

**ST. Xavier's Technical Institute,
Mahim, Mumbai 400 016**

**Revised Curriculum
For
Diploma Programme in
Electronics and
Telecommunication
Engineering**

From July 2020

Dr. Shivaji Ghungrad
PRINCIPAL
St. Xavier's Technical Institute
Mahim, Mumbai - 400 016.

DIPTI MESTRY
Controller of Examinations
St. Xavier's Technical Institute
Mahim, Mumbai - 400 016.

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Member Secretary
BOARD OF STUDIES
St. Xavier's Technical Institute



ST. Xavier's Technical Institute, Mahim, Mumbai 400 016
Diploma Programme in Electronics and Telecommunication Engineering
Programme Structure

Programme Educational Objectives (PEO)

(What the student will continue to do even after 3-5 years of working in the industry)

PEO1: To produce diploma holders who have the ability to demonstrate technical competence in the fields of Electronics and Telecommunication engineering and develop solutions to the problems.

PEO2: To produce diploma holders who would be able to take individual responsibility and to work as a part of a team towards the fulfillment of both individual and organizational goals.

PEO3: To prepare the students to engage in professional development through self-study, graduate and professional studies in engineering, management and research.

Program Outcomes (PO) given by NBA.

(What the student will be able to do at the entry point of industry soon after diploma programme)

NO.	PO Statement
PO1	Apply knowledge of mathematics and engineering to solve problems in Electronics and Telecommunication Engineering.
PO2	Employ necessary techniques, hardware and software tools for modern engineering applications.
PO3	Demonstrate basic engineering practices and conduct experiments in electronics, electrical system and in programming language.
PO4	Model and simulate communication systems and analyse the performance using modern tools.
PO5	Solve problems through analytical thinking to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering practice.
PO6	Follow and contribute to the developments in their own field, within realistic constraints such as economic, social, ethical, environmental and sustainability.
PO7	Have strong ethical and professional responsibility and adherence to quality.

- PO8 Work as a member of a project team to find cost effective design solutions to problems related to electronics and communication systems.
- PO9 Communicate effectively in both verbal and written forms
- PO10 Appreciate technological change and the need for independent life-long learning.

Program Specific Outcomes (PSOs)

(What the student will be able to do in the Electronics and Telecommunication engineering specific industry soon after the diploma programme)

PSO 1. Design, verify and validate electronic functional elements for a variety of applications, with skills to interpret and communicate results.

PSO 2. Exercise good programming practices employing low or high level languages on appropriate platforms.

Note for All the Semesters :

1. Every student has to separately pass in End-Semester-Examination (ESE) for both theory and practical by securing minimum of 40% marks, (i.e. 32 out of 80, 20 out of 50, and 10 out of 25).
2. Progressive Assessment (PA) for Theory includes Written Exam – average of two PTs of 20 marks each. Progressive Assessment (PA) for Practical includes lab performance /micro projects/ Assignment/Quiz/Presentations/attendance according to the nature of the course. The scheme and schedule for progressive assessment should be informed to the students and discussed with them at the start of the term.
3. For developing self-directed learning skills, from each course about 15-20% of the topics/sub-topics, which are relatively simpler or descriptive in nature are to be given to the students for self-study and proper learning of these topics should be assured through classroom presentations by students.



ST. XAVIER'S TECHNICAL INSTITUTE, MAHIM, MUMBAI 400 016

Diploma in Electronics & Telecommunication Engineering

REVISED AND EFFECTIVE FROM JULY 2018		TEACHING AND EXAMINATION SCHEME									SEMESTER ONE
ACADEMIC YEAR 2020-21		TEACHING SCHEME					EXAMINATION SCHEME				
SR.NO	SUBJECT TITLE	SUBJECT CODE	TH	TU	PR	CREDITS	THEORY		PRACTICAL / ORAL		GRAND TOTAL
							ESA	PA	ESA	PA	
							ESA	PA	ESA	PA	
1	Basic Mathematics	ET-18111	4	1	XX	5	80	20	XX	XX	100
2	Basic Electronics	ET-18121	4	XX	4	8	80	20	50	25	175
3	Basic Electrical Engineering	ET-18113	4	XX	2	6	80	20	50	25	175
4	Computer Applications	ET-18115	XX	XX	2	2	XX	XX	50 (ONLINE EXAM)	25	75
5	Electronic Materials & Components	ET-18116	2	2	XX	4	XX	XX	50 (ONLINE EXAM)	50	100
6	Professional Practices	ET-18117	2	XX	XX	2	XX	XX	XX	50	50
7	English Language	ET-18118	4	XX	2	6	80	20	XX	50	150
Total			20	3	10	33	320	80	200	225	825
ET-18120 represents "Yoga" which is Non-Credit and Non-Exam in First Semester of 1 Hour/ Week											
Total Number of Credits = 33 , Total Number of Student Contact Hours = 34						Total Marks =				825	
Abbreviations		TH	Theory				<ul style="list-style-type: none"> ➤ For progressive and continuous assessment two periodic tests of 20 marks each are for all the theory subjects. The average of these is added to the final theory examination marks, which is of 70 marks (except for online examinations). ➤ All term work marks are Internal. ➤ All practical exams/ oral are External and Internal . ➤ All online exams are Internal 				
		TU	Tutorial								
		PR	Practical								
		XX	No TW/EXAM(TH/PR/OR/ Online)								
		ESA	End Semester Exam								
PA	Progressive assessment										



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REVISED AND EFFECTIVE FROM JANUARY 2019		TEACHING AND EXAMINATION SCHEME									SEMESTER TWO	
ACADEMIC YEAR 2020-21		TEACHING SCHEME					EXAMINATION SCHEME					
SR.NO	SUBJECT TITLE	SUBJECT CODE	TH	TU	PR	CREDITS	THEORY		PRACTICAL / ORAL		GRAND TOTAL	
							ESA	PA	ESA	PA		
1	Engineering Mathematics	ET-18211	3	1	xx	4	80	20	xx	xx	100	
2	Applied Electronics	ET-18222	3	xx	4	7	80	20	50	25	175	
3	Electronic Circuits & Applications	ET-18223	3	xx	4	7	80	20	50	25	175	
4	Engg. Drawing & C.A.D.	ET-18215	xx	xx	2	2	xx	xx	50	25	75	
5	Electrical Machines	ET-18216	3	xx	2	5	80	20	50	25	175	
6	Electronics Workshop	ET-18217	xx	xx	2	2	xx	xx	xx	50	50	
7	Environmental Science *	ET-18219	2	xx	2	4	xx	xx	(Online exam) 100	50	150	
8	Communication Skills	ET-18224	2	2	xx	4	xx	xx	xx	50	50	
Total			16	3	16	35	320	80	300	250	950	
Total Number of Credits = 35, Total Number of Student Contact Hours = 35									Total Marks =		950	
Abbreviations		TH	Theory			<ul style="list-style-type: none"> ➤ For progressive and continuous assessment two periodic tests of 20 marks each are for all the theory subjects. The average of these is added to the final theory examination marks, which is of 70 marks (except for online examinations). ➤ All term work marks are Internal. ➤ All practical exams/ oral are External and Internal . ➤ All online exams are Internal 						
	TU	Tutorial										
	PR	Practical										
	XX	No TW/EXAM(TH/PR/OR/ Online)										
	ESA	End Semester Exam										
	PA	Progressive assessment										



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REVISED AND EFFECTIVE FROM JULY 2019		TEACHING AND EXAMINATION SCHEME									SEMESTER THREE	
ACADEMIC YEAR 2020-21		TEACHING SCHEME					EXAMINATION SCHEME					
SR.NO	SUBJECT TITLE	SUBJECT CODE	TH	TU	PR	CREDITS	THEORY		PRACTICAL / ORAL		GRAND TOTAL	
							ESA	PA	ESA	PA		
1	Applied Mathematics	ET-18311	3	1	xx	4	80	20	xx	xx	100	
2	Principles of Communication I*	ET-18312	4	xx	2	6	80	20	50	25	175	
3	Electronic Test Instruments	ET-18313	3	xx	2	5	80	20	50	25	175	
4	'C' Programming *	ET-18314	2	xx	4	6	xx	xx	50	25	75	
5	Linear Integrated Circuits	ET-18315	4	xx	2	6	80	20	50	25	175	
6	Circuit Building I	ET-18319	xx	xx	4	4	xx	xx	xx	50	50	
7	Academic Skills	ET-18317	xx	xx	2	2	xx	xx	xx	xx	xx	
Total			16	1	16	33	320	80	200	150	750	
*ET-18320 represents "Yoga" which is non-credit and non-exam in 3rd Semester of 2 hours per week												
Total Number of Credits = 33, Total Number of Student Contact Hours = 35							Total Marks =					750
Abbreviations		TH	Theory				<ul style="list-style-type: none"> ➤ For progressive and continuous assessment two periodic tests of 20 marks each are for all the theory subjects. The average of these is added to the final theory examination marks, which is of 70 marks (except for online examinations). ➤ All term work marks are Internal. ➤ All practical exams/ oral are External and Internal . ➤ All online exams are Internal 					
		TU	Tutorial									
		PR	Practical									
		XX	No TW/EXAM(TH/PR/OR/ Online)									
		ESA	End Semester Exam									
		PA	Progressive assessment									



