revised from 2018-19)

Credit System structure of S.Y. B. Tech. Electronics Engineering W.E.F. 2019-20

Semester I

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EN211	Engineering Mathematics – III	3	1	–	4	30	70	25	125
EN212	Electronic Circuit Analysis and Design	4	–	–	4	30	70	-	100
EN213	Network Theory and Analysis	4	-	–	4	30	70	-	100
EN214	Digital Logic Design	4	–	–	4	30	70	-	100
EN215	Analog Communication	3	–	–	3	30	70	-	100
Sub Total		18	1	–	19	150	350	25	525
ENV21	Environmental Studies	1	-	-	-	-	-	-	1
Course Code	Laboratory Course Name								
							ESE		
							POE	OE	
EN212	Electronic Circuit Analysis and Design	–	–	2	1	–	50*	--	25
EN213	Network Theory and Analysis	–	–	2	1	–	–	–	25
EN214	Digital Logic Design	--	--	2	1	--	25	--	25
EN215	Analog Communication	–	–	2	1	–	--	–	25
EN216	Object Oriented Programming with C++	--	1	2	2	–	50	–	50
Sub Total		--	1	10	6	–	125		150
Grand Total		18	2	10	25	150	475	175	800

Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE-In Semester Exam, ESE - End Semester Exam,
ICA- Internal Continuous Assessment ESE - University Examination (Theory &/ POE &/Oral examination)

- **Note:**

1. *- Practical and Oral Examination of Electronics Circuit Analysis and Design includes some of the practical from Network Theory and Analysis
2. Student is required to study and pass Environmental Science subject in Second Year to become eligible for award of degree.
3. Batch size for the practical /tutorial shall be of 20 students. On forming the batches, if the strength of remaining students exceeds 9, then a new batch shall be formed.
4. Vocational Training (evaluated at Final Year B.Tech Part- I) of minimum 15 days shall be completed in any vacation after S.Y. Part-II but before Final Year Part-I & the report shall be submitted and evaluated in Final Year Part-I
5. Student shall select one Self Learning Module at T.Y. Part I and T.Y. Part II each from Technical and Humanities and Social Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group
6. Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology
7. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable



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Credit System Structure of S.Y. B. Tech. Electronics Engineering W.E.F. 2019-20

