Curriculum Structure for B. Tech. Electronics and Telecommunication Engineering Programme

(In light of NEP 2020)

NCrF Level 6

(NEP_Version II)

For students admitted in 2023-24 onwards

Government College of Engineering, Amravati

(An Autonomous Institute of Government of Maharashtra)

Near Kathora Naka, Amravati, Maharashtra
PIN 444604

www.gcoea.ac.in

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Structure for B. Tech. Programme in light of NEP 2020

For students admitted in 2023-24 onwards

Key Features of Curriculum

1. Multiple entry and exit option after every year.
2. Provision for Open Electives (OE), Vocational and Skill Enhancement Courses (VSE), Ability Enhancement Courses (AE), Indian Knowledge System (IKS), Value Education Courses (VE), Co-Curricular Courses (CC) in addition to program core courses.
3. Mandatory internship of one semester.
4. Credits for Value education courses, Ability Enhancement Courses, Co-Curricular Curricular Activities.
5. Mandatory Non-Credit Courses.
6. Interdisciplinary and multidisciplinary education through single and double minors and open electives.
7. Skill based courses and multiple exit level.
8. Provision for learning in online mode through Swayam/ NPTEL etc courses
9. Provision for B.Tech. Honours with Research degree through research project.
10. Opportunity for learner to choose courses of their interest in all disciplines.
11. Provision of Skill Based Courses and internship/Field project/mini projects for exit options at each level.
12. Flexibility for all types of learners i.e. Good, Normal and Exit

Good Students	Normal Students	Exit
B. Tech. Major with Multidisciplinary Minor	B. Tech. Major with Multidisciplinary Minor	Additional 08 credits in the form of skill-based courses / labs, internship, mini projects shall be offered in 8 weeks.
B. Tech. Honors and Multidisciplinary Minor	--	
B. Tech. Honors with Research and Multidisciplinary Minor	--	
B. Tech. with Double Minor (Multidisciplinary and Specialization Minor)	--	

Credit Distribution for each year and Exit Option

NCrFLevel	Year / Semester	Exit Option	Credits	Additional Credits for exit students	Total Credits
4.5	Semester I & II	U. G. Certificate	43	08	51
5.0	Semester III & IV	U. G. Diploma	84	08	92
5.5	Semester V & VI	B. Vocational/B.Sc. Engg.	127	08	135
6.0	Semester VII & VIII	B. Tech.Major with Multidisciplinary Minor	167	--	167
		B. Tech. Honors and Multidisciplinary Minor	167+18=185	--	185
		B. Tech. Honors with Research and Multidisciplinary Minor	167+18=185	--	185
		B. Tech. with Double Minor (Multidisciplinary and Specialization Minor)	167+18=185	--	185

Course Category-wise Credit Distribution

Course Category	As per NEP GR	GCOEA Credits	CC	As per NEP GR	GCOEA Credits
BSC/ESC	30	30	BS	14-18	15
			ES	16-12	15
Program Courses	64-76	67	PC	44-56	47
			PE	20	20
Multidisciplinary Courses	22	22	MM	14	14
			OE	8	8
Skill Courses	8	8	VSE	8	8
Humanities, Social Science & Management (HSSM)	14	14	AE	4	4
			EM	4	4
			IKS	2	2
			VE	4	4
Experiential Courses	22	22	RM	4	4
			FP	2	2
			PR	4	4
			IN/OJT	12	12
Liberal Learning Courses	4	4	CC	4	4
Total Credits	**160-176**	**167**		**160-176**	**167**