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REVISED AND EFFECTIVE FROM JANUARY 2020		TEACHING AND EXAMINATION SCHEME						SEMESTER FOUR				
ACADEMIC YEAR 2020-21		TEACHING SCHEME					EXAMINATION SCHEME					
SR.NO	SUBJECT TITLE	SUBJECT CODE	TH	TU	PR	CREDITS	THEORY		PRACTICAL / ORAL		GRAND TOTAL	
							ESA	PA	ESA	PA		
1	Entrepreneurship	ET-18411	3	xx	2	5	xx	xx	(Online exam) 50	50	100	
2	Principles of Communication II	ET-18412	3	xx	2	5	80	20	50	25	175	
3	Digital Electronics	ET-18413	3	xx	2	5	80	20	50	25	175	
4	Circuits and Networks	ET-18415	3	xx	2	5	80	20	50	25	175	
5	Software Simulation Techniques	ET-18416	xx	xx	2	2	xx	xx	xx	50	50	
6	Circuit Building II	ET-18419	xx	xx	4	4	xx	xx	xx	50	50	
7	Industrial Electronics	ET-18420	3	xx	2	5	80	20	50	25	175	
8	Academic Skills	ET-18421	xx	xx	2	2	xx	xx	xx	xx	xx	
Total			15	0	18	33	320	80	250	250	900	
ET-18423 represents Sports And Cultural which is non-credit and non-exam in 4th Semester of 2 hours/week												
Total Number of Credits = 33, Total Number of Student Contact Hours = 35						Total Marks =						900
Abbreviations	TH	Theory					<ul style="list-style-type: none"> ➤ For progressive and continuous assessment two periodic tests of 20 marks each are for all the theory subjects. The average of these is added to the final theory examination marks, which is of 70 marks (except for online examinations). ➤ All term work marks are Internal. ➤ All practical exams/ oral are External and Internal . ➤ All online exams are Internal 					
	TU	Tutorial										
	PR	Practical										
	X	No TW/EXAM(TH/PR/OR/ Online)										
	ESA	End Semester Exam										
	PA	Progressive assessment										



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REVISED AND EFFECTIVE FROM JULY 2020		TEACHING AND EXAMINATION SCHEME								SEMESTER FIVE	
ACADEMIC YEAR 2020-21		TEACHING SCHEME					EXAMINATION SCHEME				
SR.NO	SUBJECT TITLE	SUBJECT CODE	TH	TU	PR	CREDITS	THEORY		PRACTICAL / ORAL		GRAND TOTAL
							ESA	PA	ESA	PA	
1	Microprocessors and Microcontrollers	ET-18519	4	xx	2	6	80	20	50	25	175
2	Signals and Systems	ET-18512	3	1	2	6	80	20	50	25	175
3	Advanced Communication Systems	ET-18513	4	xx	2	6	80	20	50	25	175
4	Project I	ET-18514	xx	xx	2	2	xx	xx	xx	50	50
5	Basic Control Systems (E1)	ET-18520	4	xx	2	6	80	20	50	25	175
6	Vocational Training	ET-18516	xx	xx	6	(4+2)=6	xx	xx	50	50	100
7	Circuit Simulation and PCB Design	ET-18517	xx	xx	2	2	xx	xx	50	25	75
8	PLC Systems and Applications (E1)	ET-18518	4	xx	2	6	80	20	50	25	175
Total			15	1	18	34	320	80	300	225	925
Total Number of Credits, Student Contact Hours = 34							Total Marks =				925
Abbreviations		TH	Theory			<ul style="list-style-type: none"> ➤ For progressive and continuous assessment two periodic tests of 20 marks each are for all the theory subjects. The average of these is added to the final theory examination marks, which is of 70 marks (except for online examinations). ➤ All term work marks are Internal. ➤ All practical exams/ oral are External and Internal . ➤ All online exams are Internal 					
		TU	Tutorial								
		PR	Practical								
		XX	No TW/EXAM(TH/PR/OR/ Online)								
		ESA	End Semester Exam								
PA	Progressive assessment										
E1	Elective One										



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REVISED AND EFFECTIVE FROM JANUARY 2021		TEACHING AND EXAMINATION SCHEME							SEMESTER SIX			
ACADEMIC YEAR 2020-21		TEACHING SCHEME					EXAMINATION SCHEME					
SR.NO	SUBJECT TITLE	SUBJECT CODE	TH	TU	PR	CREDITS	THEORY		PRACTICAL / ORAL		GRAND TOTAL	
							ESA	PA	ESA	PA		
1	Mobile Communication(E2)	ET-18611	4	xx	2	6	80	20	50	25	175	
2	Digital Signal Processing	ET-18612	3	1	2	6	80	20	50	25	175	
3	Data Commn. & Comp. Networking(E2)	ET-18613	4	xx	2	6	80	20	50	25	175	
4	Digital Communication	ET-18614	4	xx	2	6	80	20	50	25	175	
5	Mechatronics(E3)	ET-18619	4	xx	2	6	80	20	50	25	175	
6	Project II	ET-18616	xx	xx	4	4	xx	xx	50	50	100	
7	Advanced Power Electronics (E3)	ET-18617	4	xx	2	6	80	20	50	25	175	
8	Scilab	ET-18618	xx	xx	2	2	xx	xx	xx	50	50	
9	Industrial Management and Quality Control (IMQC)	ET-18620	3	xx	xx	3	80	20	xx	xx	100	
10	Technical Writing	ET-18621	xx	xx	2	2	xx	xx	xx	50	50	
Total			18	1	16	35	400	100	250	250	1000	
Total Number of Credits, Student Contact Hours = 35							Total Marks =		1000			
Abbreviations		TH	Theory				<ul style="list-style-type: none"> ➤ For progressive and continuous assessment two periodic tests of 20 marks each are for all the theory subjects. The average of these is added to the final theory examination marks, which is of 70 marks (except for online examinations). ➤ All term work marks are Internal. ➤ All practical exams/ oral are External and Internal . ➤ All online exams are Internal 					
		TU	Tutorial									
		PR	Practical									
		XX	No TW/EXAM(TH/PR/OR/ Online)									
E2, E3	Elective Two and Three	ESA	End Semester Exam									
		PA	Progressive assessment									



ST. XAVIER'S TECHNICAL INSTITUTE, MAHIM, MUMBAI 400 016
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REVISED AND EFFECTIVE FROM JULY 2018		SUMMARY OF TEACHING / WEEK, CREDITS AND EXAMINATION SCHEME						SEMESTER ONE - SIX		
ACADEMIC YEAR 2020-21		TEACHING SCHEME				EXAMINATION SCHEME				
SR.NO	SUBJECT TITLE	TH	TU	PR	CREDITS	THEORY		PRACTICAL / ORAL		GRAND TOTAL
						ESA	PA	ESA	PA	
1	Semester -- 1	20	3	10	33	320	80	200	225	825
2	Semester -- 2	16	3	16	35	320	80	300	250	950
3	Semester -- 3	16	1	16	33	320	80	200	150	750
4	Semester -- 4	15	1	18	34	320	80	300	225	925
5	Semester -- 5	15	1	18	34	320	80	300	225	925
6	Semester -- 6	18	1	16	35	400	100	250	250	1000
Total		100	10	94	204	2000	500	1550	1325	5375



ST. XAVIER'S TECHNICAL INSTITUTE, MAHIM, MUMBAI 400 016

Diploma in Electronics and Telecommunication Engineering

Reviewed and Effective from January 2019

TEACHING AND EXAMINATION SCHEME

SEMESTER TWO

Academic Year 2020-2021

Teaching Scheme

Examination Scheme

Sr. No.	Subject Title	Subject Code	TH	TU	PR	CREDITS	PAPER HRS	THEORY		PRACTICAL		ORAL		TERM WORK		TOTAL
								Max	Min	Max	Min	Max	Min	Max	Min	
1	Engineering Mathematics	ET-18211	3	1	xx	4	3	100	40	xx	xx	xx	xx	xx	xx	100
2	Applied Electronics	ET-18222	3	xx	4	7	3	100	40	50	20	xx	xx	25	10	175
3	Electronic Circuits & Applications	ET-18223	3	xx	4	7	3	100	40	50	20	xx	xx	25	10	175
4	Engg. Drawing & C.A.D.	ET-18215	xx	xx	2	2	xx	xx	xx	50	20	xx	xx	25	10	75
5	Electrical Machines	ET-18216	3	xx	2	5	3	100	40	50	20	xx	xx	25	10	175
6	Electronics Workshop	ET-18217	xx	xx	2	2	xx	xx	xx	xx	xx	xx	xx	50	20	50
7	Environmental Science *	ET-18219	2	xx	2	4	xx	xx	xx	xx	xx	(Online exam) 100	40	50	20	150
8	Communication Skills	ET-18224	2	2	xx	4	xx	xx	xx	xx	xx	xx	xx	50	20	50
TOTAL			16	3	16	35		400		200		100		250		950

Total Number of Credits = 35, Total Number of Student Contact Hours = 35

Total Marks = 950

Abbreviations: 1)

TH

Theory

Note:

2)

TU

Tutorial

1) For progressive and continuous assessment two periodic tests of 20 marks each are for all the theory subjects. The average of these is added to the final theory examination marks, which is of 80 marks (except for online examinations).

3)

PR

Practical

2) All term work marks are Internal.

4)

No Theory Exam

3) All practical exams/ oral are External and Internal.

Prepared by Mr. Anil Gurav

NOTE:

The subjects and contents reviewed in July, 2018.

Following are the changes w.e.f academic year 2018-2019 :-

Basic Electronic Circuits (ET-18212) and Electronic Devices And Applications(ET-18214) are removed.

Applied Electronics (ET-18212) and Electronic Circuits And Applications (ET-18223) are added.

Communication Skills is shifted from Semester 1(ET-15114) to Semester 2 (ET-18224), these two course codes are equivalent as there is no change in the syllabus.

Credits for EVS (ET-18219) is reduced from 5 (3TH , 2 Pr) to 4 (2 TH, 2 Pr)

PROGRAMME TITLE : Diploma in Electronics & Telecomm. Engineering											
SEMESTER : Two											
Course Code	Course Title	Prerequisite	Credits			Examination Scheme					
			L	Tutorial	Total	Theory		PR	OR	TW	Total
						T H	T S				
ET 18211	ENGINEERING MATHEMATICS	ET-18111	3	1	4	80	20	-	-	-	100

1) Theory paper duration 3 hrs.
2) Theory paper assessment is Internal and External.

RATIONALE:

This subject is classified under Foundation courses and intends to teach the students the theory, concepts and principles of Engineering Mathematics. The contents of this subject proceed further with more complex and higher levels of Mathematics related to the Engineering field. The pre-requisite for this subject is Basic Mathematics covered in the previous semester.

COURSE OUTCOMES & CO PO MAPPING

SEM II C109	ENGINEERING MATHEMATICS (9TH COURSE IN FIRST YEAR)
C109.1	Solve problems related to functions and Limits in mathematical applications
C109.2	Evaluate derivative of various types of functions.
C109.3	Apply derivatives to find slope, maxima and minima.
C109.4	Construct a Matrix to solve simultaneous Linear equations.
C109.5	Use De Moivre's Theorem for solving Complex equations.
C109.6	Calculate Measures of dispersion using Statistical data.

Mapping of Course outcomes (COs) to Program outcomes (POs)

SEM II C109 CO	ENGINEERING MATHEMATICS (9TH COURSE IN FIRST YEAR) PREPARED BY : SD									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C109.1	3	1								
C109.2	3	1			1					
C109.3	3	2			1			1		
C109.4	3	2			1					
C109.5	3	2			1					
C109.6	3	1			1					
C 109 TOTAL	18	09	00	00	05	00	00	01	00	00
CORRELATION LEVEL	3	2	0	0	1	0	0	0	0	0

TABLE TO DECIDE CORRELATION LEVELS

CO SUM TOTAL	06	12	18
CORRELATION LEVEL	1	2	3

CO SUM TOTAL	0, 1, 2	3, 4, 5, 6, 7, 8	9, 10, 11, 12, 13, 14	15, 16, 17, 18
CORRELATION LEVEL	0	1	2	3

Mrs. Sanchita Datta

Subject Expert

SECTION 1			
Sr. No.	Name of the Topic	Periods	Marks
01	FUNCTIONS C109.1 1.1 Study of all types of Functions 1.2 Even and odd functions 1.3 Periodic functions 1.4 Function of functions etc.	05	12
02	LIMITS C109.1 2.1 Introduction of Limits 2.2 Limits of Algebraic functions 2.3 Limits of Trigonometric functions	05	08
03	DIFFERENTIATION C109.2 3.1 Fundamental rules of differentiation (without proof) such as derivatives of sum, difference scalar multiplication, product and quotient. 3.2 Differentiation of all types of standard functions. 3.2.1 Derivatives of Inverse functions 3.2.2 Composite functions 3.2.3 Implicit functions 3.2.4 Parametric functions 3.2.5 Logarithmic differentiation 3.2.6 Derivatives of one function w.r.t. another function 3.3 Second order derivatives	14	20
SECTION 2			
04	APPLICATIONS OF DERIVATIVES C109.3 4.1 Geometrical meaning of derivative-slope/gradient, tangent and normal	04	06

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

	4.2 Maxima and Minima (Simple problems)		
05	MATRICES C109.4 5.1 Definition of matrices of order $m \times n$ 5.2 Types of Matrices, Addition, Subtraction of Two matrices 5.3 Multiplication of matrices by a scalar, Multiplication of Two matrices (3×3 and 2×2 only) 5.4 Singular and Non-singular matrices Transpose of matrices 5.5 Adjoint of a matrix. 5.6 Inverse of a matrix by using Adjoint of matrix 5.7 Solution of simultaneous equations using matrices.	08	14
06	COMPLEX NUMBERS C109.5 6.1 Definition with different forms:- 6.1.1 Cartesian form 6.1.2 Polar form 6.1.3 Exponential form 6.2 All four operations of mathematics on complex Nos. 6.3 De Moivre's Theorem (without proof) and simple problems.	06	10
07	STATISTICS C109.6 7.1 Range, Co-efficient of a Range of discrete and grouped data 7.2 Mean deviation and standard deviation from mean of grouped and ungrouped data. 7.3 Variance and Co-efficient of Variance.	06	10

IMPLEMENTATION STRATEGY

1. Teaching plan.
2. Minimum 10 Tutorials.

REFERENCES

S. No.	Author	Title	Edition	Year of Publication	Publisher & Address
1.	S.P. Deshpande	Mathematics for Polytechnic students (Second Year)	1 st	2005	Pune Vidyarthi Griha Prakashan
2.	S.G.Chitale & N.A.Joshi	A new approach to Mathematics and Statistics (Sc. Paper II)	9 th	1998	Sheth Publishers Pvt. Ltd. Mumbai
3	S.P. Deshpande	Mathematics for Polytechnic students (First Year)	11 th	2006	Pune Vidyarthi Griha Prakashan

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

S. No.	Author	Title	Edition	Year of Publication	Publisher & Address
4.	V.K.Nirmale A.D. Wandhekar	Basic Mathematics	2 nd	2018	Technical Publications
5	Sameer Shah	Engineering Mathematics	3 rd	2009	Tech-Max Publications

<i>PROGRAMME TITLE</i> : Diploma in Electronics & Telecom. Engineering											
<i>SEMESTER</i> : Two											
Course Code	Course Title	Prerequisite	Credits			Examination Scheme					
			L	P	Total	Theory		PR	OR	TW	Total
						T H	T S				
ET-18222	APPLIED ELECTRONICS	ET-18121	3	4	7	80	20	50	-	25	175
<p>1) Theory paper duration 3 hrs. 2) Theory paper assessment is Internal and External. 3) The assessment of practical is Internal and External.</p>											

RATIONALE:

This subject is classified under the Applied Technology group and intended to teach the students the concepts, principles and working of basic electronic circuits. It is targeted to provide a basic foundation for technology areas like communication systems, industrial electronics as well as instrumentation, control systems and electronic circuit design.

COURSE OUTCOMES & CO PO MAPPING

SEM II C110	APPLIED ELECTRONICS (10TH COURSE IN FIRST YEAR)
C110.1	Demonstrate working principle of BJT in different Transistor configurations and analyze their Characteristics.
C110.2	Interpret the use of different parameters of BJT
C110.3	Analyze different biasing methods of BJT
C110.4	Identify the need of Amplifier and compare their types
C110.5	Demonstrate the operation & classify different types of Wave shaping circuit
C110.6	Select appropriate devices for various Electronics Circuits

Mapping of Course outcomes (Cos) to Program outcomes (Pos)

SEM II C110	APPLIED ELECTRONICS (10TH COURSE IN FIRST YEAR) PREPARED BY : AG									
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C110.1	3		3		1	1		2	2	2
C110.2	3	1	3			2		3	2	3
C110.3	3		3		1	1		2	2	2
C110.4	1	1	3	1		1		3	3	2
C110.5	3	1	3			2		3	3	2
C110.6	2	2	3	2		1		3	2	2
C 110 TOTAL	15	05	18	03	02	08	00	16	14	13
CORRELATION LEVEL	3	1	3	1	0	1	0	3	2	2

TABLE TO DECIDE CORRELATION LEVELS

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

CO SUM TOTAL	06	12	18
CORRELATION LEVEL	1	2	3

CO SUM TOTAL	0, 1, 2	3, 4, 5, 6, 7, 8	9, 10, 11, 12, 13, 14	15, 16, 17, 18
CORRELATION LEVEL	0	1	2	3

Mr. Anil Gurav

Subject Expert

SECTION 1

Sr. No.	Name of The Topics	Periods	Marks
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DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

01	<p>BIPOLAR JUNCTION TRANSISTOR C110.1 , C110.2</p> <p>1.1. Introduction, types & symbols. 1.2 Operating principle of NPN & PNP Transistor. 1.3 Transistor Currents & their relations. 1.4 Transistor configurations</p> <p>1.4.1 CE configuration – Circuit Diagram &Details ,V-I characteristics (I/P& O/P),Current Gain, Current relation , Leakage Current</p> <p>1.4.2 CB configuration – Circuit Diagram &Details ,V-I characteristics (I/P& O/P),Current Gain, Current relation , Leakage Current</p> <p>1.4.3 CC configuration – Circuit Diagram &Details ,V-I characteristics (I/P& O/P),Current Gain, Current relation , Leakage Current</p> <p>1.5 Transistor parameters: Input resistance, Output resistance, Current gain and Relation between α & β.</p> <p>1.6 Thermal Runaway & Role of Heat Sink in Transistor operation.</p>	16	24
02	<p>BIASING OF TRANSISTOR C110.2, C110.3</p> <p>2.1 Introduction, need of biasing. 2.2 The DC load line & operating point. 2.3 Fixed current bias 2.4 Voltage Divider bias. 2.5 Comparison of basic biasing circuits. 2.6 Thermal runaway.</p>	8	16
SECTION 2			
Sr. No.	Name of The Topics	Periods	Marks
03	<p>AMPLIFIER USING BJT C110.4,C110.6</p> <p>3.1 Introduction</p> <p>3.1.1 Definition , Need of Amplification 3.1.2 Types of Amplifier,</p> <p>3.2 RC coupled amplifier</p> <p>3.2.1 Circuit diagram, Working, 3.2.2 Advantages, Disadvantages and Applications</p> <p>3.3. Transformer coupled amplifier</p> <p>3.3.1 Circuit diagram, Working, 3.3.2 Advantages, Disadvantages and Applications</p> <p>3.4 Comparison of above circuits.</p>	10	16

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

04	<p>WAVE SHAPING CIRCUITS: C110.5,C110.6</p> <p>4.1 Need & Types of Wave Shaping Circuits</p> <p>4.2 Non linear circuits – Clippers & Clamper</p> <p> 4.2.1 Series Clipper (positive & negative)</p> <p> 4.2.2 Parallel Clipper (positive & negative)</p> <p> 4.2.3 Bias Clipper. (Positive bias clipper & Negative bias clipper) Operation details, Circuit Diagram, I/O Waveforms.</p> <p> 4.2.4 Double Bias Parallel Clipper Operation details, Circuit Diagram, I/O Waveforms.</p> <p> 4.2.5 Clipper Circuit examples</p> <p>4.3 Comparison between Clipper Circuits</p> <p>4.4 Clamper circuit (positive & negative) Operation details, Circuit Diagram Output Waveforms.</p> <p>4.5 Voltage Multiplier – Voltage Doubler.</p> <p> 4.5.1 Half Wave Voltage Doubler.</p> <p> 4.5.2 Full Wave Voltage Douler.</p>	14	24
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LIST OF LABORATORY EXPERIENCES

EXP. NO.	TITLE	COURSE OUTCOME MAPPING
1.	B.J.T. Characteristics (Common Emitter Configuration) (Input Characteristics)	C110.1
2.	B.J.T. Characteristics (Common Emitter Configuration) (Output Characteristics)	C110.1
3.	B.J.T. Characteristics (Common Base Configuration)	C110.1
4.	DC Load Line	C110.2
5.	Q-point or Operating Point	C110.2
6.	Stability Factor of a Transistor	C110.3
7.	Frequency Response of R-C Coupled Amplifier	C110.4
8.	Frequency Response of a Transformer Coupled Amplifier	C110.4
9.	Series Clipper (positive & negative)	C110.5
10.	Parallel Clipper (positive & negative)	C110.5
11.	Biased Parallel Clipper Circuit	C110.5
12.	Clamping Circuit	C110.5
13.	Half Wave Voltage Doubler	C110.6

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

14.	Full Wave Voltage Doubler	C110.6
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IMPLEMENTATION STRATEGY

1. Teaching plan
2. Minimum 10 practicals
3. Assignments ((Example : Market survey study of latest Transistors with ratings and applications, Power supply ratings, applications etc)

The table to measure the attainment levels for TERM WORK (on a rating scale of “out of 25”) of the defined expected course outcomes is as shown in the format given below:

(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

LAB EXPERIENCE		1	2	3	4	5	6
	COURSE OUTCOMES	C110.1 (out of 25)	C110.1 (out of 25)	C110.2 (out of 25)	C110.2 (out of 25)	C110.2 (out of 25)	C110.3 (out of 25)
STUDENT SPNO							
1303001							
1303002							
1303004							
1303005							
1303006							
1303008							
1303011							
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* The final % attainment level for TERM WORK of each course outcome may then be computed and the overall % attainment level for the course, for term work may then be calculated.

The table to measure the attainment levels for PRACTICAL EXAMINATION (on a rating scale of “out of 50”) of the defined expected course outcomes is as shown in the format given below:

(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

LAB EXPERIENCE		1	2	3	4	5	6
COURSE OUTCOMES		C110.1 (out of 50)	C110.1 (out of 50)	C110.2 (out of 50)	C110.2 (out of 50)	C110.2 (out of 50)	C110.3 (out of 50)
STUDENT SPNO							
1303001							
1303002							
1303004							
1303005							
1303006							
1303008							
1303011							
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* The final % attainment level for PRACTICAL EXAMINATION of each course outcome may then be computed and the overall % attainment level for the course, for practical exam may then be calculated.

REFERENCES

Sr. No.	Author	Title	Edition	Year of Publication	Publisher & Address
1.	Robert Boylestad	Electronics Devices & Circuit Theory	9 th	2009	PHI publisher
2.	G.K.Mital	Electronics Devices & Circuits	23 rd	2006	Khanna Publication
3.	DR. R.S.Sedha	APPLIED ELECTRONICS	Revised Edition	2015	S CHAND Publication
4.	David Bell	Fundamentals of Electronic Devices	1 st	1990	D B Taraporevala son & Co Pvt. Ltd. Mumbai
5.	Millman and Halkias	Electronics Devices and Circuits	1 st	1985	McGraw Hills Inc.,

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

Sr. No.	Author	Title	Edition	Year of Publication	Publisher & Address
1.	Robert Boylestad	Electronics Devices & Circuit Theory	9 th	2009	PHI publisher
2.	G.K.Mital	Electronics Devices & Circuits	23 rd	2006	Khanna Publication New Delhi-2

PROGRAMME TITLE : Diploma in Electronics & Telecom. Engineering											
SEMESTER : Two											
Course Code	Course Title	Prerequisite	Credits			Examination Scheme					
			L	P	Total	Theory		PR	OR	TW	Total
						T H	T S				
ET 18223	ELECTRONIC CIRCUITS AND APPLICATIONS	ET-18121	3	4	7	80	20	50	-	25	175
1) Theory paper duration 3 hrs. 2) Theory paper assessment is Internal and External. 3) The assessment of practical is Internal and External.											

RATIONALE:

This subject is classified under the Applied Technology group and intended to teach the students theory, concepts and principles of operation of various electronic devices related to their use and working in electronic systems and applications.

COURSE OUTCOMES & CO PO MAPPING

SEM II C111	ELECTRONIC CIRCUITS AND APPLICATIONS (11TH COURSE IN FIRST YEAR)
C111.1	Analyze the construction, principle of operation and characteristics of FET and MOSFETs and their use in engineering field.
C111.2	Classify different types of oscillators based on design and working principles.
C111.3	Analyze the working principles of different types of power amplifiers
C111.4	Appreciate the role of tuned amplifiers in communication circuits.

Mapping of Course outcomes (COs) to Program outcomes (POs)

SEM II C111	ELECTRONIC CIRCUITS AND APPLICATIONS (11TH COURSE IN FIRST YEAR) PREPARED BY : JN									
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C111.1	2	2	3	2				2	2	2
C111.2	2	2	3	3	1	1		3	2	2
C111.3	1	3	3	3	1	1		3	2	2
C111.4	2	3	3	3	1	1		3	2	2
C 111 TOTAL	7	10	12	11	3	3		11	8	8
CORRELATION LEVEL	2	3	3	3	1	1		3	2	2

TABLE TO DECIDE CORRELATION LEVELS

CO SUM TOTAL	04	8	12
CORRELATION LEVEL	1	2	3

CO SUM TOTAL	0,1	2,3,4,5,	6, 7, 8,9	10, 11, 12
CORRELATION LEVEL	0	1	2	3

Mr. Anil Gurav
Mrs. Janani Natarajan
Subject Experts

SECTION 1			
Sr. No.	Name of the Topic	Periods	Marks
01	FIELD EFFECT TRANSISTORS C111.1 1.1 Introduction 1.2 Types of FET 1.3 JFET – 1.3.1 Types 1.3.2 Construction 1.3.3 Operation 1.3.4 Characteristics and applications. 1.3.5 Parameters – g_m , u , $IDSS$, V_g , V_p . and relation between them 1.3.6 FET as voltage dependent resistor 1.4 MOSFET 1.4.1 Types – Enhancement, Depletion 1.4.2 Construction	16	28

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

	1.4.3 Operation 1.4.4 Characteristics and applications. 1.5 Comparison 1.5.1 n-channel and p-channel (FET & MOSFET) 1.5.2 JFET and MOSFET 1.6 CMOSFET - Operation and application.		
02	OSCILLATORS USING BJT C111.2 2.1 Introduction 2.2 Principles of oscillators, Barkhausen criterion 2.3 Types 2.4 LC Oscillator - Hartley and Colpitts type. 2.4.1 circuit diagram, working 2.4.2 Advantages, disadvantages, applications, 2.4.3 Expression for frequency of oscillation. 2.4.4 Numerical examples on above expressions 2.5 RC Oscillator – Wein bridge & Phase shift type. 2.5.1 circuit diagram, working 2.5.2 Advantages, disadvantages, applications, 2.5.3 Expression for frequency of oscillation(no derivation)	08	12

SECTION 2			
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Sr. No	Name of the Topic	Periods	Marks
.			

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

03	<p>POWER AMPLIFIERS USING BJT C111.3</p> <p>3.1 Introduction 3.1.1 Types of Amplifiers. 3.1.2 Comparison between Voltage and Power Amplifiers. 3.1.3 Performance Parameters of Power Amplifiers</p> <p>3.2 Classification of power amplifiers</p> <p>3.3 Class A Power Amplifier 3.3.1 Working Principle, characteristics, efficiency, merits & demerits 3.3.2 Transformer coupled type</p> <p>3.4 Class B Amplifier 3.4.1 Working Principle, characteristics, efficiency, merits & demerits. 3.4.2 Class B Push-pull amplifier 3.4.3 Cross over Distortion 3.4.4 Complimentary symmetry Class B Push-pull amplifier</p> <p>3.5 Class C Amplifier 3.6 Comparison of Power Amplifier Types</p>	14	24
04	<p>TUNED AMPLIFIERS C111.4</p> <p>5.1 Introduction – need, resonant circuits 5.2 Resonance in Parallel RLC circuit – resonance frequency F_r, and selectivity Q 5.3 Types of tuned amplifiers 5.4 Single tuned CE amplifier – operation, frequency response and bandwidth, merits, demerits and applications 5.5 Double tuned amplifier 5.6 Comparison of tuned amplifiers 5.7 Examples</p>	10	16

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019
LIST OF LABORATORY EXPERIENCES

EXP. NO.	TITLE	COURSE OUTCOME MAPPING
1	F.E.T. Characteristics	C111.1
2	M.O.S.F.E.T. Characteristics	C111.1
3	Frequency Response Characteristics of an F.E.T. Amplifier	C111.1
4	FET as a voltage dependent resistor	C111.1
5	Wien Bridge Oscillator	C111.2
6	R-C Phase Shift Oscillator	C111.2
7	Determine the frequency of oscillations of Colpitts oscillator circuit	C111.2
8	Class B Complimentary Symmetry Power Amplifier	C111.3
9	Class A Power Amplifier characteristics	C111.3
10	Resonance in Parallel RLC circuit	C111.4
11	Single Tuned CE Amplifier	C111.4
12	Double Tuned Amplifier	C111.4
13		
14		
15		

The table to measure the attainment levels for TERM WORK (on a rating scale of “out of 25”) of the defined expected course outcomes is as shown in the format given below:

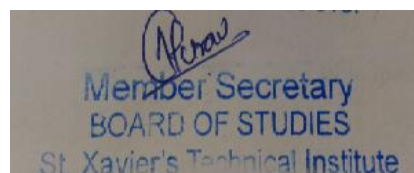
(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

LAB EXPERIENCE		1	2	3	4	5	6
COURSE OUTCOMES		C111.1 (out of 25)	C111.1 (out of 25)	C111.1 (out of 25)	C111.2 (out of 25)	C111.2 (out of 25)	C111.2 (out of 25)
STUDENT SPNO							
1303001							
1303002							
1303004							
1303005							
1303006							
1303008							
1303011							
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* The final % attainment level for TERM WORK of each course outcome may then be computed and the overall % attainment level for the course, for term work may then be calculated.

IMPLEMENTATION STRATEGY

1. Teaching plan
2. Minimum 10 practicals And assignments



The table to measure the attainment levels for PRACTICAL EXAMINATION (on a rating scale of “out of 50”) of the defined expected course outcomes is as shown in the format given below:

(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

LAB EXPERIENCE		1	2	3	4	5	6
COURSE OUTCOMES		C111.1 (out of 50)	C111.1 (out of 50)	C111.1 (out of 50)	C111.2 (out of 50)	C111.2 (out of 50)	C111.2 (out of 50)
STUDENT SPNO							
1303001							
1303002							
1303004							
1303005							
1303006							
1303008							
1303011							
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* The final % attainment level for PRACTICAL EXAMINATION of each course outcome may then be computed and the overall % attainment level for the course, for practical exam may then be calculated.

REFERENCES

S. No.	Author	Title	Edition	Year of Publication	Publisher & Address
1.	Robert Boylestad Louis Nashelsky	Electronic Devices and Circuit Theory	9th	2006	Prentice Hall of India Pvt. Ltd., New Delhi
2.	R.S.Sedha	Applied Electronics	Revised 1st	2015	S.Chand Publications
3	G.K.Mithal	Electronic Devices and Circuits	23rd	2006	Khanna Publications

PROGRAMME TITLE : Diploma in Electronics & Telecom. Engineering											
SEMESTER : Two											
Course Code	Course Title	Prerequisite	Credits			Examination Scheme					
			L	P	Total	Theory		PR	OR	TW	Total
						T H	T S				
ET 18215	ENGINEERING DRAWING AND COMPUTER AIDED DESIGN (No Theory exam)	--	-	2	2	-	-	50	-	25	75
Assessment of term work is internal Assessment of PRACTICAL EXAM is internal and external											

RATIONALE :

This subject is classified under Applied Technology group and intended to teach the students the requirement and importance of concepts and procedures involved in Engineering Drawing. It will be useful for designing and drawing accurate schematics for simple blocks, orthographic and isometric representations, dimensioning, etc., which will be helpful during project work in later semesters, as well as professionally. The objective of this subject is to familiarize the student with the use of AUTOCAD software as a drawing tool.

COURSE OUTCOMES & CO PO MAPPING

SEM II C112	ENGINEERING DRAWING AND COMPUTER AIDED DESIGN (12TH COURSE IN FIRST YEAR)
C112.1	Enumerate the basic concepts of Engineering Drawing
C112.2	Use the drawing tools available in the drawing and modify toolbars in AutoCAD
C112.3	Apply various required settings to produce accurate drawings in and efficient manner, in a given time frame/ schedule
C112.4	Draw simple geometric shapes with precision and accuracy using AutoCAD
C112.5	Represent simple blocks with orthographic and isometric

	drawings using AutoCAD
C112.6	Apply the skills gained for implementing and making required chassis work, etc. in their final semester for project work

Mapping of Course outcomes (COs) to Program outcomes (POs)

SEM II C112 CO	ENGINEERING DRAWING AND COMPUTER AIDED DESIGN (12TH COURSE IN FIRST YEAR) PREPARED BY : VV									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C112.1	1	1		1				1		3
C112.2	1	2		2				2		3
C112.3	1	2		2				2		3
C112.4	2	2		2				2		3
C112.5	2	2		2				2		3
C112.6	2	2		2				2		3
C 112 TOTAL	09	11	00	11	00	00	00	11	00	18
CORRELATION LEVEL	2	2	0	2	0	0	0	2	0	3

TABLE TO DECIDE CORRELATION LEVELS

CO SUM TOTAL	06	12	18
CORRELATION LEVEL	1	2	3

CO SUM TOTAL	0, 1, 2	3, 4, 5, 6, 7, 8	9, 10, 11, 12, 13, 14	15, 16, 17, 18
CORRELATION LEVEL	0	1	2	3

ENGINEERING DRAWING THEORY			
Sr. No.	Name of the Topic	Periods	Marks
	<p>Guest/ visiting lecturers to be/ may be invited to provide basic background knowledge on orthographic and isometric projections and views</p> <p>Students may be required to also make orthographic and isometric drawings on drawing paper/ graph sheets/ lab manual, as instructed by the concerned teacher</p> <p>Students will have to submit the weekly drawings made in autocad on pen drive to the concerned teacher</p>		

RATIONALE FOR THE EXPERIMENT LIST:

Students will be able to learn the basics of Engineering Drawing. They will also get hands on experience on the various tools using AUTO CAD software. This will enable them to effectively use the software to implement the basic orthographic and isometric representations of objects related to Engineering Drawing.

LIST OF LABORATORY EXPERIENCES

EXP. NO.	TITLE	COURSE OUTCOME MAPPING
1	Creating Drawing Sheets of ISO-A Drawing Sizes	C112.2
2	Construction of Simple Geometrical Shapes	C112.3
3	Construction of Simple Geometrical Shapes	C112.4

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

4	(Orthographic Projection 1)	C112.5
5	(Orthographic Projection 2)	C112.5
6	Isometric Views 1	C112.5
7	Isometric Views 2	C112.5
8	Dimensioning	C112.6
9	Text and Borders for Your Drawing Sheets	C112.6
10	Additional Drawing Example 1	C112.5
11	Additional Drawing Example 2	C112.5
12	Additional Drawing Example 3	C112.5
13	Additional Drawing Example 4	C112.5
14	Additional Drawing Example 5	C112.5
15	Additional Drawing Example 6	C112.5

NB:

- 1) Introduction to Engineering Drawing may be taken as separate extra lectures for students (visiting/ guest lecturers).
- 2) Students will be/ may be asked to work on drawing paper also and produce two drawing sheets containing simple geometric drawings, orthographic and isometric views of object examples, as assignment, and submit the same, as instructed by the concerned teacher.

NB: The above list of experiments is subject to change, if required.

NB: Students are required to carry their own PEN DRIVE to save weekly work done and submit the soft copy of the same to the concerned teacher.

IMPLEMENTATION STRATEGY

Minimum total 8 practicals and 2 additional practice drawings

References:

1. Elementary Engineering Drawing, N.D. Bhatt. Charotar Publishing House.
2. Mastering AutoCAD, G. Omura by Sybers (Autodesk press), Wiley India.
3. Understanding AutoCAD, Sham Tickou (Autodesk press), Wiley India

The table to measure the attainment levels for TERM WORK (on a rating scale of “out of 25”) of the defined expected course outcomes is as shown in the format given below:

(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

LAB EXPERIENCE		1	2	3	4	5	6
	COURSE OUTCOMES	C112.2 (out of 25)	C112.3 (out of 25)	C112.4 (out of 25)	C112.5 (out of 25)	C112.5 (out of 25)	C112.5 (out of 25)
STUDENT SPNO							
1303001							

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

1303002							
1303004							
1303005							
1303008							
1303011							

* The final % attainment level for TERM WORK of each course outcome may then be computed and the overall % attainment level for the course, for term work may then be calculated.

The table to measure the attainment levels for PRACTICAL EXAMINATION (on a rating scale of ‘out of 50’) of the defined expected course outcomes is as shown in the format given below:

(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

LAB EXPERIENCE		1	2	3	4	5	6
COURSE OUTCOMES		C112.2 (out of 50)	C112.3 (out of 50)	C112.4 (out of 50)	C112.5 (out of 50)	C112.5 (out of 50)	C112.5 (out of 50)
STUDENT SPNO							
1303001							
1303002							
1303004							
1303005							
1303006							

* The final % attainment level for PRACTICAL EXAMINATION of each course outcome may then be computed and the overall % attainment level for the course, for practical exam may then be calculated.

PROGRAMME TITLE : Diploma in Electronics & Telecom. Engineering											
SEMESTER : Two											
Course Code	Course Title	Prerequisite	Credits			Examination Scheme					
			L	P	Total	Theory		PR	OR	TW	Total
						T H	T S				
ET 18216	ELECTRICAL MACHINES	ET-15113	3	2	5	80	20	50	-	25	175
1) Theory paper duration 3 hrs. 2) Theory paper assessment is Internal and External. 3) The assessment of practical is Internal and External.											

RATIONALE:

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

This subject belongs to the Applied Technology group and will enable the students to comprehend the theory, concepts and operating principles of electrical machines, generators, alternators, different types of motors along with starting, switching and control circuits for the same, their applications and use in industry, and real time actual use of these in small and heavy machinery in factories. The knowledge acquired by the students will help them to design, test, trouble-shoot problems in electrical motors and generators.

COURSE OUTCOMES & CO PO MAPPING

SEM II C113	ELECTRICAL MACHINES (13TH COURSE IN FIRST YEAR)
C113.1	Apply electromagnetic induction concept to generate induced emf by static and dynamic methods
C113.2	Illustrate construction and describe principle of operation, characteristics of AC / DC generators
C113.3	Demonstrate construction and understand the principle of operation, characteristics and Applications of AC / DC motors
C113.4	Illustrate the construction ,working principle ,application and testing methods of transformer
C113.5	Analyze construction and working principle of special types of motors.
C113.6	Justify the importance of preventive maintenance schedule and safety of DC machines.

Mapping of Course outcomes (COs) to Program outcomes (POs)

SEM II C113	ELECTRICAL MACHINES (13TH COURSE IN FIRST YEAR) PREPARED BY : SRB									
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C113.1	2	1	2	-	-	-	-	-	3	1
C113.2	3	2	3	1	1	1	-	1	2	1
C113.3	3	2	3	1	1	1	-	1	2	1
C113.4	2	1	3	1	1	1	-	1	3	1
C113.5	-	2	1	1	1	-	-	1	2	1
C113.6	-	-	1	1	2	1	1	-	2	1
C 113 TOTAL	10	08	13	05	06	04	01	04	14	06
CORRELATION LEVEL	2	1	2	1	1	1	0	1	2	1

TABLE TO DECIDE CORRELATION LEVELS

CO SUM TOTAL	06	12	18
CORRELATION LEVEL	1	2	3

CO SUM TOTAL	0, 1, 2	3, 4, 5, 6, 7, 8	9, 10, 11, 12, 13, 14	15, 16, 17, 18
CORRELATION LEVEL	0	1	2	3

Mr. S. R. Borkar

Subject Expert

SECTION 1

Sr. No.	Name of the Topic	Periods	Marks
01	ELECTRO MAGNETIC INDUCTION C113.1 1.1 Faradays Laws of Electro magnetic induction 1.2 Statically induced e.m.f, derivation, problems. 1.3 Dynamically induced e.m.f, derivation, problems. 1.4 Self induced e.m.f 1.5 Mutually induced e.m.f., expressions for co-efficient of couplings 1.6 Eddy current.	06	10
02	A.C. / D.C. GENERATOR C113.2	08	14

DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

	2.1 Construction 2.2 Principle of operation of DC generator / AC generator (alternator) 2.3 EMF equation, derivation and explanation 2.4 Types of windings and their applications 2.5 Types of D.C. generators and excitation methods 2.6 Characteristics of DC generator 2.7 Applications of DC generator		
03	A.C. / D.C. MOTORS with controls and applications C113.3 3.1 General features of construction of D.C. series, shunt and compound motors. 3.2 Principle of operation, Back EMF, Torque equation, speed equation and load characteristics of D.C. series, shunt and compound motors. 3.3 Starter for D.C. motors, working principle of 3-point starter 3.4 Applications of series, shunt and compound motors. 3.5 A.C motors – different types, characteristics, working and applications	10	16
SECTION 2			
04	TRANSFORMERS C113.4 4.1 General construction and principle of operation. 4.2 E.M.F. equation. 4.3 Open and short-circuit tests. 4.4 Voltage Regulation and Efficiency of single phase transformer. 4.5 losses and efficiency by Direct and Indirect loading methods.	12	20

05	SPECIAL TYPES OF MOTORS AND CONTROLS C113.5 5.1 Synchronous Motors: Principle of operation, construction application and methods of starting. 5.2 Universal-motor: Construction, operation and applications 5.3 Stepper-motors: Construction, operation and applications 5.4 Single phase induction motor and classification	08	14
06	PREVENTIVE MAINTENANCE C113.6 Importance of preventive maintenance schedule, maintenance schedule for D.C. and A.C. motors. Faults due to poor maintenance.	04	06

LIST OF LABORATORY EXPERIENCES

EXP. NO.	TITLE	COURSE OUTCOME MAPPING
1	Study of Transformers	C113.4
2	Efficiency and Regulation of a Transformer by Direct Loading Method	C113.4
3	Different parts of DC Machines	C113.2
4	Measurement of Winding Resistances of a DC Machine	C113.2
5	Testing of a DC Motor	C113.3
6	Speed control of DC Shunt Motor	C113.3
7	Load Test of a Single Phase Induction Motor	C113.5
8	Testing of an AC motor	C113.3
9	Fault rectification in an AC motor	C113.6
10	Fault rectification in a DC motor	C113.6
11	Speed control of an Universal motor	C113.5
12	3 – Point Starter	C113.5
13	Efficiency and Regulation of a Transformer by Indirect Loading Method	C113.4
14	Significance of Transformer Ratio	C113.4

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15	Characteristics of a DC Shunt Motor	C113.3
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The table to measure the attainment levels for TERM WORK (on a rating scale of “out of 25”) of the defined expected course outcomes is as shown in the format given below:

(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

LAB EXPERIENCE		1	2	3	4	5	6
COURSE OUTCOMES		C113.4 (out of 25)	C113.4 (out of 25)	C113.2 (out of 25)	C113.2 (out of 25)	C113.3 (out of 25)	C113.3 (out of 25)
STUDENT SPNO							
1303001							
1303002							
1303004							
1303005							
1303006							
1303008							
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* The final % attainment level for TERM WORK of each course outcome may then be computed and the overall % attainment level for the course, for term work may then be calculated.

The table to measure the attainment levels for PRACTICAL EXAMINATION (on a rating scale of “out of 50”) of the defined expected course outcomes is as shown in the format given below:

(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

LAB EXPERIENCE		1	2	3	4	5	6
COURSE OUTCOMES		C113.4 (out of 50)	C113.4 (out of 50)	C113.2 (out of 50)	C113.2 (out of 50)	C113.3 (out of 50)	C113.3 (out of 50)
STUDENT SPNO							
1303001							
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* The final % attainment level for PRACTICAL EXAMINATION of each course outcome may then be computed and the overall % attainment level for the course, for practical exam may then be calculated.

IMPLEMENTATION STRATEGY

1. Teaching plan
2. Minimum 10 practicals/assignments

REFERENCES

S. No.	Author	Title	Edition	Year of Publication	Publisher & Address
1.	B.L. Theraja	Electrical Technology Vol-I	Ist	2008	S Chand &Co Ramnagar New Delhi
2.	B.L. Theraja	Electrical Technology Vol-II	Ist	2008	S Chand &Co Ramnagar New Delhi
3.	B.P. Patil	Installation Testing and maintenance of Electrical Equipment	Ist	2008	S Chand &Co Ramnagar New Delhi

PROGRAMME TITLE : Diploma in Electronics & Telecom. Engineering											
SEMESTER : Two											
Course Code	Course Title	Prerequisite	Credits			Examination Scheme					
			L	P	Total	Theory		PR	OR	TW	Total
						T H	T S				
ET 18217	ELECTRONIC WORKSHOP (No Theory exam)	--	-	2	2	-	-	-	-	50	50
The assessment of term work is internal											

RATIONALE:

Electronic Workshop is a Foundation course and plays an important role in the field of electronics for technicians. This is a foundation course and intended to teach the students the use of different tools, PCB making, transformer winding, etc. Students are also provided training of soldering and de-soldering of electronic components on printed circuit boards.

COURSE OUTCOMES & CO PO MAPPING

SEM II C114	ELECTRONIC WORKSHOP (14TH COURSE IN FIRST YEAR)
C114.1	Illustrate the use of common handtools in electronic workshop
C114.2	Demonstrate the process of PCB making
C114.3	Illustrate the construction of a transformer
C114.4	Demonstrate process of chassis making
C114.5	Compare soldering and de-soldering practice of electronic components on printed circuit boards
C114.6	Classify use of carpentry and fitting tools.

Mapping of Course outcomes (COs) to Program outcomes (POs)

SEM II C114 CO	ELECTRONIC WORKSHOP (14TH COURSE IN FIRST YEAR) PREPARED BY : RT									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C114.1		2	2	1						
C114.2		2	2	1						
C114.3		2	2	1						
C114.4		2	2	1						
C114.5		2	2	1						
C114.6		2	2	1						
C 114 TOTAL	00	12	12	06	00	00	00	00	00	00
CORRELATION LEVEL	0	2	2	1	0	0	0	0	0	0

TABLE TO DECIDE CORRELATION LEVELS

CO SUM TOTAL	06	12	18
CORRELATION LEVEL	1	2	3

CO SUM TOTAL	0, 1, 2	3, 4, 5, 6, 7, 8	9, 10, 11, 12, 13, 14	15, 16, 17, 18
CORRELATION LEVEL	0	1	2	3

Mr. Roger Titus

CONTENT

Sr. No.	Name of the Topic		
1	Tools C114.1 Use of common Hand-tools in Electronic Workshop like files, taps, drill machines, cutter, pliers, snappers, soldering iron, de-soldering pump etc. Crimping – solder-less connection.		
2	P.C.B. manufacturing process C114.2 - hand printing, Etching, drilling.		
3	Transformer Winding C114.3 - Coil winding and stacking of laminations.		
4	Chassis Making C114.4		
5	General soldering and de-soldering practice and also surface mounting devices. C114.5		
6	Power supply construction C114.6		

LIST OF LABORATORY EXPERIENCES

EXP. NO.	TITLE	COURSE OUTCOME MAPPING
1	Introduction to Tool Kit	C114.1
2	Files	C114.1
3	Tapping (Outer Tapping)	C114.1

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4	Tapping (Inner Tapping)	C114.1
5	Drills/ Drill Bits	C114.1
6	Hand Drill (Practical)	C114.1
7	Drill Machines / Sensitive Drill	C114.1
8	Chassis Construction	C114.4
9	Transformer Winding	C114.3
10	Soldering Techniques / Practice I	C114.2
11	Soldering Techniques / Practice II	C114.2
12	Soldering Techniques / Practice III	C114.5
13	Soldering Techniques / Practice IV	C114.5
14	Introduction To Carpentry Tools.	C114.6
15	Introduction To Fitting Tools	C114.6

The table to measure the attainment levels for TERM WORK (on a rating scale of “out of 50”) of the defined expected course outcomes is as shown in the format given below:

(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

LAB EXPERIENCE		1	2	3	4	5	6
COURSE OUTCOMES		C114.1 (out of 50)	C114.1 (out of 50)	C114.1 (out of 50)	C114.1 (out of 50)	C114.1 (out of 50)	C114.1 (out of 50)
STUDENT SPNO							
1303001							
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* The final % attainment level for TERM WORK of each course outcome may then be computed and the overall % attainment level for the course, for term work may then be calculated.

IMPLEMENTATION STRATEGY

1. Teaching plan
2. Minimum 10 practicals

REFERENCES:

S. No.	Author	Title	Edition	Year of Publication	Publisher & Address
1.	Walter C. Bosshart	Printed Circuit Board - Design and Technology	2 nd	1984	Tata McGraw Hill Publishing Co. Ltd. New Delhi

PROGRAMME TITLE : Diploma in Electronics & Telecom. Engineering											
SEMESTER : Two											
Course Code	Course Title	Prerequisite	Credits			Examination Scheme					
			L	P	Total	Theory		PR	Online Exam	T W	Total
						T H	T S				
ET-18219	ENVIRONMENTAL SCIENCE		2	2	4				100	50	150
1) There is on online exam for this subject. 2) Online exam assessment is internal 3) The assessment of TERM WORK (assignments/projects) is Internal.											

RATIONALE/ GENERAL OBJECTIVE

It is now understood that the subject dealing with Environmental Science, which comes under the Foundation courses group, is not merely a subject but is closely connected to the quality of our lives and surrounding, which is why the understanding and knowledge of this subject is a must. It would be most

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appropriate to bring about awareness of the importance of environmental issues amongst adolescents. Together with theoretical knowledge, its implementation in day-to-day life is desirable. Different activities like project work and assignments are included in this subject. "Preservation is better than cure", is the purpose of including this subject in the second semester of the Diploma course.

(Note: The contents and activities (assignments/ project work/ reports to be made is based on Mumbai University Standard XI curriculum/ syllabus on environmental Education.)

COURSE OUTCOMES & CO PO MAPPING

SEM II C115	ENVIRONMENTAL SCIENCE (15TH COURSE IN FIRST YEAR)
C115.1	Develop an in-depth understanding of various environmental issues and concerns of national and global importance
C115.2	Illustrate basic concepts related to sustainable development vis-avis improvement of quality of life
C115.3	Develop a deeper concern for the environment and a sense of Commitment and responsibility to take proactive action
C115.4	Appreciate the role of individual community national and international agencies in resolving environmental problems
C115.5	Respect customs and traditions related to local conservation practices and accepts indigenous eco-friendly technologies
C115.6	Motivate others and participate in dealing with environmental problems

Mapping of Course outcomes (COs) to Program outcomes (POs)

SEM II C115	ENVIRONMENTAL SCIENCE (15TH COURSE IN FIRST YEAR) PREPARED BY : VV									
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C115.1						3	3		3	3
C115.2						3	3		3	3
C115.3						3	3		3	3
C115.4						3	3		3	3
C115.5						3	3		3	3
C115.6						3	3		3	3
C 115 TOTAL	00	00	00	00	00	18	18	00	18	18
CORRELATION LEVEL	0	0	0	0	0	3	3	0	3	3

TABLE TO DECIDE CORRELATION LEVELS

CO SUM TOTAL	06	12	18
CORRELATION LEVEL	1	2	3

CO SUM TOTAL	0, 1, 2	3, 4, 5, 6, 7, 8	9, 10, 11, 12, 13, 14	15, 16, 17, 18
CORRELATION LEVEL	0	1	2	3

Mr. Vijay Vaghela

Subject Expert

Specific Objectives

To enable the students to:

1. Develop an in-depth understanding of various environmental issues and concerns of national and global importance;
2. Develop a balanced view of the relationship between environment and Development;
3. Understand basic concepts related sustainable development vis-avis improvement of quality of life;
4. Develop a deeper concern for the environment and a sense of commitment and responsibility to take proactive action;
5. Appreciate the variety in living organisms and recognizes India as a mega-diversity nation;

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6. Appreciate the role of individual community national and international agencies in resolving environmental problems;
7. Practice and ways of bringing about qualitative improvement in the environment by assuming leadership role;
8. Identify self with one's environment with an attitude to personally contribute towards its improvement;
9. Respect customs and traditions related to local conservation practices and accepts indigenous eco-friendly technologies;
10. Develop skills to undertake and participate in investigative studies on various environmental issues; and
11. Motivate others and participates in dealing with environmental problems

SECTION 1

Sr. No.	Name of the Topic	Periods	Marks
01	Man and Environment C115.1 1.1 Dimensions of environment- physical, biological and social 1.1.1 Human being as a rational and social partner in environmental actions. 1.2 Society and environment in India; Indian traditions, customs and culture - past and present 1.3 Population and environment 1.3.1 Impact of human activities on environment - A Environmental problems of urban and rural areas B Natural resources and their depletion C Stress on civic amenities; supply of water and electricity, waste disposal, transport, health services D Vehicular emissions E Urbanization - land use, housing, migrating and floating population	08	20

02	Environment and Development C115.2, C115.3 2.1 Economic and social needs - as basic considerations for development 2.2 Agriculture and industry as major sectors of development 2.3 Social factors affecting development - poverty, affluence, education, employment, child marriage and child labour, human health, social, cultural and ethical values 2.4 Impact of development on environment – changing pattern of land use; land reclamation, deforestation, resource depletion, pollution and environmental degradation	08	20
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	<p>2.5 Role of society in development and environment – public awareness through education eco -club, population education programme, campaigns, public participation in decision making</p> <p>2.6 Impact of liberalization and globalization on – agriculture and industries, dislocation of manpower and unemployment, implication for social harmony.</p>		
SECTION 2			
03	<p>Energy C115.4, C115.5</p> <p>3.1 Changing global patterns of energy consumption from ancient to modern times</p> <p>3.2 Energy consumption as measure of quality of life</p> <p>3.3 Rising demand for energy, gap between demand and supply (Indian context)</p> <p>3.4 Conventional energy sources - fossil fuels and firewood, potential (Indian context) and limitations of each source, methods of harnessing and environmental consequences of their use</p> <p>3.5 Non-conventional energy sources - types of non-conventional sources (biomass, solar, wind, ocean, hydel, geothermal, nuclear), potential (Indian context) and limitations of each source, methods of harnessing and their environmental consequences, need to promote non-conventional energy sources</p> <p>3.6 Conservation of energy sources - efficiency in production, transportation and utilization of energy</p> <p>3.7 Planning and management of energy; future sources of energy - hydrogen, alcohol, fuel cells</p> <p>3.8 Enhancing efficiency of the devices and optimizing energy utilization</p>	08	20
04	<p>Environmental Pollution and Global Issues C115.5</p> <p>4.1 Air, water (fresh and marine), soil pollution – sources and consequences including human diseases</p> <p>4.2 Sound pollution and pollution due to radioactivity sources and consequences including human diseases</p> <p>4.3 Solid, liquid and gaseous pollutants</p> <p>4.4 Hazardous materials : processes; handling and management of hazardous wastes</p> <p>4.5 Ozone layer depletion and its effect</p> <p>4.6 Greenhouse effect - global warming and climatic changes and their effects on human society, agriculture, plants and animals</p> <p>4.7 Disasters - natural (earthquakes, droughts, floods, cyclones, landslides, tsunamis, avalanches) and man-made (technological and industrial); their impact</p>	08	20

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	on the environment; prevention, control and mitigation		
4.8	Strategies for reducing pollution and improving environment		

TERM WORK:

Term work shall consist of minimum five project assignments (PROJECT ASSIGNMENTS SHALL BE DESIGNED ON THE TOPICS MENTIONED IN THE SYLLABUS OR ON CURRENT ENVIRONMENT CONCERNS). Examples of these are mentioned below:

- 1) Role of Information Technology in Environment and Human Health
- 2) Natural Resources
- 3) International Organizations for Environmental Conservation
- 4) Endangered Species
- 5) Forests and Environment
- 6) Oil Spills and their Effect on Environment
- 7) Global Warming
- 8) Alternative Energy Resources
- 9) Renewable Energy Resources
- 10) Biodiversity and its Conservation
- 11) Social Issues and Environment
- 12) Human Population and the Environment
- 13) Multidisciplinary Nature of Environment Studies
- 14) Pollution
- 15) Ecosystems
- 16) Noise Pollution and its Adverse Effects
- 17) Disaster Management
- 18) Bio-geographical Classification of India
- 19) Use of Modern Technology in Environment Conservation
- 20) Types of Environmental Pollution

OBJECTIVES (FOR COMPUTATION OF ATTAINMENT OF TERM WORK):

The students will be able to achieve the following criteria in the quality of their assignments in relation to the objectives stated below and the term work marks granted will be on the basis of the implementation of the following in their soft copies of the assignments/ files, both .DOCX and .PPTX submitted by them on pen drive:

C115.1 -.Content matter

C115.2 - Formatting

C115.3 – Sequencing and flow

C115.4 – Quality of self work and presentation

C115.5 – References in both .DOCX and .PPTX files and image/ photo credits

C115.6 – Attendance, Interaction and Punctuality/ Timely submission of assignments.

The progress level of the assignment activities is to be monitored on a regular basis, based on the student **commitment and interaction, as defined in OBJECTIVES stated above during the practical time** allotted to them for the **ASSIGNMENT/ PRACTICAL WORK** by the concerned teacher. The final table to measure the attainment levels (on a rating scale of “out of 50”) for the attainment levels of course outcomes through **observation of performance** as well as the **ASSIGNMENTS submitted** by students is as shown in the format given below:

The **TERM WORK** for this subject is out of **50 marks**.

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	COURSE OUTCOMES	C115.1 (out of 50)	C115.2 (out of 50)	C115.3 (out of 50)	C115.4 (out of 50)	C115.5 (out of 50)	C115.6 (out of 50)
STUDENT SPNO							
1303001							
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1303004							
1303005							
1303006							
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* The final average % attainment level of course outcomes for the course, for term work may then be calculated.

IMPLEMENTATION STRATEGY

1. Teaching plan
2. Use of PowerPoint slide shows and videos
3. Referencing from the Internet.
4. Minimum five projects/assignments

THE FIVE ASSIGNMENT TOPICS FOR THE TERM WORK MARKS TO BE DONE ARE IN GENERAL MEANT TO COVER ALL THE COURSE OUTCOMES. Students are assigned with 5 different topics related to environmental issues for which they have to prepare 5 individual Microsoft Word Document files and 5 individual Microsoft PowerPoint Presentation files for each topic and present the same to the class, as well as submit these completed assignments to the assigned staff member on pen drive.

REFERENCES

S. No.	Author	Title	Publisher & Address
1	Erach Bharucha,	Text Book of Environmental Studies	Universities Press/Orient Blackswan
2	Jagdish Krishnaswami, R J Ranjit Daniels	Environmental Studies	Wiley India Private Ltd. New Delhi
3	Anindita Basak	Environmental Studies	Pearson
4	Benny Joseph	Environmental Studies	Tata McGRAW HILL
5	D L Manjunath	Environmental Studies	Pearson
6	R Rajgopalan	Environmental Studies	Oxford
7	Alok Debi	Environmental Science and Engineering	University Press

PROGRAMME TITLE : Diploma in Electronics & Telecom. Engineering											
SEMESTER : Two											
Course Code	Course Title	Prerequisite	Credits			Examination Scheme					
			L	2 Tutorials	Total	Theory		PR	OR	TW	Total
						T H	T S				
ET 18224	COMMUNICATION SKILLS (No Theory exam)		2	2 Tu	4			-	-	50	50

1) There is no theory or practical exam.
2) Assessment of term work is Internal.

RATIONALE:

It is important to note that the subject of Communication Skills, which belongs to the Foundation group, is not just about English language, but is concerned with various other aspects of human interaction, since communication is universal and takes place through various languages and means across the world. This subject attempts to bring about various aspects of skills involved in communication, different methods of communication, principles of communication, hindrances to communication, concepts and importance of verbal and non-verbal communication, visual communication, use of appropriate body language and also writing skills. Thus the target of this subject is to inculcate a greater amount of effectiveness in the manner of communication in formal, informal and social situations.

COURSE OUTCOMES & CO PO MAPPING

SEM II C116	COMMUNICATION SKILLS (16TH COURSE IN FIRST YEAR)
C116.1	Enumerate various stages of the process of communication.
C116.2	Enumerate the concepts of various types of communication.
C116.3	Compare Verbal and Non Verbal communication.
C116.4	Illustrate the use of effective communication in real life situations.
C116.5	Enhance vocabulary and language skills.
C116.6	Develop writing skills to write different types of letters

Mapping of Course outcomes (COs) to Program outcomes (POs)

SEM II C116 CO	COMMUNICATION SKILLS (16TH COURSE IN FIRST YEAR) PREPARED BY : VV									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C116.1					2		2	3	3	3
C116.2					2		2	3	3	3
C116.3					2		2	3	3	3
C116.4					2		2	3	3	3
C116.5					2		2	3	3	3
C116.6					2		2	3	3	3
C 116 TOTAL	00	00	00	00	12	00	12	18	18	18
CORRELATION LEVEL	0	0	0	0	2	0	2	3	3	3

TABLE TO DECIDE CORRELATION LEVELS

CO SUM TOTAL	06	12	18
CORRELATION LEVEL	1	2	3

CO SUM TOTAL	0, 1, 2	3, 4, 5, 6, 7, 8	9, 10, 11, 12, 13, 14	15, 16, 17, 18
CORRELATION LEVEL	0	1	2	3

Mr. Vijay Vaghela

Subject Expert

SECTION 1			
Sr. No.	Name of the Topic	Periods	Marks
1	<p>PRINCIPLES OF COMMUNICATION C116.1</p> <p>1.1 Definition of communication and the communication cycle: Sender, information, medium, listener, cognition and response</p> <p>1.2 Process of communication</p> <p>1.3 Various stages of the process, namely, definition of the context, type of audience, message design, encoding, use of appropriate medium, sending, receiving, understanding and providing feedback.</p> <p>1.4 Examples related to above.</p>	04	
2	<p>COMMUNICATION TYPES C116.2</p> <p>2.1 Formal and informal communication: examples</p> <p>2.2 Vertical, horizontal and diagonal communication</p> <p>2.3 Verbal and non-verbal communication</p> <p>2.4 Oral and written communication</p> <p>2.5 Body language and graphic language</p> <p>2.6 Examples related to the above</p>	04	
3	<p>NON-VERBAL COMMUNICATION C116.3</p> <p>3.1 Examples of non-verbal communication</p> <p>3.2 Body language and types of body language with examples</p> <p>3.3 Using and understanding of visuals, graphics, symbols, charts, maps, graphs, etc. (Non-verbal codes: Kinesics, Proxemics, Haptics, Vocalics, Physical appearance, Chronemics, Artifacts)</p>	04	
4	<p>EFFECTIVE COMMUNICATION C116.4</p> <p>4.1 Barriers in communication and overcoming them</p> <p>4.2 Making communication effective: Thought process regarding purpose, audience type, message structuring, use of appropriate medium, and methods obtaining feedback for effectiveness /</p>	04	

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	success of achievement of purpose. 4.3 Examples related to the above		
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SECTION 2

Sr. No.	Name of the Topic	Periods	Marks
5	<p>SENTENCE MAKING/ CHOOSING THE APPROPRIATE WORD/S for the same, with related exercise examples C116.5</p> <p>5.1 Structure of a sentence 5.2 Agreement of the verb with the subject in person / persons 5.3 Tenses of verbs 5.4 Use of model words: can, could, may, might, shall, should, will, would, etc. 5.5 Vocabulary: (a) Differentiating similar words (b) Different meanings of same words 5.6 Use of Active and Passive voice 5.7 Direct and indirect narration 5.8 Punctuation 5.9 Comprehension of simple Passages on Scientific and Technical Subjects.</p>	06	
6	<p>WRITING SKILLS C116.6</p> <p>6.1 Formal and informal letters 6.2 Articles, reviews, etc. for magazines and newspapers 6.3 Format and Drafting of official letters, job application, resume, notices, circulars, memos, etc. 6.4 Report writing examples 6.5 Business correspondence: Enquiry letters, Orders, Receipts, complaints, proforma invoices, etc. 6.6 Writing Technical / user manuals, specifications, precautions, procedures / instructions for use of equipments, description, components, functions, applications 6.7 Written queries from management to employees and written responses from employees to management 6.8 Differentiating between bio-data, resume and curriculum vitae</p>	10	

IMPLEMENTATION STRATEGY:

- 1) Use of PowerPoint presentations and Videos
- 2) References from internet (**for teachers as well as students**)
- 3) Extensive use of examples and situations
- 4) Group discussions and role plays
- 5) Assignments for writing skills

The above strategy can be followed in the classroom teaching –learning process as well as extensively during the tutorial class by the teacher.

LIST OF TUTORIAL ASSIGNMENT/ EXPERIENCES

EXP. NO.	TITLE	COURSE OUTCOME MAPPING
1	Questions and Answers Activities: Barriers to Communication	C116.1
2	Questions and Answers: Elements of Communication	C116.1
3	Questions and Answers: Listening Skills	C116.2
4	Essay Writing based on video clips shown: History of Communication	C116.4
5	Communication Failure: Questions and Answers based on video clip shown	C116.3
6	Creative Story Writing (based on given ten words)	C116.5
7	Informal Letter Writing	C116.6
8	Formal Letter Writing	C116.6
9	Debate / Group Discussion Activity: Based on given topics	C116.4

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The table to measure the attainment levels for TERM WORK (on a rating scale of “out of 50”) of the defined expected course outcomes is as shown in the format given below:

(Note:.....the table should progress to the right for Lab Experience 7, 8, 9,and so on.....)

LAB EXPERIENCE		1	2	3	4	5	6
	COURSE OUTCOMES	C116.1 (out of 50)	C116.1 (out of 50)	C116.2 (out of 50)	C116.4 (out of 50)	C116.3 (out of 50)	C116.5 (out of 50)
STUDENT SPNO							
1303001							
1303002							
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* The final % attainment level for TERM WORK of each course outcome may then be computed and the overall % attainment level for the course, for practical exam may then be calculated.

REFERENCES

S. No.	Author	Title	Edition	Year of Publication	Publisher & Address
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DETE SYLLABUS FOR SECOND SEMESTER - JANUARY 2019

S. No.	<u>Author</u>	<u>Title</u>	<u>Edition</u>	<u>Year of Publication</u>	<u>Publisher & Address</u>
1		A Course of Technical English Book – 1			Curriculum Development Centre – TTTI Bhopal
2		A Course of Technical English Book – 2			Curriculum Development Centre – TTTI Bhopal
3	MSBTE, Mumbai	Text book of Communication Skills			MSBTE, Mumbai
4	M. Ashraf Rizvi	Effective Technical communication			Tata McGraw Hill
5	Krushna Mohan, Meera Bannerji	Developing Communication Skills			Macmillan
6	Joyeeta Bhattacharya	Communication Skills			Reliable Series
7	Jayakaran	Every ones guide to effective writing			Apple Publishing