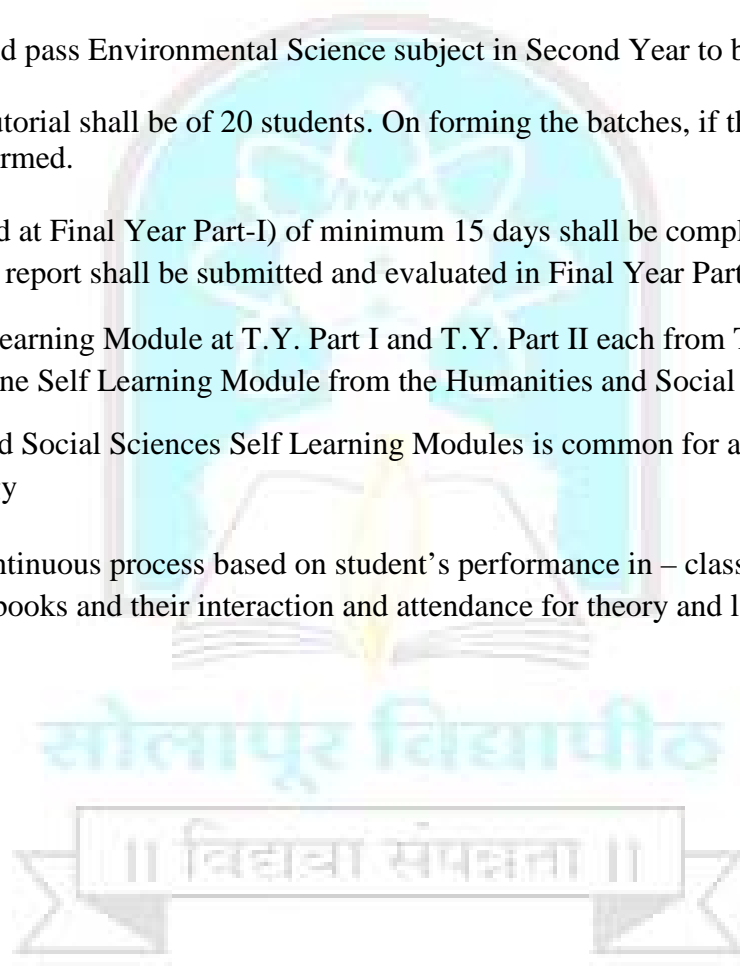
Semester II

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EN221	Electrical Machines	3	–	–	3	30	70	-	100
EN222	Control Systems	4	–	–	4	30	70	-	100
EN223	Data Structures	3	–	–	3	30	70	-	100
EN224	Analog Integrated Circuits	4	–	–	4	30	70	-	100
EN225	Signals and Systems	4	1	–	5	30	70	25	125
Sub Total		18	1	–	19	150	350	25	525
ENV22	Environmental Studies	1	-	-	-	-	-	-	1
Course Code	Laboratory Course Name								
							ESE		
							POE	OE	
EN221	Electrical Machines	–	–	2	1	–	–	--	25
EN222	Control Systems	–	–	2	1	–	-	25	25
EN223	Data Structures	–	–	2	1	–	50	–	25
EN224	Analog Integrated Circuits	–	–	2	1	–	50	–	25
EN226	Software Simulation Tools	–	1	2	2	–	–	–	50
Sub Total		--	1	10	6	–	125		150
Grand Total		18	2	10	25	150	475	175	800

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ICA- Internal Continuous Assessment ESE - University Examination (Theory &/ POE &/Oral examination)

- Note:

1. \$ Practical and Oral Examination of Electronics Circuit Analysis and Design – II includes some of the simulation practical from Software Simulation Tools
2. Student is required to study and pass Environmental Science subject in Second Year to become eligible for award of degree.
3. Batch size for the practical /tutorial shall be of 20 students. On forming the batches, if the strength of remaining students exceeds 9, then a new batch shall be formed.
4. Vocational Training (evaluated at Final Year Part-I) of minimum 15 days shall be completed in any vacation after S.Y. Part-II but before Final Year Part-I & the report shall be submitted and evaluated in Final Year Part-I
5. Student shall select one Self Learning Module at T.Y. Part I and T.Y. Part II each from Technical and Humanities and Social Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group
6. Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology
7. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable



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Credit System Structure of T.Y. B. Tech. Electronics Engineering W.E.F. 2020-21

Semester I

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EN311	Digital Communications	4	-	-	4	30	70	--	100
EN312	Digital Signal Processing	4	-	-	4	30	70	-	100
EN313	Microcontrollers	4	-	-	4	30	70	-	100
EN314	Electro Magnetic Engineering	4	1	-	5	30	70	25	125
EN315	Open Elective I	3	-	-	3	30	70	25	125
SLH31	Self-Learning Module I	-	-	-	2	--	50	-	50
EN317	Programming with Java	2	-	-	2	--	--	50	50
Sub Total		21	1	-	24	150	400	100	650
Course Code	Laboratory Course Name								
						ESE			
						POE	OE		
EN311	Digital Communications	-	-	2	1	-	--	25	50
EN312	Digital Signal Processing	-	-	2	1	-	--	--	25
EN313	Microcontrollers	--	--	2	1	--	50	--	75
EN317	Programming with Java	-	-	2	1	-	50	-	50
Sub Total		--	-	8	4	-	125	75	200
Grand Total		21	1	8	28	150	525	175	850

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Faculty of Science & Technology (Revised from 2018-19)

Credit System structure of T.Y. B. Tech. Electronics Engineering W.E.F. 2020-21

Semester II

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EN321	Open Elective II	3	–	–	3	30	70	-	100
EN322	Computer Networks	3	–	–	3	30	70	-	100
EN323	Embedded Systems	4	–	–	4	30	70	-	100
EN324	Electronic System Design	3	1	–	4	30	70	-	100
EN325	VLSI Design	4	–	–	4	30	70	–	100
EN326	Self-Learning Module II	–	–	–	2	--	50	–	50
Sub Total		17	1	–	20	150	400	–	550
Course Code	Laboratory Course Name								
							ESE		
							POE	OE	
EN321	Open Elective II	–	–	2	1	–	–	–	25
EN322	Computer Networks	–	–	2	1	–	–	25	50
EN323	Embedded Systems	–	–	2	1	–	50	–	75
EN324	Electronic System Design	–	–	2	1	–	-	50	75
EN325	VLSI Design	–	–	2	1	–	–	–	25
EN327	Mini Hardware Project	–	–	2	1	–	–	–	50
Sub Total			–	12	6	–	125		300
Grand Total		17	1	12	26	150	525	175	850