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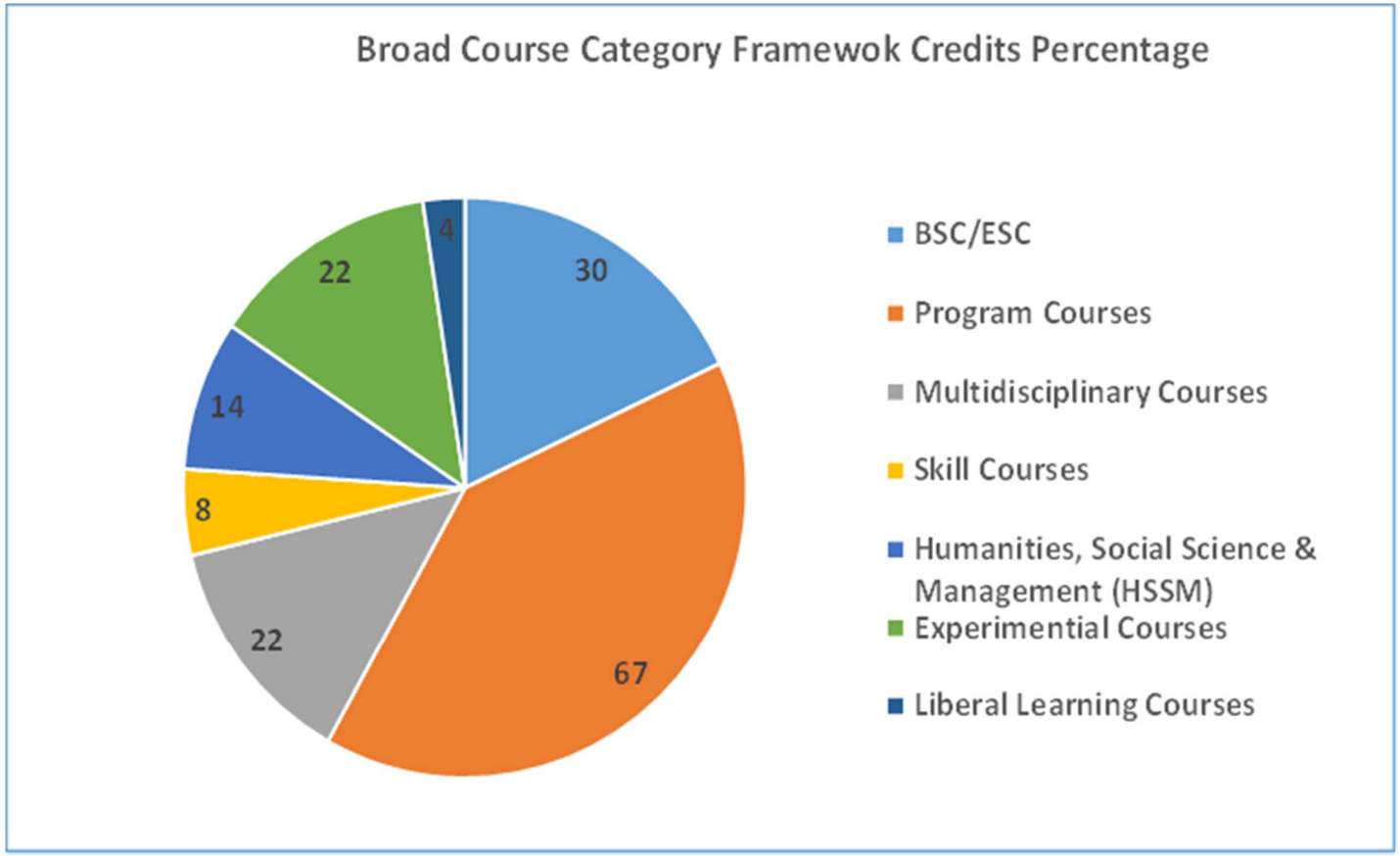
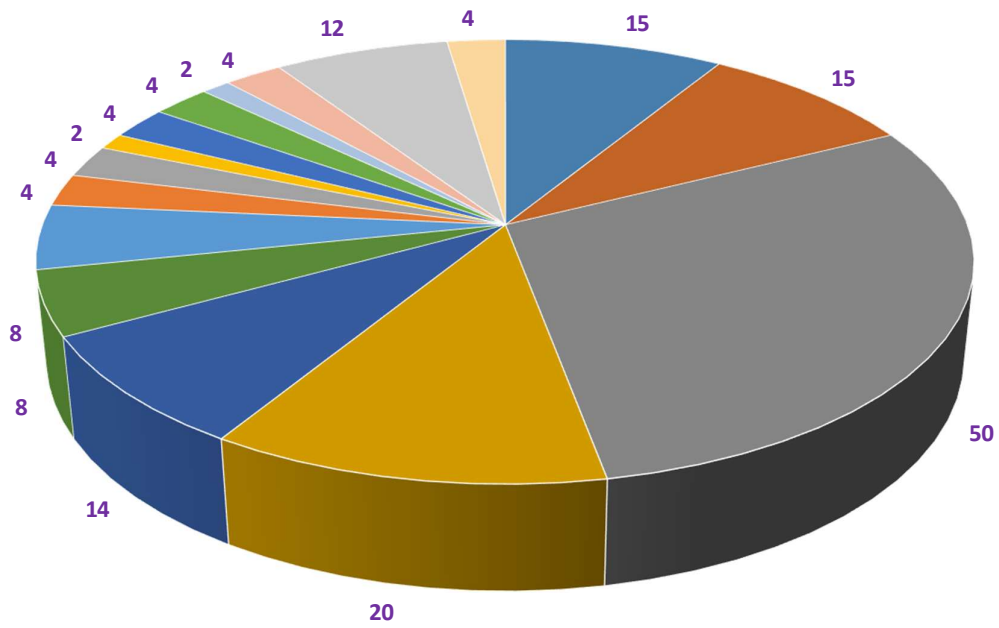

Broad Course Category Framewok Credits Percentage
30
67
22
8
14
22
4
BSC/ESC
Program Courses
Multidisciplinary Courses
Skill Courses
Humanities, Social Science & Management (HSSM)
Experimental Courses
Liberal Learning Courses

Course Category Credits



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Semester-wise Credit Distribution

Sr. No.	SEM	I	II	III	IV	V	VI	VII	VIII	Total Credits	NEP Requirement
1	Basic Science Course (BS)	8	7	3						18	14-18
2	Engineering Science Course (ES)	8	4							12	12-16
3	Program Core Course (PC)		6	10	14	8	6	3		47	44-56
4	Program Elective Course (PE)					5	8	7		20	20
5	Multidisciplinary Minor Course (MM)			3	3	3	3	2		14	14
6	Open Elective Course (OE)				3	3		2		8	8
7	Vocational & Skill Enhancement Course (VSE)			2	1	2	1	2		8	8
8	Ability Enhancement Course (AE)	1	3							4	4
9	Entrepreneurship / Management Courses (EM)			1					3	4	4
10	Indian Knowledge System (IKS)	2								2	2
11	Value Education Course (VE)	2	2							4	4
12	Research Methodology (RM)								4	4	4
13	Field Project (FP)						2			2	2
14	Project (PR)							4		4	4
15	Internship (IN)								12	12	12
16	Co Curricular Course (CC)				2	2				4	4
	Total Credits	**21**	**22**	**19**	**23**	**23**	**20**	**20**	**19**	**167**	**160-176**

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General Instructions:

(1) 10% content of syllabus of each theory course shall be completed by the students with self-study. The 10% portion of each course (for self-study) shall be declared by the concerned course-coordinator at the beginning of teaching of the course.

(2) Student can complete **any Course** or programme elective courses PE1 to PE5 in "online" mode, offered through SWAYAM/ NPTEL portal or equivalent platform which provides Evaluation mechanism with the permission of Departmental Faculty Board (DFB). In this case –

(i) Students can register and complete these online courses any time after beginning of third semester, however, the student must successfully complete and pass the course, and submit the score card/certificate before declaration of result of respective semester in which the course is being offered.

(ii) In case, if a student registers for a course in online mode but fails in the course, the student will have to register for the course offered by the institute in respective semester as per curriculum. In this case, the student will have to appear for all the examinations (CT1/CT2, TA, ICA, ESE etc) of the course, and successfully complete the course.

(3) In eighth semester, the students have to complete mandatory internship of one semester in the company/ organization approved by the DFB.

(4) In eighth semester during internship, the students have to complete the theory courses in any one of the two modes:

(i) **Online courses** offered through SWAYAM/ NPTEL or equivalent platform which provides Evaluation mechanism with the permission of DFB: In this case, students can register and complete these online courses any time after beginning of third semester and complete the course and submit the score card/ certificate before declaration of result of eighth semester.

In case if a student registers for a course in online mode but fails in the course, the student will have to register for the course offered by the institute as per curriculum. In this case, the student will have to appear for all the examinations (CT1/CT2, TA, ICA, ESE etc) of the course personally as per the schedule declared by the institute, and successfully complete the course.

(ii) **Self-study mode:** In this case the student will have to study the course offered by the institute of his/her own. The student shall appear for all the college assessments/ examinations (CT1/CT2, TA and ESE) personally as per the schedule declared by the institute and successfully complete the course.

(5) In addition to program specific courses, the students have to complete vocational skill courses, internship, field projects connected to **major degree**.

(6) Exit Option:

The exit option at the end of each year will be available to students after even semester. e. 2nd semester, 4th semester &6th semester and will commence from AY 2024-25 for UG Certificate, AY 2025-26 for UG Diploma, AY 2026-27 for B. Voc./B. Sc. Engineering degree.

(7) Students opting for exit at any level (after odd semesters or even semester) will have to earn additional eight credits before exit in skill based vocational courses and internship/apprenticeship/mini project to make them eligible to get UG certificate / UG Diploma or B. Voc./B. Sc. Engineering degree as per eligibility.

(8) Re Entry and Lateral Entry: Students opting for exit at any level after even semester, will have the option to re-enter the programme from where they left off in odd semesters within **four years of exit.** There shall be a gap of at least **one year** between exit and re-entry to UG programme.

(9) Students opting for exit after odd semester, i.e. 1st, 3rd, 5th or 7th semester will have the option to re-enter the programme from where they left off in even semesters only. There shall be a gap of at least **one year** between exit and re-entry to UG programme.

(10) Maximum period for completion of B. Tech. programme:
The student has to complete the degree programme within the stipulated **maximum period of eight years** from the date of admission to first year UG. The maximum duration of the programme includes the period of exit, withdrawal, absence and different kinds of leaves permissible to a student but it shall exclude the period of rustication of the student from the institute. However, genuine cases on confirmation of valid reasons may be referred to Academic Council for extending this limit by **additional one year**.

(11) Eligibility for admission to the UG Bachelor's Degree with Honours/ Research/Double Minor:
Students with minimum **CGPA of 7.5** without backlog courses at the end of fourth semester and should have earned from 1 to 4 sem total mentioned credits are eligible for admission to the UG Bachelor's Degree with Honours/ Research/ Double Minor. Courses under this category must be completed in online mode through SWAYAM/ NPTEL or equivalent platform which provides evaluation mechanism. Credits/Marks Obtained under this category are directly mapped to mention teaching evaluation scheme. At the time of registration, if mention course is not available on SWAYAM/ NPTEL or equivalent platform , then DFB will provide available alternative/equivalent course.

SEMESTER –I

Category	Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
							Theory				Practical		Total	
		Induction Program	TH	TU	PR	Total	CT1	CT2	TA	ESE	ICA	ESE		
BS1	SH1121	Engineering Mathematics-I	3	1		4	15	15	10	60			100	4
BS2	SH1122	Engineering Physics	3			3	15	15	10	60			100	3
	SH1123	Engineering Physics Laboratory			2	2					25		25	1
ES1	EE1121	Basic Electrical Engineering	3			3	15	15	10	60			100	3
	EE1122	Basic Electrical Engineering Laboratory			2	2					25		25	1
ES2	CS1121	Programming for Problem Solving	2			2	15	15	10	60			100	2
	CS1122	Programming for Problem Solving Laboratory			2	2					25		25	1
ES3	ME1121	Workshop Practices			2	2					25		25	1
AE1	SH1124	Communication Skill			2	2					50		50	1
VE1	SH1125	Environment Science	2			2	15	15	20				50	2
IKS1	SH1126	Indian Knowledge System	2			2			40				40	2
Total			**15**	**1**	**10**	**26**	**75**	**75**	**100**	**240**	**150**		**640**	**21**

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SEMESTER –II

Category	Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
							Theory				Practical		Total	
			TH	TU	PR	Total	CT-1	CT-2	TA	ESE	ICA	ESE		
BS3	SH1221	Engineering Mathematics-II	3	1		4	15	15	10	60			100	4
BS4	SH1222	Engineering Chemistry	2			2	15	15	10	60			100	2
	SH1223	Engineering Chemistry Laboratory			2	2					25		25	1
ES4	ME1221	Engineering Graphics	2			2	15	15	10	60			100	2
	ME1222	Engineering Graphics Laboratory			2	2					25		25	1
PC	ET1221	Basic Electronics Engineering	3			3	15	15	10	60			100	3
ES	ET1222	Basic Electronics Engineering Laboratory			2	2					25		25	1
PC	ET1223	Electronics Communication	3			3	15	15	10	60			100	3
AE2	SH1224	Modern Indian Language		2		2	15	15	20				50	2
VE2	SH1225	Universal Human Value	2			2	15	15	20				50	2
MNC1	SH1226	Yoga &Fitness			2	2			20				20	0
AE3	SH1227	Language Laboratory			2	2					25		25	1
			15	**3**	**10**	**28**	**105**	**105**	**110**	**300**	**100**		**721**	**22**

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Note : In first semester , the students of Civil, Electrical, Electronics & Telecommunication ,Instrumentation Engineering programmes will be offered the courses mentioned under Semester-I **AND** students of Mechanical , Computer Science Engineering and Information Technology will be offered the courses mentioned under Semester-II and in Second Semester Vice-versa except Engineering Mathematics-I (SH1101) and Engineering Mathematics-II (SH1201).

Programme specific Subjects offered by programme wise

Sr No	Name of Programme	Programme specific Subject -1 aligned with Engineering Science Category XX1221-XX1222	Programme specific Subject -2 XX1223
1	Civil Engineering	Engineering Mechanics	Basic of Civil Engineering
2	Mechanical Engineering	Engineering Mechanics	Mechanical Measurement
3	Electrical Engineering	Analog and Digital Electronics	Energy Resource & Generation
4	Electronics & Telecommunication Engg	Basic Electronics Engineering	Electronics Communication
5	Computers Science & Engineering	Introduction to Computer Hardware and Networking	Computational Thinking with Python
6	Information Technology	Python Programming	Discrete Mathematics
7	Instrumentation Engineering	Elements of Measurement	Basic MatLab programming

Equivalence Scheme

Programme Name:-B. Tech. Electronics & Telecommunication Engg

S N.	Course code with Name of course (old) Revised Curriculum 2019-20			NEP Version I			Course code with Name of course(NEW) (NEP Version-II)		
	Code	Name	Credit	Code	Name	Credit	Code	Name	Credit
1.	ETU221	Basic Electronics Engineering	2	ET1201	Basic Electronics Engineering	2	ET1221 / ET1408	Basic Electronics Engineering	3
2.		Newly Added			Newly Added		ET1222	Basic Electronics Engineering laboratory	1
3.		Newly Added		ET1215	Electronics Communication	3	ET1223	Electronics Communication	3
4.		Newly Added		ET1211	Apprenticeship / Internship	3	ET1213	Internship / Technical Project	8
5.		Newly Added		ET1212	Functional Electronics	3	ET1211	Assembly of Personal Computer	8
6.		Newly Added		ET1213	Electronics Laboratory	2	ET1212	Electronics Servicing & Maintenance	8 8

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Multiple exits: Following options are available for multiple exists:

Option	NCrF Level	Qualification Title	Additional credit requirement	Bridge courses
Exit-1	4.5	One year UG certificate course in Engg/Tech	8	2 Month Internship **OR** Online Two skill courses at ITI Level from NSQF/ESSC/ANY Other agency which provides certification / Evaluation @ **OR** Technical Project
Exit-2	5.0	Two year UG Diploma I Engg/Tech	8	2 Month Internship **OR** Online Two skill courses at Diploma Level from NSQF/ESSC/ANY Other agency which provides certification / Evaluation @ **OR** Technical Project
Exit-3	5.5	Three year Bachelor Degree in Vocation (B.Voc) orB.Sc. (Engg./Tech)	8	2 Month Internship **OR** Online Two skill courses at Degree Level from NSQF/ESSC/ANY Other agency which provides certification / Evaluation @ **OR** Technical Project

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EXIT CRITERIA FOR U. G. Certificate														
Category	Course Code	Name of the Course @	Teaching Scheme				Evaluation Scheme							Credits
							Theory				Practical		Total	
			TH	TU	PR	Total	CT1	CT2	TA	ESE	ICA	ESE		
EX1	ET1211	Assembly of Personal Computer	-	-	16	16	-	-	-	-	50	-	50	4
EX1	ET1212	Electronics Servicing & Maintenance	-	-	16	16	-	-	-	-	50	-	50	4
OR														
EX1	XX1213	Internship / Technical Project	-	-	16	16	-	-	-	-	100@	-	100	8

@ Based on seminar, Internship Report, Internship/ Project evaluation

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Course Code	ET1221 /ET1408						Course category			PC
Course Name	BASIC ELECTRONICS ENGINEERING									
Teaching Scheme				Examination Scheme						Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	-	-	03	15	15	10	60	2 hrs 30 min	-	-	-	03

Course Objectives: Students undergoing this course are expected to

1. understand semiconductor fundamentals, including materials and doping.
2. analyse diode characteristics and their current-voltage relationships.
3. explore various types of diodes and their applications in circuits.
4. comprehend the construction and operation of bipolar junction transistors (BJTs).
5. perform AC analysis of BJTs using appropriate models and configurations.

Course Contents:

Semiconductor Fundamentals: Overview of semiconductor materials: Ge, Si, GaAs, Covalent bonding and intrinsic materials. **Energy Levels and Doping:** Energy levels in semiconductors, n-type and p-type materials.

Semiconductor Diode, Characteristics and Equivalent Circuits: Semiconductor Diodes: Structure and operation of semiconductor diodes**,** Ideal versus practical diode characteristics. **VI Characteristics:** Current-voltage characteristics of diodes, Effect of temperature on diode performance. **Diode Equivalent Circuits**: Resistance levels in diodes, Transition and diffusion capacitance, Reverse recovery time.

Types of Diodes and Their Applications: Types of Diodes: Zener diodes: operation and applications**,** Light-emitting diodes (LEDs) and their characteristics. **Diode Circuit Analysis:** Load-line analysis, Half-wave and full-wave rectification, Clippers and clampers, Voltage regulation with diodes.

Introduction to Bipolar Junction Transistors (BJTs): BJT Construction and Operation: Transistor construction and basic operation**,** Common configurations: common-base, common-emitter, and common-collector. **Biasing Techniques:** Concept of operating point (Q-point)**. Biasing configurations:** fixed-bias, emitter-bias, voltage-divider bias, collector feedback, and emitter-follower configurations.

AC Analysis of Bipolar Junction Transistors: AC Amplification: Principles of amplification in the AC domain**,** BJT transistor modelling techniques. **Analysis of Common Configurations:** Common-emitter fixed-bias and voltage-divider configurations**,** Emitter-bias and emitter-follower configurations, Common-base configuration. **Advanced Analysis**

Techniques: Determining current gain in BJT circuits**,** Cascaded systems, Darlington connections, and feedback pairs.

Text Books:

1. Electronic Devices and Circuit Theory, Robert L. Boylestad and Louis. Nashelsky, 11th Edition, Pearson, 2015.
2. Millman's Electronic Devices and Circuits Third Edition Late Jacob Millman, Christos C Halkias, Satyabrata Jit Tata McGraw Hill Education Private Limited ,NEW DELHI 3/e, 2010

Reference Books:

1. Electronic Devices and Circuits by Dharma Raj Cheruku and Buttula Tirumala Krishna, Pearson Education 2/e 2008
2. Integrated devices & Circuits by Millman,Halkias & Jit TMH 2/e, 2008
3. Principles of Electronics, Albert Malvino and David Bates, 8th Edition, McGraw Hill, 2015.

Links:

1. https://www.nptelvideos.com/course.php?id=527 **Basic Electronics**: NPTEL Lecture Videos by **Prof. Chitralekha Mahanta, IIT Guwahati**. . (Lecture No.01 to 16)
2. https://nptel.ac.in/courses/122106025 **Basic Electronics and Lab**: NPTEL course by Prof. T.S. Natarajan, IIT Madras. (Lecture No.01 to 17)

Course Outcomes:

After Completion of Course, the student will able to

ET1221.1 demonstrate the ability to explain semiconductor principles.

ET1221.2 analyse and interpret diode characteristics and calculate relevant parameters.

ET1221.3 evaluate different types of diodes and apply load-line analysis in circuits.

ET1221.4 describe BJT operation in various configurations and apply biasing techniques.

ET1221.5 conduct AC analysis of BJT circuits and determine performance metrics.

CO-PO-PSO Mapping

CO	PO / PSO														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ET1221.1	3	0	0	0	0	0	0	0	0	0	0	2	2	0	0
ET1221.2	3	1	0	0	0	0	0	0	0	0	0	2	2	0	0
ET1221.3	2	2	1	1	1	0	0	0	0	0	0	2	3	0	0
ET1221.4	1	2	1	1	2	2	0	0	0	0	0	3	3	0	0
ET1221.5	3	3	1	2	3	1	0	0	1	1	0	3	3	2	0

0- Not Correlated 1-Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated

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Course Code	ET1222						Course category		ES
Course Name	ET1222 BASIC ELECTRONICS ENGINEERING LABORATORY								
Teaching Scheme				Examination Scheme					Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
00	00	02	02	-	-	00	00	--	25	--	25	01

Course Objectives: Students undergoing this course are expected to

1. work with Semiconductor based devices
2. experience the behaviour of Semiconductor based devices in Circuits
3. experiment with Diode, Transistor etc in circuits.
4. realise Circuit applications using Diode and Transistor

Course Contents: Suggestive list but not limited to

1. Characteristics of pn junction diode
2. Characteristics of zener diode and zener as voltage regulator
3. Circuit using diode like half wave rectifier, full wave rectifier, bridge rectifier
4. Full wave rectifiers using l, c, l-section and π - section filters
5. Characteristics of zener junction diode
6. Transistor characteristics
7. Design self-bias circuit
8. Stability of q-point analysis
9. Input and output characteristics of transistor cb,cc and ce configuration
10. Various circuit of transistor using common base, common collector and common emitter
11. Transistor as as CE, CB and CC amplifier
12. Transistor as switch
13. Clippers and Clamper circuits

Course Outcomes:

After Completion of Course, the student will able to

ET1222.1 use testing and measuring instrument by reading manuals

ET1222.2 choose and use semiconductor devices like diode and transistor semiconductor by reading data sheets of the devices

ET1222.3 realise the working of solid state diodes and transistors as switch and circuit component

ET1222.4 implement circuits using semiconductor devices and other components.

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ET1222.5 build the circuits using semiconductor diode and transistors to realise the importance of Semiconductor devices.

CO-PO-PSO Mapping

CO	PO / PSO														
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
ET1222.1	3	0	0	1	0	0	0	0	0	0	0	2	2	0	0
ET1222.2	3	1	0	1	0	0	0	0	0	0	0	2	2	0	0
ET1222.3	2	2	1	2	1	0	0	0	0	0	0	2	3	0	0
ET1222.4	1	2	1	2	2	2	0	0	0	0	0	3	3	0	0
ET1222.5	3	3	2	3	3	1	0	0	1	1	0	3	3	2	0

0- Not Correlated 1-Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated

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Course Code	ET1223							Course category			PC
Course Name	ELECTRONIC COMMUNICATION										
Teaching Scheme				Examination Scheme							Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	00	00	00	15	15	10	60	2 hrs 30 min	00	00	100	03

Course Objectives:

To make the student able

1. To introduce students with basics of communication system, modulation and demodulation.
2. To understand the concept of noise in communication
3. To understand fundamentals of wave propagation and radio communication
4. To expose the students to the ideas of Radio and Television broadcasting
5. To acquire knowledge of applications in communication such as Radar, Satellite and mobile

Course Contents:

Introduction to Electronic Communication: Elements of a communication system, need for modulation, Electromagnetic spectrum and typical applications.

Noise: External noise, Internal noise.

Modulation: Theory of Amplitude, Frequency, Phase Modulation, Demodulation: Concept.

Wave Propagation: Propagation of Waves

Radio Communication: AM and FM Radio transmitter and Receiver.

Television Broadcasting: Introduction to Television, Transmitter and Receiver, Direct-to-Home (DTH).

Radar Communication: Principle and fundamentals, Basic Pulsed Radar System.

Satellite communication: Satellite communication systems, Satellite orbits.

Mobile Communication: Cellular Mobile Communication.

Text Books:

1. Electronic Communication Systems, George Kennedy, Bernard Davis, McGraw Hill Publication, 5th edition, 2011.

Reference Books:

1. Satellite Communication, R. M. Gagliardi, 1 st edition, CBS publications and Distributors, 2004
2. Mobile Cellular Telecommunications, W. C.Y. Lee, 2nd edition, MGH, 2006

Course Outcomes:

On completion of the course, students will be able to:

ET1223.1 To introduce students with basics of communication system, modulation and demodulation.

ET1223.2 To describe concept of noise in communication

ET1223.3 To understand fundamentals of wave propagation

ET1223.4 Illustrate the knowledge of radio and television broadcasting

ET1223.5 Explicate various applications of communication

CO – PO – PSO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ET1223.1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
ET1223.2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ET1223.3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ET1223.4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
ET1223.5	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0

0 - Not correlated 1 - Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated

Course Code	ET1211							Course category			EX1
Course Name	ASSEMBLY OF PERSONAL COMPUTER										
Teaching Scheme				Examination Scheme							Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
--	--	08	08	--	--	--	--	--	50	--	50	04

Course Objectives:
To make student able

1. To explain the basic concepts of Peripheral devices
2. To understand the construction and working of Input &Output devices
3. To Know the Troubleshooting and preventive maintenance of PC .
4. To know law related issues in IT act.

Introduction: Understanding the basic of computer, its components, different I/O devices

Operating system: Acquiring skills to setup Computer BIOS, windows command prompt commands, formatting of Hard Disk, Installation of Operating System (Windows & Linux) and data recovery

Mother Board: Develop skills to identify different types of Mother Board, its components and configuring it.

Software Installation: Develop skills to install different types of application software, and Hard disk utility. Develop skills to perform preventive maintenance, running diagnostic tool, backup files, virus protection program

Printer: Develop skills to identify, configure and troubleshoot different types of Printers and UPS.

IT Act:, IT Act 2000/2008, Issues related to Digital signatures, Electronic records, Cybercrime and offenses , Interception and monitoring of electronic communications, Data protection and privacy

Text Book:

1. B. Govindarajalu, “IBM PC and Clones”, TMH Publication

Reference Books:

1. Mueller, “Repairing and Upgrading of IBM PC”, Que Publications
2. Mark Minasi, “The Complete PC Upgrade and Maintenance Guide”, BPB Publications.
3. D. Balasubramaniam, ”Computer Installation and Servicing”, TMH Publications.
4. Government of India IT Act 2000/2008

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Member Secretary

Sign
BoS Chairperson

Sign
Dean (Academics)

Sign
Principal

Useful Link:
National Institute of Electronics & Information Technology,Govt. of India.
https://nielit.gov.in/kohima/content/assembly-maintenance-personal-computer
https://bskillforum.bharatskills.gov.in/

Course Outcomes:
ET1211.1 Acquire skills to enter the BIOS setup utility and configuring the BIOS like Booting Sequence, system date, setting administrative password, USB Enabling

ET1211.2 Understand the use of different commands of Windows in command prompt

ET1211.3 Acquire knowledge and skills for Installation of Operating System for DOS & Windows Using Off-line and Online method and booting from pen drive

ET1211.4 Understand the various acts under IT Act 2000

ET1211.5 Understanding Printer interface and setting

CO-PO-PSO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ET1211.1	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0
ET1211.2	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0
ET1211.3	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0
ET1211.4	2	2	3	0	0	0	0	0	0	0	0	0	0	0	0
ET1211.5	2	2	3	0	0	0	0	0	0	0	0	0	0	0	0

0 - Not correlated 1 - Weakly Correlated 2 - Moderately Correlated 3 - Strongly Correlated

Course Code	ET1212							Course category			EX1
Course Name	ELECTRONIC SERVICING & MAINTAINANCE										
Teaching Scheme				Examination Scheme							Credits
Th	Tu	Pr	Total	Theory				Practical		Total	
				MSE	TA	ESE	ESE Duration	ICA	ESE		
-	-	8	8	-	-	-	-	50	-	50	04

Course Objectives:

To make the students aware

1. The working of electronic products used in daily life
2. The repair and maintenance of these products
3. To Know the Troubleshooting and preventive maintenance of electronic products
4. To develop and acquire the skills of Calibration & Testing of Electronic Equipment.

Course Contents:

Digital Multimeter: Use of Digital Multimeter, Digital Multimeter range selection.

Resistors: Types of Resistors, Calculating the values of Color coded resistors.

DC voltage Measurement and DC voltage testing, Measuring AC voltage.

Introduction to Repair and troubleshooting electronics device.

Soldering techniques, ESD issues.

Basic Concepts of Repair & Maintenance, Use and acquire the skills of handling Lab Equipment – (DMM, CRO, Function generator etc) and Servicing of Consumer products.

Text Book:

EASY Laser Printer Maintenance & Repair By Stephen J. Bioelow

Reference Books:

1. Handbook of Repair & Maintenance of Domestic Electronics Appliances : Shashi Bhushan Sinha
2. Troubleshooting and Repairing Consumer Electronics Without a Schematic by Homer Davidson - Third Edition
3. S. P. Bali, Consumer Electronics, Pearson Education

Online Link:

1. 160513_RepairMaintenance_ElectProducts.pdf (nielit.gov.in)

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Member Secretary

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BoS Chairperson

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Dean (Academics)

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Principal

2. Learn to Repair & Troubleshoot Electronics Device | Udemy

Course Outcomes:
At the end of the course, the students shall be able to

ET1212.1 to use the datasheets of components

ET1212.2 to identify the fault & repair

ET1212.3 to do maintenance of electronic products

ET1212.4 to do routine serving of consumer products

ET1212.5 understanding of working principles of electrical and mechanical components /systems in electronic gadgets

CO – PO – PSO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ET1212.1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
ET1212.2	2	1	1	2	0	0	0	0	0	0	0	0	1	0	0
ET1212.3	2	1	1	2	0	0	0	0	0	0	0	0	1	0	0
ET1212.4	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
ET1212.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

0 - Not correlated 1 - Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated

Course Code	ET1213							Course category			EX1
Course Name	ET1213 INTERNSHIP / TECHNICAL PROJECT										
Teaching Scheme				Examination Scheme							Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
-	-	16	16	-	-	-	-	-	100	-	100	08

Course Objectives:

To make the students competent to:

1. Carry out industry internship / apprenticeship
2. Prepare report of industry internship / apprenticeship

Course Contents:

Industry internship / apprenticeship

Students must complete Internship/ / apprenticeship for a duration of minimum eight weeks, after completion of second semester of first year. The company/organization for Internship/ / apprenticeship must be approved by the DFB. All the official formalities to be completed by the student.

The students should undergo related trainings and perform tasks assigned to him in the Industry, under the guidance of Industry personnel. The students shall submit the report based on the Industry Internship / apprenticeship along with the Completion Certificate given by Industry.

Industry internship / apprenticeship may be carried out in any one of the following construction industry:

i) Central Government Department related to Electronics and Telecommunication Engineering e.g. BSNL, BHARAT ELECTRONICS etc.

ii) State Government Department related to Electronics and Telecommunication Engineering e.g. MSETC, Pune Maharashtra Power Grid Corporation of India Ltd (PGCIL)etc.

iii) Private Limited Company related to Electronics and Telecommunication Engineering AIRTEL MOBILES, SAMSUNG, VIDEOCON etc.

At the end of internship / apprenticeship, student should submit the report based on training received during internship / apprenticeship and also give presentation for the same to the panel of examiners / Evaluation Committee comprising of Experts appointed by the Program Head.

Course Outcome:

On completion of the course, students will be able to:

ET1213.1: Prepare report based on Industry internship / apprenticeship,

ET1213.2: Give presentation based on Industry internship / apprenticeship

CO – PO – PSO Mapping:

Course Outcomes	Program Outcomes														
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
ET1213.1	1	3	1	3	1	1	3	1	1	1	2	1	2	0	0
ET1213.2	1	3	1	3	1	1	3	1	1	1	2	1	2	0	0

0- Not correlated 1 - Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated