Punyashlok Ahilyadevi Holkar Solapur University, Solapur

Name of the Faculty: Science &Technology

(As per New Education Policy 2020)

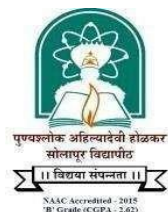# Structure: Electronics & Telecommunication Engineering

Name of the Course: F.Y. B. Tech. to Final Y. B. Tech.

(Syllabus to be implemented from June 2023)

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY,SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum for Electronics & TelecommunicationEngineering with effect from 2023-24

Semester I (Common for All Engineering Branches)

Course Type	Course Code	Name of the Course	Engagement Hours		Credits	FA	SA		Total
			L	P		ESE	ISE	ICA	
BSC	BS-01/ BS-02	Engineering Physics / Engineering Chemistry $	3	2	4	70	30	25	125
	BS-03	Engineering Mathematics-I	3	2	4	70	30	25	125
ESC	ES-01/ ES-02	Basics of Civil and Mechanical Engineering /Basic Electrical & Electronics Engineering $	3	2	4	70	30	25	125
	ES-03	Engineering Mechanics	3	2	4	70	30	25	125
AEC	AE-01	Communication Skills	1	2	2		25	25	50
CC	CC-01	Sports and Yoga or NSS/NCC/UBA (Liberal Learning Course-I)	1	2	2			25	25
SEC	SE-01	Workshop Practices		2	1			25	25
		Total	**14**	**14**	**21**	**280**	**145**	**175**	**600**
		Student Induction Program**							

Semester II (Common for All Engineering Branches)

Course Type	Course Code	Name of the Course	Engagement Hours		Credits	FA	SA		Total
			L	P		ESE	ISE	ICA	
BSC	BS-01/ BS-02	Engineering Physics / Engineering Chemistry $	3	2	4	70	30	25	125
	BS-04	Engineering Mathematics - II	3	2	4	70	30	25	125
ESC	ES-01/ ES-02	Basics of Civil and Mechanical Engineering / Basic Electrical & Electronics Engineering $	3	2	4	70	30	25	125
		Engineering Graphics and CAD		4	2		25	50	75
SEC	SE-02	Data Analysis and Programming Skills	1	2	2		25	25	50
CC	CC-02	Professional Personality Development (Liberal Learning Course-II)	1	2	2		25	25	50
IKS	IKS-01	Introduction to Indian Knowledge System	2		2		25	25*	50
		Total	**13**	**14**	**20**	**210**	**190**	**200**	**600**
		Democracy, Elections and Good Governance *	1			50			

For IKS activity report should be submitted

BSC- Basic Science Course   ESC- Engineering Science Course,   PCC- Programme Core Course ,

AEC- Ability Enhancement Course, IKS- Indian Knowledge System,   CC- Co-curricular Courses ,

VSEC-Vocational and Skill Enhancement Course

- Legends used–

L	Lecture	FA	Formative Assessment
T	Tutorial	SA	Summative Assessment
P	Lab Session	ESE	End Semester Examination
		ISE	In Semester Evaluation
		ICA	Internal Continuous Assessment

- **Notes-**

1. $ - Indicates approximately half of the total students at F. Y. will enroll under Group A and remaining will enroll under Group B.

   Group A will take up course of Engineering Physics (theory & laboratory) in Semester I and will take up course of Engineering Chemistry (theory & laboratory) in semester II.

   Group B will take up course of Engineering Chemistry (theory & laboratory) in Semester I and will take up course of Engineering Physics (theory & laboratory) in semester II.

2. # - For the Course (C113) Basic Electrical & Electronics Engineering, Practicals of Basic Electrical Engineering and Basic Electronics Engineering will be conducted in alternate weeks.

3. @ - For the Course (C113) Basics of Civil and Mechanical Engineering, Practicals of Basics of Civil Engineering and Basics of Mechanical Engineering will be conducted in alternate weeks.

4. In Semester Evaluation (ISE) marks shall be based upon student's performance in minimum two tests & mid-term written test conducted & evaluated at institute level.

   Internal Continuous Assessment Marks (ICA) is calculated based upon student's performance during laboratory sessions / tutorial sessions.

5. *- Democracy, Elections & Good Governance is mandatory course. The marks earned by student with this course shall not be considered for calculation of SGPA/CGPA. However, student must complete End Semester Examination (ESE) of 50 marks (as

prescribed by university) for fulfillment of this course. This course is not considered as a passing head for counting passing heads for ATKT. However, student must pass this subject for award of the degree.

6. Student must complete induction program of minimum five days before commencement of the regular academic schedule at the first semester.

** GUIDELINES FOR INDUCTION PROGRAM (C119)

New entrants into an Engineering program come with diverse thoughts, mind set and different social, economic, regional and cultural backgrounds. It is important to help them adjust to the new environment and inculcate in them the ethos of the institution with a sense of larger purpose.

An induction program for the new UG entrant students is proposed at the commencement of the first semester. It is expected to complete this induction program before commencement of the regular academic schedule.

Its purpose is to make new entrants comfortable in their new environment, open them up, set a healthy daily routine for them, create bonding amongst the peers as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature.

The Induction Program shall encompass (but not limited to) below activity –

1. Physical Activities
2. Creative Arts
3. Exposure to Universal Human Values
4. Literary Activities
5. Proficiency Modules
6. Lectures by Experts / Eminent Persons
7. Visit to Local Establishments like Hospital /Orphanage
8. Familiarization to Department

Induction Program Course do not have any marks or credits however performance of students for Induction Program is assessed at institute level using below mandatory criteria –

1. Attendance and active participation
2. Report writing
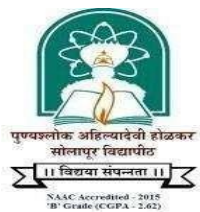
PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum of Electronics and Telecommunication Engineering
With effect from 2024-2025

Semester –III

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	ENTPCC-01	Network Theory Analysis	3			03	70	30			100
PCC	ENTPCC-02	Electronics Circuit Analysis & Design	3			03	70	30			100
PCC	ENTPCC-03	Analog and Digital Communication	3		2	04	70	30	25	25	150
CEP/FP	ENTFP-01	Electronics Circuit Analysis & Design Lab			2	01			25	25	50
CEP/FP	ENTFP-02	PCB Design Lab			2	01			25	25	50
Entrepreneurship	EM-01	Product Development and Entrepreneurship	1	1		02		50	25		75
OE	OE-01	Open Elective-I	2		2	03	70	30	25		**125**
MD M	ENTMDM-01	MD Minor-I	2		2	03	70	30	25		**125**
VEC	VEC-01	Universal Human Values	1		2	02	50*		25		**75**
		Total	15	1	12	22	400	200	175	75	850
		Environmental Science	1								

*For UHV MCQ-based examination to be conducted. The red colour indicates activities that are connected with other programs

  BSC- Basic Science Course,   ESC- Engineering Science Course,   PCC- Programme Core Course,

  AEC- Ability Enhancement Course, IKS- Indian Knowledge System, CC- Co-curricular Courses, VSEC-Vocational and Skill Enhancement Course

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	ENTPCC-04	Signals and Systems	3			03	70	30			100
PCC	ENTPCC-05	Control System	2	1		03	70	30	25		125
PCC	ENTPCC-06	Analog Integrated Circuits	3		2	04	70	30	25	25	150
SEC	ENTSEC-01	Data Structure	1		2	02			25	25	50
Economic/ Management	EM-02	Project Management and Economics	2		0	02		25	25		50
OE	OE-02	Open Elective-II	2		2	03	70	30	25		125
MDM	ENTMDM-02	MD Minor-II	2		2	03	70	30	25		125
VEC	VEC-01	Professional Ethics	1		2	02	50*		25		75
		Total	**16**	**1**	**10**	**22**	**400**	**175**	**175**	**50**	**800**
		Environmental Science	**1**				**40**	**10**			**50**

*VEC-01 Examination will be MCQ based

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PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum of Electronics and Telecommunication Engineering

With effect from 2025-2026

Semester –V

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/POE	
PCC	ENTPCC-07	Electromagnetic Field Theory	3			03	70	30			100
PCC	ENTPCC-08	Digital Signal Processing	3		2	04	70	30	25		125
PCC	ENTPCC-09	Microcontrollers and Applications	3		2	04	70	30	25	25	150
PEC	ENTPEC-01	Programme Elective Course-I	3		2	04	70	30	25		125
AEC	AEC-02	Creativity and Design Thinking	1		2	02	50*		25		75
OE	OE-03	Interdisciplinary Mini Project	1		2	02			25	25	50
MDM	ENTMDM-03	MD Minor-III	2		2	03	70	30	25		125
		Total	**16**		**12**	**22**	**400**	**150**	**150**	**50**	**750**

* MCQ examinations

 BSC- Basic Science Course   ESC- Engineering Science Course,   PCC- Programme Core Course,

 AEC- Ability Enhancement Course, IKS- Indian Knowledge System,   CC- Co-curricular Course,

 VSEC-Vocational and Skill Enhancement Course

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA				Total
			L	T	P		ESE	ISE	ICA	OE/POE		
PCC	ENTPCC-10	Advanced Mobile Communication	3			03	70	30				100
PCC	ENTPCC-11	Electronics System Design	2		2	03	70	30	25	25		150
PCC	ENTPCC-12	Optical Communication	3			03	70	30	25			125
PEC	ENTPEC-02	Programme Elective-II	3		2	04	70	30	25	25		150
PEC	ENTPEC-03	Programme Elective-III	3		2	04	70	30	25			125
SEC	ENTSEC-02	Hardware Mini Project			4	02			25	50		75
MDM	ENTMDM-04	MD Minor-IV	2		2	03	70	30	25			125
		Total	**16**		**12**	**22**	**420**	**180**	**150**	**100**		**850**

BSC- Basic Science Course   ESC- Engineering Science Course,   PCC- Programme Core Course,

AEC- Ability Enhancement Course,   IKS- Indian Knowledge System,   CC- Co-curricular Courses ,

VSEC-Vocational and Skill Enhancement Course

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA		SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	ENTPCC-13	Microwave Engineering	3			03	70	30			100
PCC	ENTPCC-14	Data Communication	2		2	03	70	30	25	25	150
PEC	ENTPEC-04	Programme Elective-IV or MOOCS	3##		2#	04	70	30	25#		125
Project	ENTProject	Capstone Project			8	04			100	100	200
RM	RM	Research Methodology and IPR	3		2	04	70	30	25		125
MDM	ENTMDM-05	MD Minor-V	2			02	70	30			100
		Total	**13**		**14**	**20**	**350**	**150**	**175**	**125**	**800**

* MCQ examinations   ## Students should attend NPTEL in that 3 hrs   #Mini Project related to NPTEL course and ICA marks be given based on that

BSC- Basic Science Course   ESC- Engineering Science Course,   PCC- Programme Core Course,

AEC- Ability Enhancement Course,   IKS- Indian Knowledge System,   CC- Co-curricular Courses, VSEC-Vocational and Skill Enhancement Course

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	ENTPCC-15	Wireless Sensor Network	4#			04	100				100
PEC	ENTPEC-05	Programme Elective-V or MOOCS	4#			04	100				100
OJT	ENTOJT	On-Job Training			24	12			200	100	300
		Total	**8**		**24**	**20**	**200**		**200**	**100**	**500**

 # Students will practice or attend in Self-Learning mode or MOOCS.

BSC- Basic Science Course   ESC- Engineering Science Course,   PCC- Programme Core Course,

AEC- Ability Enhancement Course,   IKS- Indian Knowledge System,   CC- Co-curricular Courses,

VSEC-Vocational and Skill Enhancement Course

Basket of Program Elective Course (PEC)

PEC/Sem	Course code and name
ENTPEC - 01/ V	ENTPEC – 01A: Digital Logic Design ENTPEC – 01B: Fundamentals of Image Processing
ENTPEC - 02/ VI	ENTPEC – 02A: VLSI Design ENTPEC – 02B: Digital Image Processing
ENTPEC - 03/ VI	ENTPEC – 03A: Embedded Systems ENTPEC – 03B Pattern Recognition
ENTPEC - 04/ VII OR	ENTPEC – 04A: CMOS VLSI ENTPEC – 04B: Computer Vision
ENTPEC - 04/ VII	MOOC Courses offered by NPTEL/SWAYAM ENTPEC – 04C : <As per the list provided by BoS>
ENTPEC - 05/ VIII OR	ENTPEC – 05A: Advanced Embedded System ENTPEC – 05B: Image Processing Applications
ENTPEC - 05/ VIII	MOOC Courses offered by NPTEL/SWAYAM ENTPEC – 05C: <As per the list provided by BoS>

- Students will opt for semester-wise PECs to develop expertise in the specific area.

Basket of Multidisciplinary Minor (MDM): Multidisciplinary Minors are for the students of Other Program

A) Multidisciplinary Minor in "Controllers and Applications"

Semester	Course Code	Course Title
III	ENTMDM-01A	Digital Techniques
IV	ENTMDM-02A	8051 Microcontroller
V	ENTMDM-03A	PIC Microcontroller
VI	ENTMDM-04A	Advanced Microcontrollers
VII	ENTMDM-05A	Programmable Logic Controller

B) Multidisciplinary Minor in "Internet of Things"

Semester	Course Code	Course Title
III	ENTMDM-01B	Sensor Technology
IV	ENTMDM-02B	Fundamentals of IoT
V	ENTMDM-03B	IoT Networks and Security
VI	ENTMDM-04B	Industrial IoT
VII	ENTMDM-05B	IoT Cloud Platform

Honors Structure

A) Honors in "Artificial Intelligence and Machine Learning"

Semester	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA		Total
			L	T	P		ESE	ISE	ICA	
III	ENTHON-01A	Computational Statistics	3	1		4	70	30	25	125
IV	ENTHON-02A	Artificial Intelligence	3		2	4	70	30	25	125
V	ENTHON-03A	Machine Learning	3		2	4	70	30	25	125
VI	ENTHON-04A	AI Applications	3		2	4	70	30	25	125
VII	ENTHON-05A	Mini Project			4*	2			50	50
		Total	**12**	**1**	**10**	**18**	**280**	**120**	**150**	**550**

* Indicates Contact Hours

B) Honors in "Data Science"

Semester	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA		Total
			L	T	P		ESE	ISE	ICA	
III	ENTHON-01B	Database Management System	3	1		4	70	30	25	125
IV	ENTHON-02B	Machine Learning	3		2	4	70	30	25	125
V	ENTHON-03B	Data Analytics	3		2	4	70	30	25	125
VI	ENTHON-04B	Business Intelligence	3		2	4	70	30	25	125
VII	ENTHON-05B	Mini Project			4*	2			50	50
		Total	**12**	**1**	**10**	**18**	**280**	**120**	**150**	**550**

* Indicates Contact Hours

C) Honors in "Internet of Things"

Semester	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA		Total
			L	T	P		ESE	ISE	ICA	
III	ENTHON-01C	Fundamental of IoT	3	1		4	70	30	25	125
IV	ENTHON-02C	Industrial IoT	3		2	4	70	30	25	125
V	ENTHON-03C	IoT Cloud Platform	3		2	4	70	30	25	125
VI	ENTHON-04C	Architecting IoT Solutions	3		2	4	70	30	25	125
VII	ENTHON-05C	Mini Project			4*	2			50	50
		Total	**12**	**1**	**10**	**18**	**280**	**120**	**150**	**550**

* Indicates Contact Hours

D) Honors in "Railway Engineering"

Semester	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA		Total
			L	T	P		ESE	ISE	ICA	
III	ENTHON-01D	Railway Engineering: A Beginner's Perspective	3	1		4	70	30	25	125
IV	ENTHON-02D	Data Communication and Signaling in Railway	3		2	4	70	30	25	125
V	ENTHON-03D	Applications of IT and Control Engineering in Railway	3		2	4	70	30	25	125
VI	ENTHON-04D	Advanced Communication and Modern Signaling in Railway	3		2	4	70	30	25	125
VII	ENTHON-05D	Mini Project			4*	2			50	50
		Total	**12**	**1**	**10**	**18**	**280**	**120**	**150**	**550**

Honors with Research

Semester	Course Code	Name of the Course	Engagement Hours	Credits	SA		Total
			P		ICA	OE	
VII	ENTRES-01	Research Project Phase-01	9#	9	100	100	200
VIII	ENTRES-01	Research Project during OJT	9##	9	100	100	200
		Total		**18**	**200**	**200**	**400**

 # Along with 9 hrs of engagement hours, 4.5 hrs. activities for preparation for community engagement and service, preparation of reports, etc.

Along with 9 hrs of engagement hours, 4.5 hrs. activities for preparation for community engagement and service, preparation of reports, etc. and independent reading during on job training and preferably related to on job training activities.

Open Elective Courses

List of Open Electives 01   **(Semester –III)**

1. OE-01A: Advanced Mathematics and Statistics
2. OE-01B Digital Marketing and E-Commerce
3. OE-01C Humanities and Social Sciences
4. OE-01D Industrial and Quality Management
5. OE-01E Mathematics for Software and Hardware
6. OE-01F Soft Skills and Personality Development

List of Open Electives 02   **(Semester –IV)**

1. OE-02A Entrepreneurship and Innovation
2. OE-02B Environmental Sustainability
3. OE-02C Renewable Energy
4. OE-02D Measurement, Instrumentation and Sensors
5. OE-02E Operation Research
6. OE-02F Computational Mathematics
7. OE-02G Professional Business Communication

Open Electives 03 (Semester –V)

1. Interdisciplinary Mini Project