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• **Note –**

1. Batch size for the practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.
2. Vocational Training (evaluated at Final Year Part-I) of minimum 15 days shall be completed in any vacation after S.Y. Part-II but before Final Year Part-I & the report shall be submitted and evaluated in Final Year Part-I
3. Student shall select one Self Learning Module at T.Y. Part I and T.Y. Part II each from Technical and Humanities and Social Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group
4. Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology
5. Minimum four assignments for Self Learning Modules at T.Y. Part I and T.Y. Part II shall be submitted by the students which shall be evaluated by a Module Coordinator assigned by institute / department
6. Project group for T.Y.(Electronics) Part II Mini Project shall not be of more than **three** student
7. Project group for Final Year (Electronics) Part I and Part II shall not be of more than **three** student.
8. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable



PAH SOLAPUR UNIVERSITY, SOLAPUR
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Credit System structure of Final Year B. Tech. Electronics Engineering W.E.F. 2021-22

Semester I

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EN411	Power Electronics	4	–	–	4	30	70	--	100
EN412	CMOS VLSI Design	4	–	–	4	30	70	-	100
EN413	Mobile Technology	4	-	–	4	30	70	25	125
EN414	Internet of Things	3	1	–	4	30	70	–	100
EN415A to EN415C	Elective - I	3	1	–	4	30	70	25	125
Sub Total		18	2	–	20	150	350	50	550
Course Code	Laboratory Course Name								
							ESE		
							POE	OE	
EN411	Power Electronics	–	–	2	1	–	50	--	25
EN412	CMOS VLSI Design	–	–	2	1	–	–	25	25
EN414	Internet of Things	--	--	2	1	--	--	25	25
EN416	Project- I	–	–	4	2	–	–	–	50
EN417	Vocational Training	–	–	–	1	–	–	–	25
Sub Total		--	-	10	6		100		150
Grand Total		18	2	10	26	150	450	200	800

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Credit System structure of Final Year B. Tech. Electronics Engineering W.E.F. 2021-22

Semester II

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
EN421	Advanced Communication Engineering	4	–	–	4	30	70	-	100
EN422	Audio Video Systems	4	–	–	4	30	70	-	100
EN423A to EN423C	Elective – II	4	-	–	4	30	70	25	125
EN424A to EN424C	Elective – III	4	-	–	4	30	70	25	125
Sub Total		16	-	–	16	120	280	50	450
Course Code	Laboratory Course Name								
							ESE		
							POE	OE	
EN421	Advanced Communication Engineering	–	–	2	1	–	--	50	75
EN422	Audio Video Systems	–	–	2	1	–	–	50	75
EN425	Project -II	–	–	8	4	–	–	100	200
Sub Total			–	12	6	–	200		350
Grand Total		16	-	12	22	120	480	200	800

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<i>Elective I</i>		<i>Elective II</i>		<i>Elective III</i>	
<i>Course Code</i>	<i>Course</i>	<i>Course Code</i>	<i>Course</i>	<i>Course Code</i>	<i>Course</i>
EN415A	Image Processing	EN423A	Speech processing	EN424A	Broadband Communication
EN415B	Mechatronics	EN423B	PLC and Industrial Controllers	EN424B	Biomedical Instrumentation
EN415C	Database Management Systems	EN423C	Data Analytics	EN424C	Computer Architecture

• **Note –**

1. Batch size for the practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining students exceeds 7, then a new batch shall be formed.
2. Vocational Training (evaluated at Final Year Part-I) of minimum 15 days shall be completed in any vacation after S.Y. Part-II but before Final Year Part-I & the report shall be submitted and evaluated in Final Year Part-I
3. Appropriate Elective I,II & III Subjects may be added when required.
4. Project group for Final Year (Electronics) Part I and Part II shall not be of more than **three** students.
5. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable

