Dr. J. J. Magdum Trust's

DR. J. J. MAGDUM COLLEGE OF ENGINEERING, JAYSINGPUR

DTE Code
EN 06277

NBA Accredited

NAAC "A" Grade Accredited Institute
An ISO 21001:2018 Certified Institute

AN AUTONOMOUS INSTITUTE

Your Dream, Our Mission



• DEPARTMENT •

Electronics and Telecommunication Engineering

• CURRICULUM •

(As per NEP 2020 Guidelines)
for

Second Year B.Tech. Engineering Program

with effect from 2025-26

Prof. M. M. Kolap	Dr. Mrs. S. B. Patil	Dr. G. V. Mulgund
BOS Chairman	Dean Academics	Principal

B. Tech. (Electronics & Telecommunication)
Curriculum Structure as per NEP 2020
For Students Admitted in Year: 2024-25 Onwards

Institute Vision
To be a leading academic organization, creating Skilled and Ethical Human Resource by leveraging Technical Education for Sustainable Development of Society.

Institute Mission	
M1:	To produce competent technocrats to meet modern societal and industrial challenges.
M2:	To create ethical and skilled human resources through quality education and various extension activities and outreach programs.
M3:	To leverage technical expertise to solve societal issues for its sustainable development.

Department Vision
To be the most preferred department delivering fundamental and advanced knowledge in Electronics& Telecommunication and related engineering fields using state-of-the-art teaching methodologies to transform the students into knowledgeable and skilled graduates with ethical behaviour.

Department Mission	
M1:	To provide high-quality technical education and preparethe students to tackle the complex engineering problems using advanced methods with sound footing on fundamental engineering principles.
M2:	To implement technical and managerial skills with innovative research capabilities for exemplary professional conduct.
M3:	To lead and to apply technology for the progress of mankind.
M4:	To adopt to the constantly changing technological environment with highest ethical values as inner strength

Programme Educational Objectives (PEO):	
PEO1	Exhibit analytical and design skills by providing the optimum solutions to the real time problems associated with Electronics & Telecommunication engineering using modern tools and technology.
PEO2	Demonstrate professional skills like leadership, team spirit, communication, project management to deliver the in-time solutions to the analysed and designed technical problems
PEO3	Display commitment to high standards of professional & personal ethics, and desire for self and long-life learning.

Programme Outcomes (PO)	
PO1:	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineeringproblems.
PO2:	**Problem analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles ofmathematics, natural sciences, and engineering sciences.
PO3:	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4:	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5:	**Engineering Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6:	**The Engineer and The World:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7:	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilitiesand norms of the engineering practice.
PO8:	**Individual and Collaborative Teamwork:** Function effectively as an individual, and as a member orleader in diverse teams, and in multidisciplinary settings.
PO9:	**Communication:** Communicate effectively on complex engineering activities with theengineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO10:	**Project management and finance:** Apply knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO11:	**Life-long learning:** Recognize the need for and have the preparation and ability for i. Independent and lifelong learning ii. Adaptability to new and emerging technologies and iii. Critical thinking in the broadest context of technological change.

Program Specific Outcomes (PSO):	
PSO 1	Apply their integrated knowledge of Electronics, Communication and Digital Signal Processing to provide the technical solutions to the problems related with digital communication using simulation tools.
PSO 2	Implement the successfully simulated optimum solutions in hardware using modern tools and test those for the designed specifications.

Key Features of Curriculum		
1	Multiple entry and exit option after every year	
2	Mandatory internship of one semester	
3	Curriculum is framed in compliance with NEP 2020 guideline	
4	Provision for learning in online mode through Swayam / NPTEL courses	
5	Opportunity for learner to choose courses of their interest in all disciplines.	
6	Curriculum focuses on Project Based Learning	
12	Flexibility of various degree options available at our institute	
	Various Degree options	Optional Exit Courses
	B. Tech. in Major discipline with Multidisciplinary Minor	Additional 08 credits in the form of skill-based courses / labs, internship, mini projects shall be offered at various levels.
	B. Tech. in Major discipline, Honors and Multidisciplinary Minor	
	B. Tech. Honors with Research and Multidisciplinary Minor	
	B. Tech. with Double Minor (Multidisciplinary and Specialization Minor)	

Note:

1. Students who earn a minimum of total 174 credits will be awarded "**B. Tech in Engg. with Multidisciplinary Minor**" degree.

2. Students will have the following options to earn B. Tech. in Engg. degree with MDM and Honors / Double Minor.
    a. B. Tech in Engg.. -Honors and Multidisciplinary Minor (with additional 18 credits): 174 +18 Credits
    b. There will be four papers, one in each semester starting from the 4th semester which will be based on special self-study modules mentioned in the syllabus of all core-courses.
    c. B. Tech in Engg, Honors with Research and Multidisciplinary Minor (additional 18 credits by research): Students are expected to complete a 2-months research internship in summer after 2nd year (4 credits), 3rd year (4 credits) and work towards project after 4th year (4 credits). 2 NPTEL courses of FDP level (3 credits each) must be completed in semesters 7 and 8.

Second Year Exit: Teaching Methodology, Assessment and Evaluation

1. The students should complete two online certification courses (NPTEL) related to their programme, each of 3 credits. In addition to this, they will also need to complete 2 credits worth of two Virtual Lab work related to online certification courses. These additional 8 credits earn by students shall be based upon skill based vocational courses or internship/Apprenticeship.
2. The NPTEL courses are likely to be available online and can be completed at the student's own pace. The content will be specific to the student's field of study or programme. The skill based vocational courses shall be analogous to the Baskets/Areas provided by the concerned BoS.
3. The student must complete two virtual lab work that adds 2 credits to simulate practical or experimental learning experiences in a controlled virtual environment.
4. Examination scheme: The marks gained from the two NPTEL Courses (3 credits each) are converted to a total of 100 marks. The report for the two Virtual Lab work of 2 credits will be evaluated for 25 marks. The report should include a detailed write-up and analysis of the virtual lab experiments conducted, encompassing the methodology, results, and conclusions.
5. There may be uncertainty in availability of the NPTEL courses offered by concerned BoS as there is continuous Updation of the NPTEL courses. The students can choose equivalent NPTEL course of the required duration with prior permission from the concerned institute. The concerned institute should communicate to Concerned BoS for their permission. For NPTEL course registration, the students are required to visit to website https://swayam.gov.in and create their account. Log in the account and join the

required course and follow the instructions to compete the course. Similarly, for Virtual Lab, the students are required to visit to website https://www.vlab.co.in and create their account. Log in the account and join the required lab and follow the instructions to compete the course (need to perform all listed experiments under that Lab). To fulfil the requirement of 06 credits, students can go for two courses each of 12 weeks.

Nomenclature

Abbreviation	Title	Code
BSC	Basic Science Courses	BS
ESC	Engineering Science Courses	ES
PCC	Program Core Courses	PC
PEC	Professional Elective Courses	PE
MDM	Multidisciplinary Minor	MD
OE	Open Elective	OE
SC	Skill Courses	SC
LLC	Liberal Learning Courses	--
VSEC	Vocational and Skill Enhancement Course	SE
VEC	Value Education Course	VE
AEC	Ability Enhancement Course	AE
EEMC	Entrepreneurship/Economics/Management Courses	EC
IKS	Indian Knowledge System	IK
RM	Research Methodology	RM
CEP	Community Engagement /Field Project	FP
PRO	Project	PR
OJT	Internship/On Job Training	OJT
CC	Co-curricular Courses	CC
MC	Mandatory Courses	MC
L	Lecture	L
P	Practical	P
T	Tutorial	--
T-I	Test-I	--
T-II	Test-II	--
ISE	In-Semester Evaluation	--
CIE	Continuous Internal Evaluation	--
ESE	End Semester Examination	--

Dr. J.J.Magdum College Of Engineering, Jaysingpur
ELECTRONICSANDTELECOMMUNICATIONENGINEERING
SY-B.Tech-SEM-III
Course Name: Electronic Circuit Design

Course Details:

Class	SY		**Semester**		III	
Course Title	Electronic Circuit Design		**Course Code** 1ETCPCL201		Theory:03Hr/week Practical:02hr/Batch	
Prerequisites:			Basic electronics components Basic Circuit Law's			
Teaching scheme:	**Theory Hours:**	3	**Practical Hours:**	2	**Tutorial Hours:**	--
	Credits:	3	**Credits:**	1	**Credits:**	--

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50	25	50	175

Course Objectives:
The course aims to:

SrNo.	**Course Objectives**
1	To introduce the fundamental concepts of wave shaping circuits.
2	To impart knowledge on amplifier coupling methods and to develop an understanding of feedback amplifiers.
3	To explain the classifications of power amplifiers
4	To provide insight into waveform generation using oscillators and multivibrators
5	To familiarize students with IC voltage regulation techniques

Course Outcomes:

Upon successful completion of this course, the student will be able to:

SrNo.	Course Outcomes	Cognitive Levels of Attainments per Revised Bloom's Taxonomy
1ETCPCL201.1	Analyze the operation of wave shaping circuits	Analyze (K4)
1ETCPCL201.2	Design and analyze the frequency response of single and multistage RC coupled amplifier	Apply (K3)
1ETCPCL201.3	Classify different classes of power amplifiers	Analyze (K4)
1ETCPCL201.4	Design and analyze RC and LC oscillators	Apply (K3)
1ETCPCL201.5	Design and analyze different multivibrators	Apply (K3)
1ETCPCL201.6	Design regulated power supply using IC regulators	Apply (K3)

	Course Contents			
Unit Number	**Unit Title**	**Hours**	**Course Outcomes No.**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
Unit-01	**Wave shaping Circuits and Passive Filters** Clampers: Unbiased and Biased, Clippers: Series and Shunt Unbiased, Series and Shunt Biased, Design of Passive Filters: Low Pass Filter, High Pass Filter, Band Pass, Band stop Filter, Low pass filter as Integrator, High pass filter as Differentiator, Frequency response of all filters.	6		Analyze (K4)
Unit-02	**Small Signal Amplifier:** Single stage common emitter amplifier, Single stage common source amplifier, capacitor coupled two stage CE amplifier, direct coupled two stage circuits, two stage circuit with emitter follower output, small signal high frequency amplifier,	6		Apply (K3)
Unit-03	**Large signal Amplifiers** Parameters associated with power amplifiers, Class A, Class B, Class AB and Class C amplifier, Crossover distortion, Push pull amplifier, Heat sink	5		Analyze (K4)
Unit-04	**Oscillators** Effect of positive feedback, Barkausen Criterion, types of oscillator RC Oscillators: Phase shift oscillator, Wien bridge oscillator with amplitude stability circuit, LC Oscillators: Colpitts and Hartley oscillator, Crystal Oscillator.	6		Apply (K3)
Unit-05	**Multivibrators** Basics of Multivibrator, types of Multvibrator: Astable Monostable, Bistable and Schmitt trigger	6		Apply (K3)

	circuit. Design of Astable, Monostable, Bistable Multvibrator and Schmitt trigger using transistors.			
Unit-06	**Power Supply Design** Fixed voltage regulators (78XX, 79XX), Adjustable voltage regulators (LM317, LM337, LM723). Introduction to Switch Mode Power Supply (SMPS) and its applications.	6		Apply (K3)

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1.	Textbook	"Electronic Devices & Circuits"	Allen Mottershed	Prentice-Hall India	3	2022
2.	Textbook	"Electronic Devices & Circuits	G. K. Mittal	Khanna Publishers	1	2017
3.	Textbook	"Electronic Devices & Circuits",	Salivahanan, N Suresh Kumar	Tata McGraw Hill Publication	3	2012

Online References: Coursera /NPTEL/General websites etc)

Sr.No.	Website Name	URL	Units Covered
1	https://www.youtube.com	https://www.youtube.com/watch?v=4j1QUpPwoLk	All
2	https://archive.nptel.ac.in	https://archive.nptel.ac.in/courses/108/105/108105158/	02

Suggested List of Practical/Experiment for CIE/ESE:

- Minimum 10 Experiments based on the curriculum.

Experiment Number	Type of Experiment (Basic /Design/Advanced/ Mini/Minor Projects/ Seminar/Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	Basic	Design Low pass and High pass filter and plot its frequency response	Apply (K3)
2.	Basic	Implementation of different Clipper circuits.	Apply (K3)
3.	Basic	Implementation of different Clamper circuits.	Apply (K3)
4.	Design	Design of single stage common emitter RC coupled amplifier.	Apply (K3)
5.	Design	Design of phase shift oscillator.	Apply (K3)
6.	Design	Design of Wien bridge oscillator.	Apply (K3)
7.	Design	Design of astable multivibrator using Transistor.	Apply (K3)
8.	Design	Design of monostable multivibrator using Transistor.	Apply (K3)
9.	Design	Designs of Schmitt trigger using Transistor.	Apply (K3)
10.	Design	Design of constant current source using three terminal regulator ICs like 7805, 7812,etc.	Apply (K3)
11.	Design	Design and simulation of Colpitts oscillator.	Apply (K3)
12.	Design	Design and simulation of Harley oscillator.	Apply (K3)
13.	Minor Projects	Mini-project based on above syllabus. (Maximum two students in each group)	Create (K6), Analyze (K4), Apply (K3)

Examination Scheme and Guidelines :

CIE-I 20Marks	Examination of 20marks based on Units1, 2, and3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ's compulsory.
CIE-I 20Marks	Examination of 20marks based on Units 4,5and6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ's compulsory.
ISE 10Marks	ISE/CA-In Semester Evaluation/ Continuous Assessment
CIE(Practical) (25/50Marks)	Continuous Assessment**,** As per institute policy
ESE 70 Marks	ESE-End Semester Examination(Sample)
	Que.1:MCQ's based on All Units (Carries 14 Marks)
	Que.2:based on Unit1,2,3 (Carries14 Marks)
	Que.3:based on Unit1,2,3 (Carries 14 Marks)
	Que.4:based on Unit4,5,6 (Carries 14 Marks)
	Que.5:based on Unit4,5,6 (Carries 14 Marks)

Dr J J Magdum College Of Engineering, Jaysingpur

ELECTRONICS AND TELECOMMUNICATION ENGINEERING

SY- B.Tech -SEM-III

Course Name: NETWORK ANALYSIS

Course Details:

Class	**SY**		**Semester**		**III**	
Course Title	**Network Analysis**		**Course Code** 1ETCPCL202		**Theory: 3 L**	
					Practical: 1 T	
Prerequisites:						
Teaching scheme:	**Theory Hours:**	**3**	**Practical Hours:**	**NA**	**Tutorial Hours:**	**1**
	Credits:	**3**	**Credits:**	**NA**	**Credits:**	**1**

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50	25	-	125

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
1.	To Study various types of basic circuits
2.	To analyze the circuits using various circuit analysis theorems.
3.	To analyze different resonance circuits.
4.	To study network functions, inter relationship among various circuit parameters, solve complex network using these parameters
5.	Design different types of Filters, RL, RC and RLC circuits.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCPCL202.1	Understand the concept of super node and super mesh.	K2
1ETCPCL202.2	Analyze the linear A.C & D.C circuits applying KVL, KCL, and network theorems	K3
1ETCPCL202.3	Evaluate series resonance and parallel resonance frequency half power frequencies BW Q factor etc.	K4
1ETCPCL202.4	Determine two port network parameters viz Z, Y, ABCD,H and their interrelationships.	K5
1ETCPCL202.5	Analyze Constant K-type filters & Transient response of RC, RL and RLC circuits using Laplace Transform	K4,5

Course Contents

Unit No.	Unit Title	Hours	CO	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Basics of Network Analysis:** Practical sources, Source transformations, Network reduction using Star–Delta transformation, Loop and node analysis with linearly dependent and independent sources for DC and AC networks, Concepts of super node and super mesh.	**6**	**CO1**	**K2**
Unit-02	**Network Theorems on D.C circuits** Superposition Theorem, Norton's Theorem, Thevenin's Theorem, Determination of Equivalents for Circuits with Dependent Source, Maximum Power Transfer Theorem, Duality theorem	**7**	**CO2**	**K3**
Unit-03	**Resonance** Definition, Types: series & parallel resonance, Series resonance-resonant frequency, variation of impedance, admittance, current & voltage across L & C with respect to. Frequency, Effect of resistance on frequency response, Selectivity, B.W. & Quality factor. Parallel resonance: Anti resonance frequency, Resonant frequency for a tank circuit, Quality factor. & B.W. Comparison of series and parallel resonant circuits.	**8**	**CO3**	**K4**

Unit-04	**Two-Port Parameters** Relationship of Two-Port Variables, Short-Circuit Admittance parameters, The Open-circuit Impedance Parameters, Transmission parameters, The Hybrid parameters, Interrelationship between parameters, Concept of Reciprocity & Symmetricity for network parameters.	**4**	**CO4**	**K5**
Unit-05	**Filters**: Introduction, Classification, filter fundamental such as attenuation constant, phase shift, propagation constant, characteristic impedance. Design of K-type Low and High pass type Filter	**8**	**CO5**	**K5**
Unit-06	**Laplace Transform Analysis and Circuit Applications** Laplace Transform of some important functions, Equivalent circuits for inductors and capacitors, Analysis of RL, RC and RLC circuit, Transient and steady state response of RL , RC and RLC circuits.	**4**	**CO5**	**K4**

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	**Reference**	Network Analysis	M.E.Van Valkenburg	Pearson Education / PHI	IIIrd Edition ,	
2	**Reference**	Network Fundamentals and Analysis	R.G .Kaduskar, S.O.Rajankar, T.S. Khatavkar,	Wiley India		
3	**Text**	Circuit & Network–Analysis & Synthesis'.	A.Sudhakar, Shyammohan S.Palli	Tata McGraw Hill Publication,	Fifth Edition	2015.
4	**Text**	Electrical Circuit Analysis	Soni Gupta	Dhanpat Rai & Co.		

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	-	https://youtu.be/7Nh7ISeqn6E?list=PLbRMhDVUMngfNnABo5mre45ZbHqJE2sUn	I,II,IV

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.
  1. Solve the problems based on super node and super mesh analysis.
  2. Analyse the given network using Superposition Theorem, Norton's Theorem, Thevenin's Theorem.
  3. Analyse the given network using maximum power transfer and duality theorem.
  4. Comparison of series and parallel resonant circuits.
  5. Evaluation of interrelationship between parameters.
  6. Design of K-type Low and High pass type Filter
  7. Illustrate Transient and steady state response of RL , RC and RLC circuits.

Examination Scheme and Guidelines:(Sample)

CIE-I 20 Marks	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
CIE-I 20 Marks	Examination of 20 marks based on Units 4, 5 and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
ISE 10 Marks	ISE/CA -In Semester Evaluation/Continuous Assessment
CIE (Practical) (25/50 Marks)	Continuous Assessment **,**As per institute policy
ESE 70 Marks	ESE-End Semester Examination (Sample)
	Que.1: MCQ"s based on All Units (Carries 14 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 14 Marks)
	Que.3: based on Unit 1,2,3 (Carries 14 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 14 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 14 Marks)

Dr. J.J. Magdum College Of Engineering, Jaysingpur

ELECTRONICS AND TELECOMMUNICATION ENGINEERING

Course Name: Linear Integrated Circuits

Course Details:

Class	SY- B.Tech		**Semester**	III	
Course Title	Linear Integrated Circuits		**Course Code** 1ETCPCL203	Theory: 03 Hr/week	
				Practical: 02 Hr/week	
Prerequisites:					
Teaching scheme:	**Theory Hours:**	03 Hr / week	**Practical Hours:**	02 Hr / week	**Tutorial Hours:** 00
	Credits:	03	**Credits:**	01	**Credits:** 00

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50	25	50	175

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
1	Explain the internal circuit of operational amplifier and its electrical parameters.
2	Indicate the importance of an Op-amp in building analog computations
3	Explain the application of Op-amps in building signal conditioning circuits, filters, waveform generators etc.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	**Course Outcomes**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
1ETCPCL203.1	Define Op-AMP parameters and characteristics.	Remember(K1)
1ETCPCL203.2	Compare analog ICs by reviewing data sheets for industrial and domestic applications	Understand (K2)
1ETCPCL203.3	Analyze BJT Operational amplifier for DC and AC inputs.	Apply(K3)
1ETCPCL203.4	Design of amplifiers, signal conditioners, filters, oscillators and wave shaping circuits using op-amp circuits.	Apply(K3)

Course Contents

Unit Number	Unit Title	Course outcome	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Advanced Circuit Topologies:** **1.1** Differential Amplifier-Configuration, DC & AC Analysis of Dual Input Balanced Output Configuration. **1.2** Block Diagram of Op-Amp, Ideal & Practical Op-amp specifications, **1.3** Transfer characteristics of Op-amp, **1.4** Op-amp parameters & measurement: Input & output offset voltages, Input & output offset currents, Input Bias current, slew rate, CMRR, PSRR, Thermal drift. **1.5** Comparative study of Datasheets (μA741, OP07, LM324, LM311, LM308, LM380, CA3140.)	1	8 Hr	Remember(K1)
Unit-02	**Negative Feedback In Op-Amps**: 2.1 Open Loop & closed Loop- Inverting, Non-Inverting and Differential (Using one op amp). 2.2 Analysis for Av, Ri, Ro, Bandwidth, and Total output offset voltage. 2.3 AC & DC amplifiers – all configurations. (Numerical are expected). 2.4 Open loop frequency Response, closed loop frequency response,	3	4 Hr	Understand (K2)
Unit-03	**Op-amp Applications**: 3.1 Summing amplifier (Inverting & Non-Inverting), Subtractor, Integrator, Differentiator, 3.2 Instrumentation Amplifier (3 op-amps), Instrumentation amplifier using transducer bridge, I-V & V-I converter. (Numerical are expected). 3.3 Comparators, Zero Crossing Detector, Window detector, Schmitt trigger, peak detector, log and antilog amplifier, precision rectifier, sample and hold circuit.	2	6 Hr	Apply(K3)
Unit-04	**Active Filters** 4.1 First & Second Order Butterworth Low Pass, High Pass, Band Pass, Band Reject, & All Pass Filters (Analysis & Numerical are Expected). 4.2 Introduction to Chebyshev Filter 4.3 Audio Filter applications, Sensitivity.	4	4 Hr	Apply(K3)
Unit-05	**Waveform Generators** 5.1 Sine wave generator- RC phase Shift, Wein Bridge, & Quadrature oscillator. 5.2 Colpitts oscillator, Hartley oscillator 5.3 Square wave (Astable Multivibrator), & Triangular Wave generator, (Analysis & Numerical are Expected).	4	6 Hr	Apply(K3)

Unit-06	**Specialized IC Applications:** 5.1 IC 555 (Timer): Block Diagram, Multivibrators and Applications. 5.2 IC 566 VCO, PLL- Introduction, Block Diagram, Principles & description of individual blocks, 5.3 IC 565 PLL & Applications.	4	8 Hr	Apply(K3)

Text Books:

Sr. No	Book Type (Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text Book	Op-Amps & Linear Integrated Circuits	Ramakant. A. Gayakwad	PHI.	3rdEdition	
2	Text Book	Linear Integrated Circuits	S. Salivahanan & Bhaaskaran	Tata McGraw Hill.	1st Edition	
3	Text Book	Design with op-amp &Analog Integrated Circuits	Sergio Franco	Tata McGraw Hill	3rd Edition	
4	Reference Book	National Analog & Interface products Databook		National Semiconductors		
5	Reference Book	Integrated Circuits‖	K.R.Botkar.	Khanna publications,	10th Edition	
6	Reference Book	Analog Integrated Circuit Design	David. A.John &Ken Martin,	Wiley.	Student Edition	
7	Reference Book	Integrated Circuits	Roy Choudhary & Shail. B. Jain	New Age.	2nd Edition,	

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	https://www.youtube.com	https://archive.nptel.ac.in/course.html	02
2	https://archive.nptel.ac.in	https://archive.nptel.ac.in/courses/108/108/108108111/	All

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments based on the curriculum.

Suggested List of Practical/Experiment for CIE/ESE:

- Minimum 10 Experiments based on the curriculum.

Experiment Number	Type of Experiment (Basic /Design/Advanced/Mini/ Minor Projects/ Seminar/ Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	Study of Data sheets of following IC's. µA 741, OP 07, LM324, LM 308, LM380, CA 3140, LM 311.	Study	Understanding(K2)
2.	Design Inverting amplifier for DC & AC inputs using IC 741	Design	Apply (K3)
3.	Design Non-Inverting amplifier for DC & AC inputs using IC 741	Design	Apply (K3)
4.	Design of op-amp as Summing, Scaling, & Averaging amplifier in Inverting & Non-Inverting Configuration.	Design	Apply (K3)
5.	Design , build & test Precision half & full wave Rectifier using IC 741	Design	Apply (K3)
6.	Design a Comparator using IC 741	Design	Apply (K3)
7.	Study of Schmitt Trigger using IC 741.	Design	Apply (K3)
8.	Design of first order low pass Filter & high pass filter and study the frequency response using IC 741	Design	Apply (K3)
9.	Design , build & test Triangular & square wave generator using IC 741	Design	Apply (K3)
10.	Design & implement Oscillator using IC 741	Design	Apply (K3)
11.	Mini-project based on above syllabus. (Maximum two students in each group)	Minor Projects	Create (K6), Analyze (K4), Apply (K3)

Examination Scheme and Guidelines :(Sample)

CIE-I 20 Marks	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
CIE-I 20 Marks	Examination of 20 marks based on Units 4, 5 and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
ISE 10 Marks	ISE/CA -In Semester Evaluation/Continuous Assessment
CIE (Practical) (25/50 Marks)	Continuous Assessment **,**As per institute policy

ESE **70 Marks**	ESE-End Semester Examination (Sample)
	Que.1: MCQ‟s based on All Units (Carries 14 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 14 Marks)
	Que.3: based on Unit 1,2,3 (Carries 14 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 14 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 14 Marks)

Dr. J.J.Magdum College Of Engineering, Jaysingpur
ELECTRONICSANDTELECOMMUNICATIONENGINEERING
SY-B.Tech-SEM-III
Course Name-MDM 1: Electronic Devices and Design

Course Details:

Class	SY		**Semester**	III		
Course Title	Electronic Devices and Design		**Course Code** **1ETCMDL1201**	Theory:03 Practical:NA		
Prerequisites:			Basic electronics components Basic Circuit Law's			
Teaching scheme:	**Theory Hours:**	3	**Practical Hours:**	NA	**Tutorial Hours:**	--
	Credits:	3	**Credits:**	NA	**Credits:**	--

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50			100

Course Objectives:
The course aims to:

Sr No.	**Course Objectives**
1	Build circuits using diodes as switches.
2	Learn different uses of diodes.
3	Build circuits using transistors as switches and understand how a Junction Field Effect Transistor (JFET) works.
4	Identify different types of special-purpose diodes
5	To familiarize students with IC voltage regulation techniques

Course Outcomes:

Upon successful completion of this course, the student will be able to:

SrNo.	Course Outcomes	Cognitive Levels of Attainmentas per Revised Bloom's Taxonomy
1ETCMDL1201.1	Build circuit of diode as a switch	Apply (K3)
1ETCMDL1201.2	Analyze different application of diode	Analyze (K4)
1ETCMDL1201.3	Build circuit of transistor as a switch	Apply (K3)
1ETCMDL1201.4	Analyze junction field transistor	Analyze (K4
1ETCMDL1201.5	Identify different special purpose diodes	Apply (K3)
1ETCMDL1201.6	Design regulated power supply using IC regulators	Apply (K3)

Course Contents

Unit Number	Unit Title	Hours	Course Outcomes No.	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	Diodes: Diode - Static and Dynamic resistances, Equivalent circuit, Diffusion and Transition Capacitances, V-I Characteristics, Diode as a switch-	6	CO1	Apply (K3)
Unit-02	Diode Applications: Rectifier - Half Wave Rectifier, Full Wave Rectifier, Bridge Rectifier, Rectifiers with Capacitive and Inductive Filters, Clippers-Clipping at two independent levels, Clamper-Clamping Circuit Theorem, Clamping Operation, Types of Clampers.	6	CO2	Analyze (K4)
Unit-03	Bipolar Junction Transistor (BJT): Principle of Operation, Common Emitter, Common Base and Common Collector Configurations, Transistor as a switch, switching times**,**	6	CO3	Apply (K3)
Unit-04	Junction Field Effect Transistor (FET): Construction, Principle of Operation, Pinch-Off Voltage, VoltAmpere Characteristic, Comparison of BJT and FET,FET as Voltage Variable Resistor, MOSFET, MOSTET as a capacitor.	6	CO4	Analyze (K4
Unit-05	Special Purpose Devices: Zener Diode - Characteristics, Zener diode as Voltage Regulator, Principle of Operation - SCR, Tunnel diode, UJT, Varactor Diode, Photo diode, LED, Schottky diode	6	CO5	Apply (K3)
Unit-06	**Power Supply Design** Fixed voltage regulators (78XX, 79XX), Adjustable voltage regulators (LM317, LM337, LM723).	6	CO6	Apply (K3)

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1.	Textbook	"Electronic Devices & Circuits"	Allen Mottershed	Prentice-Hall India	3	2022
2.	Textbook	"Electronic Devices & Circuits	G. K. Mittal	Khanna Publishers	1	2017
3.	Textbook	"Electronic Devices & Circuits",	Salivahanan, N Sureshkumar	Tata McGraw Hill Publication	3	2012

Online References: Coursera/NPTEL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	https://www.youtube.com	https://www.youtube.com/watch?v=4j1QUpPwoLk	All
2	https://archive.nptel.ac.in	https://archive.nptel.ac.in/courses/108/105/108105158/	02

Examination Scheme and Guidelines:

CIE-I 20Marks	Examinationof20marksbasedonUnits1,2,and3shouldbe conducted, and marks should be communicated to the Exam Cell. • Onequestionof05MarksbasedonMCQ'scompulsory.
CIE-I 20Marks	Examinationof20marksbasedonUnits4,5and6shouldbe conducted, and marks should be communicated to the Exam Cell. • Onequestionof05Marks based on MCQ's compulsory.
ISE 10Marks	ISE/CA-In Semester Evaluation/Continuous Assessment
CIE(Practical) (25/50Marks)	Continuous Assessment**,** As per institute policy

ESE 50Marks	ESE-End Semester Examination(Sample)
	Que.1:MCQ‟s based on All Units(Carries 14 Marks)
	Que.2:basedonUnit1,2,3(Carries14 Marks)
	Que.3:basedonUnit1,2,3(Carries14 Marks)
	Que.4:basedonUnit4,5,6(Carries14 Marks)
	Que.5:basedonUnit4,5,6(Carries 14 Marks)

Dr J J Magdum College Of Engineering, Jaysingpur
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
SY- B.Tech -SEM-III
Course Name-MDM 2-Computer Communication

Course Details:

Class	SY		**Semester**	III	
Course Title	Computer Communication		**Course code** 1ETCMDL2201	Theory: 50	
				Practical: --	
Prerequisites:					
Teaching scheme:	**Theory Hours:**	3	**Practical Hours:**	NA	**Tutorial Hours:** -----
	Credits:	3	**Credits:**	NA	**Credits:** -----

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50	---	---	100

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
1	To provide knowledge about local area networks, types of computer networks.
2	To understand computer network protocols and wireless protocols.
3	To understand functionalities of different layers
4	To provide knowledge about internet layer protocol
5	To provide knowledge about routing protocol and functionality of application layer

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCMDL2201.1	Explain the functionalities of different network, communication &different layer of OSI & TCP/IP models.	L1 , L2
1ETCMDL2201.2	Categorize the types of transmission media	L1, L2
1ETCMDL2201.3	Explain the data link layer concepts, design issues & protocols.	L1, L2, L3
1ETCMDL2201.4	Describe network layer of OSI model & select an appropriate routing strategy/ addressing scheme to design a network	L1, L2, L3
1ETCMDL2201.5	Describe transport layer with its functionality.	L1, L2, L3
1ETCMDL2201.6	Explain application layer of OSI model	L1, L2, L3

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Unit Title: Fundamentals of communication** 1.1Introduction to data communications 1.2 Data and signals : digital & analog signals 1.3 Transmission Modes- Parallel and Serial 1.4 Network Representations and Topologies 1.5 Multiplexing & switching 1.6 Network Models – OSI, TCP/IP, Data Encapsulation Data Access 1.7 Protocol & Standards	06	L1,L2
Unit-02	**Unit Title : Physical layer** **2.1** Purpose of the Physical Layer 2.2 Transmission media: - Guided and Unguided media 3 Network Hardware components 2.4 wireless media 2.5 Ethernet – Ethernet Frame	06	L1,L2
Unit-03	**Unit Title : Data Link Layer & Medium Access Control** 3.1 Purpose of data link layer		

	3.2 Error detection & correction: cyclic codes, hamming code 3.3Data Link Control : Framing, Error & flow control 3.4 Sliding Window Protocol – Stop & wait, Go-Back N, Selective repeat protocol 3.5 MAC- Channel allocation Problem 3.6 MAC Protocols - Pure ALOHA, Slotted ALOHA, CSMA/CD, CDMA/CA	06	L1,L2,L3
Unit-04	**Unit Title : Network Layer & Addressing** 4.1 Network Layer Characteristics 4.2 IPv4 Address Structure 4.3 IPv4 Issues 4.4 IPv6 Address Representation 4.5 IPv6 Address Types 4.6 ICMP messages and message formats 4.7 Functions of a Router: Forwarding and Routing, NAT 4.8 Routing algorithms: Shortest path routing, Flow-based routing, Distance Vector Routing	06	L1,L2,L3
Unit-05	**Unit Title : Transport Layer** 5.1 Transportation of Data 5.2 TCP Overview 5.3 UDP Overview 5.4 Port Numbers 5.5 TCP Communication Process 5.6 Reliability and Flow Control 5.7 UDP Communication	06	L1,L2,L3
Unit-06	**Unit Title : Application Layer** 6.1 Name space 6.2 Domain Name Space 6.3 Distribution of Name Space 6.4 DNS in the Internet 6.5 Electronic mail 6.6 FTP 6.7 WWW 6.8 HTTP	06	L1,L2,L3

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text	Data communication and networking	Behrouz A Forouzan	The McGraw Hill	4th Edition	
2.	Reference	Computer Networks	A. S. Tenenbaum	PHI	3rd Edition	
3	Reference	Data and Computer communications	William Stallings	Pearson Education	8th Edition	
4	Reference	Data communication and Computer Networks	- Ajit Pal	PHI Learning	Eastern Economy Edition	

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	Network Academy (Cisco)	https://www.netacad.com.	1 -6
2	Tutorials point	https://www.tutorialspoint.com/data_communication_computer_network	1-6

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.

Examination Scheme and Guidelines:(Sample)

CIE-I 20 Marks	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ‟s compulsory.
CIE-I 20 Marks	Examination of 20 marks based on Units 4, 5 and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ‟s compulsory.
ISE 10 Marks	ISE/CA -In Semester Evaluation/Continuous Assessment

ESE **50 Marks**	ESE-End Semester Examination (Sample)
	Que.1: MCQ‟s based on All Units (Carries 14 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 14 Marks)
	Que.3: based on Unit 1,2,3 (Carries 14 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 14 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 14 Marks)

Dr. J. J. Magdum College of Engineering, Jaysingpur
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
SY-B.Tech-SEM-III

Course Details: OE-I-Graphic Design

<table>
<tr><td colspan="2">Class</td><td colspan="2">SY-B.Tech</td><td colspan="2">Semester</td><td colspan="2">III</td></tr>
<tr><td colspan="2" rowspan="2">Course Title</td><td colspan="2" rowspan="2">Graphic Design</td><td colspan="2" rowspan="2">Course Code-
01OEL1203</td><td colspan="2">Theory: 03 Hr/week</td></tr>
<tr><td colspan="2">Practical: --NA</td></tr>
<tr><td colspan="4">Prerequisites:</td><td colspan="4">Computer and Software skill.</td></tr>
<tr><td colspan="2" rowspan="2">Teaching scheme:</td><td>Theory Hours:</td><td>03Hr /week</td><td>Practical Hours:</td><td>NA</td><td>Tutorial Hours:</td><td>NA</td></tr>
<tr><td>Credits:</td><td>03</td><td>Credits:</td><td>NA</td><td>Credits:</td><td>NA</td></tr>
<tr><td colspan="8">Evaluation scheme</td></tr>
<tr><td colspan="4">Theory</td><td colspan="2">Practical</td><td colspan="2">Total</td></tr>
<tr><td>CIE-I</td><td>CIE-II</td><td>ISE</td><td>ESE</td><td>CIE</td><td>ESE</td><td colspan="2"></td></tr>
<tr><td>20</td><td>20</td><td>10</td><td>50</td><td>-</td><td>-</td><td colspan="2">100</td></tr>
</table>

Course Objectives:

The course aims to:

Sr No.	Course Objectives
1	Understand the Foundations of Design..
2	Develop Creative Thinking Skills
3	Apply Design Principles to Real-World Projects**.**
4	Develop Branding and Visual Identity
5	Understand Print and Digital Design Standards

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Cognitive Levels of Attainmentas per Revised Bloom's Taxonomy
01OEL1203.1	Recall and explain fundamental concept of Graphic Design.	K1
01OEL1203.2	Identify and describe the tools, interface and features of Adobe Photoshop.	K2
01OEL1203.3	Identify and describe the features of Adobe Illustrators interface, tools and Vector design principles	K2
01OEL1203.4	Understand Branding Concept.	K2
01OEL1203.5	Understand the fundamental of Digital Design, Print design and marketing Standards.	K2

Course Contents

Unit Number	Unit Title	Hours	CognitiveLevels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Design Fundamentals & Creative Thinking** Basics of Graphic Design: Scope, Careers & Application Color Theory, Grids & Layouts Creative Thinking	6	K1
Unit-02	**Adobe Photoshop (Raster-Based Design)** Tools, Layers, Interface Shortcuts Image Editing, Manipulation & Retouching Poster & Ad Design Mock ups& Product Visuals Social Media Post & Thumbnail Design	5	K2
Unit-03	**Adobe Illustrator (Vector-Based Design)** Logo Design Techniques Use of Pen Tool, Paths, Icons & Shapes Info graphics & Pattern Design Flat Illustration	6	K2
Unit-04	**Branding & Visual Identity** Understanding Branding Concepts Types of Logos & Their Use Brand Guidelines: Colors, Fonts, Style Stationery Design (Letterhead, ID cards) Merchandise & Packaging Concepts	6	K1
Unit-05	**Print & Marketing Design** Flyers, Brochures, Event Invitations Resume & Product Label Design	8	K2

	Understanding Print Standards (CMYK, Bleed, DPI) Flex & Poster Design		
Unit-06	**Digital Design + Portfolio Development** Social Media Kits & Templates YouTube Channel Kit Design (Banners & Thumbnails) Freelancing & Client Handling Basics Behance Portfolio Setup & Personal Branding	5	K2

Text Books and Reference Books:	
1.	Graphic Design: The New Basics"* – Ellen Lupton & Jennifer Cole Phillips
2.	Interaction of Color"* – Josef Albers
3.	Adobe Photoshop Classroom in a Book (Latest Edition)"* – Conrad Chavez & Andrew Faulkner
4	Adobe Illustrator Classroom in a Book (Latest Edition)"* – Brian Wood
5	Designing Brand Identity"* – Alina Wheeler
6	Layout Essentials: 100 Design Principles for Using Grids"* – Beth Tondreau
7	Designing for Social Media"* – Carla Snyder
Web References	
1.	**https://youtube/armChz7SMLA?si=AuqwTx9sk6aJwX7-**
2.	**Any Open source**

Course Level Gap (if any): Typography Module.

Content Beyond Syllabus: UI/UX Design Introduction

Examination Scheme and Guidelines: (Sample)

CIE-I 20Marks	Examination of 20marks based on Units 1,2,and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ"s compulsory.
CIE-II 20Marks	Examination of 20marks based on Units 4,5and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ"s compulsory.
ISE 10Marks	ISE/CA-In Semester Evaluation/Continuous Assessment

ESE 50Marks	ESE-End Semester Examination(Sample)
	Que.1:MCQ"s based on All Units(Carries 14 Marks)
	Que.2:based on Unit1,2,3(Carries14 Marks)
	Que.3:based on Unit1,2,3(Carries14 Marks)
	Que.4:based on Unit4,5,6(Carries14 Marks)
	Que.5:based on Unit4,5,6(Carries14Marks)

Dr J J Magdum College Of Engineering, Jaysingpur
ELECTRONICSANDTELECOMMUNICATIONENGINEERING
SY-B.Tech-SEM-III
Course Name : SYSTEM SIMULATION

Course Details:

Class	SY		**Semester**	III		
Course Title	SYSTEM SIMULATION		**Course Code** 1ETCVEC204	Theory:01 Practical:02		
Prerequisites:			Basic Knowledge of Programming Concepts			
Teaching scheme:	**Theory Hours:**	1	**Practical Hours:**	02	**Tutorial Hours:**	--
	Credits:	1	**Credits:**	01	**Credits:**	--

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
--	--	--	--	25	50	75

Course Objectives:
The course aims to:

SrNo.	**Course Objectives**
1.	To introduce the basic concepts of MATLAB programming
2.	To familiarize students with the use of MATLAB programming for analyzing and implementing control flow mechanisms
3.	To enable students to develop user-defined functions and manage data sharing
4.	To develop the ability to visualize and interpret engineering data and system behavior using MATLAB's graphical tools.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

SrNo.	**Course Outcomes**	**Cognitive Levels of Attainments per Revised Bloom's Taxonomy**
1ETCVEC204.1	Understand and apply the fundamentals of MATLAB programming.	Apply (K3)
1ETCVEC204.2	Analyze and implement control flow mechanisms	Analyze (K4)
1ETCVEC204.3	Develop user-defined functions and manage data sharing	Apply (K3)
1ETCVEC204.4	Design and create graphical user interfaces (GUI) and visualizations	Analyze(K4)
1ETCVEC204.5	Model and simulate dynamic systems using Simulink	Apply(K3)

	Course Contents			
Unit Number	**Unit Title**	**Hours**	**Course Outcomes No**	**Cognitive Levels of Attainment as per revised Bloom's Taxonomy**
Unit-01	**Matlab basics** Variables, arrays Multidimensional sub arrays, Special values, displaying output data, data files, scalar and array operations, Hierarchy of operations built-in Matlab functions, introduction to plotting, Debugging Matlab programs.	2	CO1	Apply (K3)
Unit-02	**Branching Statements** Logical data type, Branches, while & for loop logical arrays and vectorization	3	CO2	Analyze (K4)
Unit-03	**User-defined & I/O functions** Introduction to Matlab functions, Variable passing in Matlab, optional arguments, Sharing data using global memory, Preserving data between calls to a function, functions, sub functions , Private functions, Nested functions . complex data , string functions , text read function, load and save commands, an introduction to Matlab file processing, file opening and closing , binary i/o functions, formatted i/o functions, comparing formatted and binary i/o function, file positioning and status functions	3	CO3	Apply (K3)
Unit-04	**Handle graphics & GUI** Matlab graphics system, Object handles, examining and changing object properties, Using set to list possible property values, user-defined data, finding objects, selecting objects with the mouse, creating and displaying a graphical user interface, object properties, graphical user interface components, dialog boxes , menus	3	CO4	Analyze(K4)
Unit-05	**Simulink** Basics introduction, simulink, modeling, solvers, simulating model using variables from matlab, data import/export , state space modeling & simulation, creation of subsystems & Mass subsystem.	3	CO5	Apply(K3)

Text Books/Reference Books:

Sr. No	Book Type(Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1.	TEXT BOOK	MATLAB® Programming for Engineers	Stephen J. Chapman	Thomson Learning	4th	2008
2.	TEXT BOOK	MATLAB: An Introduction with applications	Amos Gilat	Wiley India Pvt. Ltd	4th Ed.,	2012

3.	Reference Book	Getting started with MATLAB	Rudra Pratap	Oxford University Press,		2010
4.	Reference Book	MATLAB and SIMULINK for Engineers	Agam Kumar Tyagi	Oxford University Press		2012.

Online References: Coursera / NPTEL/ General websites etc)

Sr.No.	Website Name	URL	Units Covered
1	https://www.mathworks.com	https://www.mathworks.com/moler/exm.html	All

Suggested List of Practical/Experiment for CIE/ESE:

- Minimum 08 Experiments based on the curriculum.

Experiment Number	Type of Experiment (Basic /Design/Advanced/ Mini/ Minor Projects/ Seminar/Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	**Basic**	Program using branching statement (Any two)	Apply (K3)
2.	**Basic**	Program using looping statement (Any two)	Apply (K3)
3.	**Basic**	Program of matrix manipulation (Any two)	Apply (K3)
4.	**Basic**	Program using user defined function	Apply (K3)
5.	**Basic**	Program for handling complex data	Apply (K3)
6.	**Basic**	Program for File handling & string manipulation (Any two)	Apply (K3)
7.	**Basic**	Program for creating & Displaying GUI (Any two)	Apply (K3)
8.	**Mini Project**	Mini project based on any Engineering applications.(It should be completed within	Apply (K3) Analyze(K4)

Examination Scheme and Guidelines :

CIE(Practical) (25/50Marks)	Continuous Assessment**,** As per institute policy

Dr J J Magdum College Of Engineering, Jaysingpur
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
SY-B.Tech-SEM-IV

Course Name:- Digital Design and VLSI

Course Details:

<table>
<tr><td>Class</td><td colspan="2">SY</td><td>Semester</td><td colspan="2">IV</td></tr>
<tr><td rowspan="2">Course Title</td><td colspan="2" rowspan="2">Digital Design and VLSI</td><td rowspan="2">Course Code
1ETCPCL208</td><td colspan="2">Theory: 03</td></tr>
<tr><td colspan="2">Practical:02</td></tr>
<tr><td colspan="3">Prerequisites:</td><td colspan="3">Fundamentals of Electronics</td></tr>
<tr><td rowspan="2">Teaching scheme:</td><td>Theory Hours:</td><td>3Hr/Week</td><td>Practical Hours:</td><td>2Hr/Week</td><td>Tutorial Hours:</td><td>NA</td></tr>
<tr><td>Credits:</td><td>03</td><td>Credits:</td><td>01</td><td>Credits:</td><td>NA</td></tr>
<tr><td colspan="7">Evaluation scheme</td></tr>
<tr><td colspan="4">Theory</td><td colspan="2">Practical</td><td>Total</td></tr>
<tr><td>CIE-I</td><td>CIE-II</td><td>ISE</td><td>ESE</td><td>CIE</td><td>ESE</td><td></td></tr>
<tr><td>20</td><td>20</td><td>10</td><td>50</td><td>25</td><td>50</td><td>175</td></tr>
</table>

Course Objectives:

The course aims to:

Sr No.	Course Objectives
1	To develop the fundamental concepts in digital design.
2	Design & implement digital circuits (combinational & sequential) using VHDL
3	To motivate students learn implementation of digital circuits using HDL and PLD.
4	To teach students to develop digital design using VHDL code

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCPCL208.1	Describe the fundamental concepts of VHDL and digital system design.	Remember(K1)
1ETCPCL208.2	Explain the syntax, data types, modeling styles, and simulation concepts used in VHDL.	Understand(K2)
1ETCPCL208.3	Develop VHDL code to model combinational and sequential digital circuits.	Apply(K3)
1ETCPCL208.4	Define basic terminologies and types of finite state machines (Mealy, Moore, and synchronous FSMs).	Remember(K1)
1ETCPCL208.5	Explain the internal circuit operation, power consumption, noise margins, and switching behavior of TTL and CMOS.	Understand(K2)

Course Contents				
Unit Number	**Unit Title**	**Hours**	**Course Outcome**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
Unit-01	**Introduction to logic circuits:-** Analysis and Synthesis of logic circuits using basic and universal gates. Design examples, Optimized implementation of logic functions, Static and dynamic hazards. Boolean algebra, SOP, POS, up to 6 variables K map.	5	CO1	Remember(K1)
Unit-02	**Introduction to VHDL:-** Level of abstraction. Need of HDL,VLSI Design flow, Features and capabilities of VHDL, Elements of VHDL (Entity Architecture, Libraryo90, Package, and Configuration), Modeling styles in VHDL, Identifiers, operators , Data objects, data types, literals, Delay Models, Concurrent and sequential statement.	5	CO2	Understand(K2)
Unit-03	**Design of Combinational Circuits:-** Design of Adders and subtractors, Ripple adder, adder/ subtractor, Look-ahead adder, Magnitude Comparator, Design using - Encoders, Decoders, Multiplexers. Programmable Logic Devices (PROM, PLA, PAL). Boolean function implementation using PLDs. VHDL coding for combinational circuits.	8	CO3	Apply(K3)
Unit-04	**Synchronous sequential design:-** Basic latch, Gated SR and D latch, Master slave and edge triggered Flip flops(D, JK and T), Shift Registers , Counters, Design of ripple and synchronous counters, Design and implementation of counters using JK FF and D FF, Shift registers (SISO, SIPO, PIPO, and PISO).VHDL coding for Sequential circuits.	8	CO3	Apply(K3)
Unit-05	**Finite state machines:-** Moore/Mealy machines, state diagram, state table, state assignment and state reduction, Clocked Synchronous State Machines Design using J-K, D, T FF. VHDL coding for FSM.	5	CO4	Remember(K1)
Unit-06	**Implementation technology:-** TTL and CMOS technology, voltage levels, Noise margin, power dissipation, Fan in and Fan out, Source and sink current. Different logic families: I2L, ECL, MOS , Interfacing of TTL and CMOS ICs.	5	CO5	Understand(K2)

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition
1	Textbook	Digital Design	M. Morris Mano, Michael D. Ciletti,	Pearson	Fourth edition.
2	Textbook	Modern digital Electronics	R. P. Jain	Tata McGraw Hill	fourth edition.
3	Reference Book	Fundamentals of Digital Logic with VHDL Design	Stephen Brown and Zvonko Vranesic,	Mc Craw Hill	Third edition
4	Reference Book	Fundamentals of Digital circuits	A. Anand Kumar	PHI	Fourth edition.

Online References: Coursera /NPTL/General websites etc)

Sr.No.	Website Name	URL	Units Covered
1	NPTEL	https://archive.nptel.ac.in/courses/117/108/117108040/	1-4

Suggested List of Practical/Experiment for CIE/ESE:

- Minimum10 Experiments based on the curriculum.

Experiment Number	Type of Experiment (Basic /Design/Advanced/ Mini/ Minor Projects/ Seminar/Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	Basic Design and VHDL Code	Implementation of logic using basic and universal gates	Understand(K2)
2.	VHDL Code Programming	Introduction to Xilinx with sample experiment by using VHDL	Understand(K2)
3.	Design and VHDL Code	1 bit full adder using 1 bit half adder as a component	Apply(K3)
4.	Design and VHDL Code	4 bit full adder using 1 bit full adder as a component	Apply(K3)
5.	Hardware Interfacing	Implementation and verification of VHDL code for 8:1 MUX	Apply(K3)
6.	Hardware Interfacing	Implementation and verification of VHDL code for T-Flipflop, D-Flipflop, JK Flipflop	Apply(K3)
7.	Hardware Interfacing	Implementation and verification of VHDL code for 2:4 Decoder and 8:3 Encoder	Apply(K3)
8.	Design and VHDL Code	Implementation of 4 bit comparator	Apply(K3)

9.	Design and VHDL Code	Implementation of counters (UP,DOWN,UP-DOWN,MOD N)	Apply(K3)
10.	Design and VHDL Code	Implementation of Shift registers	Apply(K3)
11.	Design and VHDL Code	Implementation of FSM	Apply(K3)
12.	Study	Interface TTL and CMOS IC to check the compatibility	Understand(K2)
13.	Mini Project	Mini Project based on Syllabus	Create(K6)

Note:- 1) Software Simulation:-05 Experiments
2) Hardware Interface:- 03 Experiments
3) Study Based:- 01 Experiment
4) Mini Project:- 01 Experiment.

Examination Scheme and Guidelines: (Sample)

CIE-I 20Marks	Examination of 20marks based on Units 1,2,and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ"s compulsory.
CIE-I 20Marks	Examination of 20marks based on Units 4,5and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ"s compulsory.
ISE 10Marks	ISE/CA-In Semester Evaluation/Continuous Assessment
CIE(Practical) (25/50Marks)	Continuous Assessment**,** As per institute policy

ESE 70 Marks	ESE-End Semester Examination(Sample)
	Que.1:MCQ's based on All Units(Carries 14 Marks)
	Que.2:based on Unit1,2,3(Carries14 Marks)
	Que.3:based on Unit1,2,3(Carries14 Marks)
	Que.4:based on Unit4,5,6(Carries14 Marks)
	Que.5:based on Unit4,5,6(Carries14 Marks)

ELECTRONICS AND TELECOMMUNICATION ENGINEERING

SY- B.Tech -SEM-IV

Course Name--Computer Communication

Course Details:

Class	SY		**Semester**	III	
Course Title	Computer Communication		**Course code** 1ETCPCL209	Theory: 03	
				Practical: 02	
Prerequisites:					
Teaching scheme:	**Theory Hours:**	3	**Practical Hours:**	2	**Tutorial Hours:** -----
	Credits:	3	**Credits:**	1	**Credits:** -----

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50	25	50	175

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
1	To provide students with an overview of the concepts and fundamentals of data communication and computer networks
2	Review the state of art in open research area such as LAN, MAN, WLAN & applications Computer Networking
3	Acquire the required skill to design simple computer networks.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCPCL209.1	State the evolution of Computer network, classify different types of Computer Networks.	L1 , L2
1ETCPCL209.2	Design, implements, and analyzes simple computer networks.	L1, L2
1ETCPCL209.3	Identify, formulate, and solve network engineering problems.	L1, L2, L3
1ETCPCL209.4	Illustrate different OSI and TCP/IP protocols.	L1, L2, L3

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**INTRODUCTION TO COMPUTER NETWORK** History and development of computer network, network application, network software and hardware components,reference models: layer details of OSI,TCP/IP models., Network topology, Transmission media and types, Network Devices:Network Connectors, Hubs, Switches, Routers, Bridges.	06	L1,L2
Unit-02	**DATA LINK LAYER** Design issues, sliding window protocols. HDLC – types of stations, modes of operation & frame formats, Random access Protocols, IEEE 802.3 frame formats.	06	L1,L2
Unit-03	**NETWORK LAYER** Design issues, Routing algorithms – shortest path, distance vector routing, link state routing. Routing protocols - RIP, OSPF, IP Addressing, Subnetting/super netting, IPv4, IPv6 header format and basic address mode, DHCP, Congestion control, traffic shaping algorithms.	06	L1,L2,L3
Unit-04	**TRANSPORT LAYER** Transport layer-Process to process delivery, UDP, TCP, TCP services, TCP Segment, TCP Timers, Flow control, congestion control and Quality of Service.	06	L1,L2,L3
Unit-05	**APPLICATION LAYER** DNS, HTTP, SMTP, Telnet, FTP	06	L1,L2,L3
Unit-06	**MULTIMEDIA IN INTERNET** Streaming stored audio/video, Real-time interactive audio/video, Real-time transport protocol (RTP),Real-time transport control protocol (RTCP), Voice over IP (VoIP)	06	L1,L2,L3

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text	Data communication and networking	Behrouz A Forouzan	The McGraw Hill	4th Edition	
2.	Reference	Computer Networks	A. S. Tenenbaum	PHI	3rd Edition	
3	Reference	Data and Computer communications	William Stallings	Pearson Education	8th Edition	
4	Reference	Data communication and Computer Networks	- Ajit Pal	PHI Learning	Eastern Economy Edition	

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	Network Academy (Cisco)	https://www.netacad.com.	1 -6
2	Tutorials point	https://www.tutorialspoint.com/data_communication_computer_network	1-6

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.

Examination Scheme and Guidelines:(Sample)

CIE-I 20 Marks	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ‟s compulsory.
CIE-I 20 Marks	Examination of 20 marks based on Units 4, 5 and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ‟s compulsory.
ISE 10 Marks	ISE/CA -In Semester Evaluation/Continuous Assessment

ESE **50 Marks**	ESE-End Semester Examination (Sample)
	Que.1: MCQ‟s based on All Units (Carries 14 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 14 Marks)
	Que.3: based on Unit 1,2,3 (Carries 14 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 14 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 14 Marks)

Dr J J Magdum College Of Engineering, Jaysingpur
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
SY- B.Tech -SEM-IV
Electromagnetic Engineering

Course Details:

Class:	SY		**Semester-**		**III**	
Course Title:	**Electromagnetic Engg.**		**Course Code:** 1ETCPCL210		Theory: 02	
					Practical:--	
Prerequisites:						
Teaching scheme:	**Theory Hours:**	02	**Practical Hours:**	----	**Tutorial Hours:**	----
	Credits:	02	**Credits:**	-----	**Credits:**	-----

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50	----	----	100

Course Objectives:

The course aims to:

Sr No.	**Course Objectives**
1	Students recall concepts from vector calculus, integral and differential equations in the analysis of electromagnetic problems
2	Students will able to define, identify, differentiate, illustrate and simulate electric and magnetic fields
3	Students recognize and analyze Maxwell‘s equations
4	Students describe, recognize and manipulate plane electromagnetic waves in dielectric and con- ducting media
5	Students determine fundamental characteristics of simple transmission lines in the time domain and analyze it

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCPCL210.1	**Relate** vector calculus to static electric, magnetic fields in different Engineering situations.	**K2**
1ETCPCL210.2	**Solve** problems in vector calculus, electrostatic, magneto-static, plane waves and transmission lines	**K3**
1ETCPCL210.3	**Analyze** the Maxwell's equations in free space, time varying and static fields and apply them to diverse engineering problems.	**K4**
1ETCPCL210.4	**Explain** the phenomenon of wave propagation in different media and Design transmission line by inputting different Parameters	**K5**

	Course Contents			
Unit Number	**Unit Title**	**Hours**	**Course Outcome**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
Unit-01	**Vectors and Coordinate Systems** **1.1** Review of vector Analysis, vector algebra, Differentiation of vectors, Gradient of scalar, Divergence, curl, del operator **1.2**, Cartesian, Cylindrical and spherical coordinate systems **1.3** Coulomb's law, electromagnetic spectrum. (Numerical expected)	3	**CO1,CO2**	**K2,K3**
Unit-02	**Electrostatics** 2.1 Electric field intensity, field due to distributed charges, Electric Flux density, 2.2Gauss's law and its applications, divergence theorem, 2.3 Electrostatic potential, potential gradient, electric dipole and moment, Electrostatic energy density, work done, 2.4 Boundary conditions for electrostatic field. (Numerical expected)	5	**CO1,CO2**	**K2,K3**
Unit-03	**Steady Magnetic Field** 3.1 Biot-Savart law, examples on magnetic Field Intensity due to infinite and finite line 3.2 Ampere's Circuital Law in integral and differential form, Magnetic flux density, 3 . 3 Magnetic boundary conditions, vector magnetic potential, Stoke's Theorem. (Numerical expected)	5	**CO1,CO2**	**K2,K3**

Unit-04	**Maxwell's Equations** 4.1 Inconsistency of Ampere's law, Faraday's law 4.2 Maxwell's equations for static field, time varying field & harmonically varying fields 4.3 Comparison of field & circuit theory.	3	**CO3**	**K4**
Unit-05	**Electromagnetic Waves** 5.1Wave propagation in free space, dielectric & conducting media, Modification in wave equations for sinusoidal time variations, 5.2 Characteristics of plane wave in a) pure dielectric media, b) Conducting media, 5.3 Reflection of electromagnetic wave for normal incidence, Polarization, skin depth, Poynting theorem. (Numerical expected)	4	CO4	K3,K5
Unit-06	**Transmission Lines** 6.1 Types of transmission lines, equivalent circuit, 6.2 Transmission line equations, primary and secondary constants of transmission line, Transmission line parameters, terminated uniform transmission line, Short circuited and open circuited line, Reflection coefficient, VSWR, Smith chart. (Numerical expected)	4	CO4	K3,K5

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	**Textbooks**	Electromagnetics	John D. Kraus	Tata McGrawHill publication		
2	**Textbooks**	Principles of Electromagnetics	S. C. Mahapatra and SudiptaMahapatra	Tata McGraw Hill,		2011
3	**Textbooks**	Electromagnetic Waves and Radiating Systems	E. C. Jordan & K. Balman	PHI	2nd edition	
4	**Reference**	Problems and Solutions in Electromagnetic	W H Hayt and J A Buck	Tata mc-Graw Hill		
5	**Reference**	Engineering Electromagnetics	William Hayt, Buck	Tata mc-Graw Hill		

Online References: Coursera /NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	NPTEL	https://archive.nptel.ac.in/courses/108/104/108104087/	All
2	NPTEL	https://onlinecourses.nptel.ac.in/noc21_ee83/preview	All

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.
  1. Solve the problems based on coloumb's law and vectors .
  2. Analyse the Gauss law and solve the problems on Electrostatic potential.
  3. Analyse Biot-Savart law, solve examples on magnetic Field Intensity due to infinite and finite line.
  4. Analysis of Ampere's Circuital Law in integral and differential form, Magnetic flux density,
  5. Solve the problems on vector magnetic potential and Stoke's Theorem.
  6. Analyse the Maxwell's Equations.
  7. Solve the problems on Poynting theorem.
  8. Evaluate the transmission line parameters.

Examination Scheme and Guidelines:(Sample)

CIE-I **20 Marks**	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
CIE-II **20 Marks**	Examination of 20 marks based on Units 4, 5 and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ"s compulsory.
ISE **10 Marks**	ISE/CA -In Semester Evaluation/Continuous Assessment
CIE (Practical) **(25/50 Marks)**	Continuous Assessment **,**As per institute policy

ESE **70 Marks**	ESE-End Semester Examination (Sample)
	Que.1: MCQ‟s based on All Units (Carries 14 Marks)
	Que.2: based on Unit 1, 2, 3 (Carries 14 Marks)
	Que.3: based on Unit 1,2,3 (Carries 14 Marks)
	Que.4: based on Unit 4, 5, 6 (Carries 14 Marks)
	Que.5: based on Unit 4, 5, 6 (Carries 14 Marks)

Dr J J Magdum College Of Engineering, Jaysingpur
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
SY-B.Tech-SEM-IV

Course Name:- MDM 2-Digital Design and VLSI

Course Details:

<table>
<tr><td>Class</td><td colspan="2">SY</td><td>Semester</td><td colspan="2">IV</td></tr>
<tr><td>Course Title</td><td colspan="2">Digital Design and VLSI</td><td>Course Code
1ETCMDL1202</td><td colspan="2">Theory: 02
Practical:--</td></tr>
<tr><td colspan="3">Prerequisites:</td><td colspan="3">Fundamentals of Electronics</td></tr>
<tr><td rowspan="2">Teaching scheme:</td><td>Theory Hours:</td><td>2Hr/Week</td><td>Practical Hours:</td><td>NA</td><td>Tutorial Hours:</td><td>NA</td></tr>
<tr><td>Credits:</td><td>02</td><td>Credits:</td><td>NA</td><td>Credits:</td><td>NA</td></tr>
<tr><td colspan="7">Evaluation scheme</td></tr>
<tr><td colspan="3">Theory</td><td colspan="2">Practical</td><td colspan="2">Total</td></tr>
<tr><td>CIE-I</td><td>CIE-II</td><td>ISE</td><td>ESE</td><td>CIE</td><td>ESE</td><td></td></tr>
<tr><td>20</td><td>20</td><td>10</td><td>50</td><td>--</td><td></td><td>100</td></tr>
</table>

Course Objectives:

The course aims to:

Sr No.	Course Objectives
1	To develop the fundamental concepts in digital design.
2	Design & implement digital circuits (combinational & sequential) using VHDL
3	To motivate students learn implementation of digital circuits using HDL and PLD.
4	To teach students to develop digital design using VHDL code

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCMDL1202.1	Describe the fundamental concepts of VHDL and digital system design.	Remember(K1)
1ETCMDL1202.2	Explain the syntax, data types, modeling styles, and simulation concepts used in VHDL.	Understand(K2)
1ETCMDL1202.3	Develop VHDL code to model combinational and sequential digital circuits.	Apply(K3)
1ETCMDL1202.4	Define basic terminologies and types of finite state machines (Mealy, Moore, and synchronous FSMs).	Remember(K1)
1ETCMDL1202.5	Describe the characteristics and classification of semiconductor memory types..	Understand(K2)

Course Contents				
Unit Number	**Unit Title**	**Hours**	**Course Outcome**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
Unit-01	**Introduction to logic circuits:-** Analysis and Synthesis of logic circuits using basic and universal gates. Design examples, Boolean algebra, SOP, POS, up to 6 variables K map.	3	CO1	Remember(K1)
Unit-02	**Introduction to VHDL:-** Need of HDL,VLSI Design flow, Features and capabilities of VHDL, Elements of VHDL (Entity Architecture, Library, Package, and Configuration), Modeling styles in VHDL	3	CO2	Understand(K2)
Unit-03	**Design of Combinational Circuits:-** Introduction of Adders and subtractors, Look-ahead adder, Magnitude Comparator,Encoders, Decoders, Multiplexers. Demultiplexers VHDL coding for combinational circuits.	6	CO3	Apply(K3)
Unit-04	**Synchronous sequential design:-** Introduction of All Flipflops (JK,SR,T,D),Design of counters, Shift registers (SISO, SIPO, PIPO, and PISO).VHDL coding for Sequential circuits.	6	CO3	Apply(K3)
Unit-05	**Finite state machines:-** Moore/Mealy machines, state diagram, state table, state assignment and state reduction, VHDL coding for FSM.	3	CO4	Remember(K1)
Unit-06	**Semiconductor Memories and Programmable Logic Devices** Memory devices: ROM, PROM, EPROM, EEPROM, RAM, SRAM, DRAM, NVRAM, Programmable logic devices: PAL ,PLA,CPLD and FPGA	3	CO5	Understand(K2)

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition
1	Textbook	Digital Design	M. Morris Mano, Michael D. Ciletti,	Pearson	Fourth edition.
2	Textbook	Modern digital Electronics	R. P. Jain	Tata McGraw Hill	fourth edition.
3	Reference Book	Fundamentals of Digital Logic with VHDL Design	Stephen Brown and Zvonko Vranesic,	Mc Craw Hill	Third edition
4	Reference Book	Fundamentals of Digital circuits	A. Anand Kumar	PHI	Fourth edition.

Online References: Coursera /NPTL/General websites etc)

Sr.No.	Website Name	URL	Units Covered
1	NPTEL	https://archive.nptel.ac.in/courses/117/108/117108040/	1-4

List of Assignments for ISE:

Sr.No.	Title Of Assignments	Course Outcome	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1	Explain Logic Gates, K-Map Examples	CO1	Remember(K1)
2	Explain Elements Of VHDL	CO2	Understand(K2)
3	Design Combinational Circuits	CO3	Apply(K3)
4	Design Sequential Circuits	CO3	Apply(K3)
5	Explain Melay and Moore Machine	CO4	Remember(K1)
6	Explain Memory Devices	CO5	Understand(K2)

Examination Scheme and Guidelines: (Sample)

CIE-I 20Marks	Examination of 20marks based on Units 1,2,and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ‟s compulsory.
CIE-I 20Marks	Examination of 20marks based on Units 4,5and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ‟s compulsory.
ISE 10Marks	ISE/CA-In Semester Evaluation/Continuous Assessment

ESE 50Marks	ESE-End Semester Examination(Sample)
	Que.1:MCQ‟sbasedonAll Units(Carries06Marks)
	Que.2:based on Unit1,2,3(Carries11Marks)
	Que.3:based on Unit1,2,3(Carries11 Marks)
	Que.4:based on Unit4,5,6(Carries11Marks)
	Que.5:based on Unit4,5,6(Carries11Marks)

Dr J J Magdum College Of Engineering, Jaysingpur
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
SY- B.Tech -SEM-IV

Course Name:- MDM 2-Introduction to IoT

Course Details:

Class	SY		**Semester**		IV	
Course Title	Introduction to IoT		**Course Code 1ETCMDL2202**		Theory:02 Practical: NA	
Prerequisites:						
Teaching scheme:	**Theory Hours:**	2 Hr/Week	**Practical Hours:**	-	**Tutorial Hours:**	-
	Credits:	02	**Credits:**	-	**Credits:**	-

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
20	20	10	50	-	-	100

Course Objectives:

The course aims to:

Sr No.	Course Objectives
01	To introduce the concept, definition, architecture, and real-world applications of the Internet of Things.
02	To provide knowledge of IoT objects, identification techniques, and basic networking requirements for IoT systems.
03	To explore communication capabilities, traffic handling, scalability, and mobility in IoT systems.
04	To understand the security, privacy, and operational challenges faced in IoT systems.
05	To study the role of RFID systems and sensor technologies as integral components of IoT architectures.
06	To develop practical skills in using Raspberry Pi and basic programming in C/C++.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCMDL2202.1	Explain the basic concepts, IoT framework, and scope of applications across various domains.	K2 (Understand)
1ETCMDL2202.2	Identify IoT devices/services and apply identification technologies such as barcodes, EPC, RFID, and their networking needs.	K3(Apply)
1ETCMDL2202.3	Analyze communication models and traffic characteristics in IoT and evaluate interoperability and mobility challenges.	K4 (Analyze)
1ETCMDL2202.4	Examine the potential security threats and privacy issues in IoT, and propose mitigations.	K4 (Analyze)
1ETCMDL2202.5	Describe and apply RFID and sensor technologies to implement basic IoT functions.	K3(Apply)
1ETCMDL2202.6	Interface I/O devices with Raspberry Pi and develop simple IoT programs for data collection and control.	K3(Apply)

Course Contents

Unit Number	Unit Title	Hours	CO	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Introduction to IoT** - IoT concepts and definitions - IoT architecture and framework - Examples of IoT in various domains	4	CO1	K2 (Understand)
Unit-02	**Objects, Identification, and Networking** - IoT objects and services - Identification technologies (EPC, uID, barcodes) - Role of Internet in IoT - Basics of networking in IoT	4	CO2	K3(Apply)
Unit-03	**Communication Mechanisms and Traffic** - IoT traffic characteristics - Communication capabilities - Interoperability, scalability, mobility, and power considerations	4	CO3	K4 (Analyze)

Unit-04	**Security, Privacy, and Challenges** - IoT security requirements - Privacy concerns - General challenges in IoT system design	4	CO4	K4 (Analyze)
Unit-05	**RFID and Sensor Technologies** - Principles of RFID - RFID components: reader, tags, middleware - Sensor nodes and networking concepts	4	CO5	K3(Apply)
Unit-06	**IoT Hardware and Programming Basics** - Introduction to Raspberry Pi - GPIO, basic I/O interfacing - Simple programs in C/C++	4	CO6	K3(Apply)

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Reference	Raspberry Pi for Dummies	Sean McManus, MikeCook	A Wiley Brand	-	-
2	Reference	Architecting the Internet of Things	Bernd Scholz, Reiter	Springer	-	-
3	Text	The Internet of Things -Connecting objects to the web	Hakima Chaouchi	Wiley Publications	-	-

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1.	You tube	INTRODUCTION TO IOT- PART-I	1,2 and 3

Examination Scheme and Guidelines:

CIE and ESE (100 Marks)	Continuous Assessment ,As per institute policy

Dr J J Magdum College Of Engineering, Jaysingpur
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
SY-B.Tech-SEM-IV
Course Name:- OE 2-Animation Film Design

Course Details:

<table>
<tr><td>Class</td><td colspan="2">SY</td><td>Semester</td><td colspan="2">IV</td></tr>
<tr><td rowspan="2">Course Title</td><td colspan="2" rowspan="2">Animation</td><td rowspan="2">COURSE CODE
01OEL2203</td><td colspan="2">Theory: 02</td></tr>
<tr><td colspan="2">Practical:--</td></tr>
<tr><td colspan="3">Prerequisites:</td><td colspan="3">Basic Drawing Skill for 2D & 3D</td></tr>
<tr><td rowspan="2">Teaching scheme:</td><td>Theory Hours:</td><td>2Hr/Week</td><td>Practical Hours:</td><td>NA</td><td>Tutorial Hours:</td><td>NA</td></tr>
<tr><td>Credits:</td><td>02</td><td>Credits:</td><td>NA</td><td>Credits:</td><td>NA</td></tr>
<tr><td colspan="7">Evaluation scheme</td></tr>
<tr><td colspan="4">Theory</td><td colspan="2">Practical</td><td>Total</td></tr>
<tr><td>CIE-I</td><td>CIE-II</td><td>ISE</td><td>ESE</td><td>CIE</td><td>ESE</td><td></td></tr>
<tr><td>20</td><td>20</td><td>10</td><td>50</td><td></td><td></td><td>100</td></tr>
</table>

Course Objectives:

The course aims to:

Sr No.	Course Objectives
1	**Introduce the fundamental concepts and history of animation,**
2	Familiarize students with the 12 principles of animation
3	**Develop students' technical proficiency in using industry-standard 2D and 3D animation software tools**
4	**Build foundational 2D and 3D modeling and animation skills,**
5	Enable students to conceptualize and produce a short animated film project

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
01OEL2203.1	Recall and describe the history, types, and applications of animation in multimedia and entertainment.	Remember(K1)
01OEL2203.2	Explain the 12 principles of animation and their role in producing believable motion..	Understand(K2)
01OEL2203.3	Apply basic 2D and 3D animation techniques using industry-standard software..	Apply(K3)
01OEL2203.4	Analyze the movement and behavior of objects and characters to produce realistic animation.	Analyze(K4)
01OEL2203.5	Evaluate and critique the use of timing, spacing, and motion in animated sequences.	Evaluate(K5)
01OEL2203.6	Create a short animated sequence integrating modeling, rigging, principles of animation, and storytelling techniques.	Create(K6)

Course Contents				
Unit Number	**Unit Title**	**Hours**	**Course Outcome**	**Cognitive Levels of Attainment as per Revised Bloom's Taxonomy**
Unit-01	**Introduction to Animation** History of Animation (Traditional to Digital),Types of Animation: 2D, 3D, Stop Motion, Motion Graphics; Overview of Industry & Career Roles, Software Introduction: 2D: **Adobe Animate / Krita / Toon Boom,**3D: Blender / Autodesk Maya	3	CO1	Remember(K1)
Unit-02	**Principles Of Animation** **12 Principles of Animation** (Disney) Squash & Stretch, Anticipation, Staging, Straight Ahead vs. Pose to Pose, Follow Through & Overlapping Action, Slow In & Slow Out, Arcs, Secondary Action, Timing, Exaggeration ,Solid Drawing, Appeal	3	CO2	Understand(K2)
Unit-03	**2D Animation Basics** Drawing Basics (Anatomy, Perspective, Expressions),frame-by-frame Animation ,Layers and Onion Skinning, Key frames and Tweening ,Lip Sync Basics, Background and Layout Design, Short 2D Animation Project (5–10 sec)	6	CO3	Apply(K3)
Unit-04	**3D Animation Basics** Introduction to 3D Space and Interface,• Modeling Basics (Primitive Shapes, Simple Objects),Rigging Basics (Bones, Joints),Introduction to Timeline & Key frames, Basic Animation Exercises: Object Movement (Translate, Rotate, Scale),Simple Character Walk Cycle, Lighting and Rendering Basics, Short 3D Animation Project (5–10 sec)	6	CO3	Apply(K3)
Unit-05	**Acting and Storytelling for Animation** Basics of Acting in Animation, Expression & Emotion in Characters, Storyboarding & Animatics, Script to Screen Workflow	3	CO5,CO6	Evaluate(K5), Create(K6)
Unit-06	**Sound and Effects** Basics of Sound Design, Adding Music and Dialogue, Introduction to Visual Effects (2D FX, Particle Systems in 3D)	3	CO4,CO6	Analyze(K4), Create(K6)

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher
1	Textbook	The Animator's Survival Kit	Richard Williams	Faber & Faber
2	Textbook	Animation: The Mechanics of Motion	Chris Webster	Focal Press
3	Textbook	Digital Character Animation 3, Volume I: Essential Techniques	George Maestri	New Riders
4	Reference Book	Acting for Animators	Ed Hooks	Routledge
5	Reference Book	Exploring 3D Modeling with Blender	R.L. Harrington	Mercury Learning

Online References: Coursera /NPTL/General websites etc)

Sr.No.	Website Name	URL	Units Covered
1	Online courses swayam	https://onlinecourses.swayam2.ac.in/cec20_cs08/preview	All

List of Assignments for ISE:

Sr.No.	Title Of Assignments	Course Outcome	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1	Animation History and types	CO1	Remember(K1)
2	Principles of Animation	CO2	Understand(K2)
3	2D Character motion	CO3	Apply(K3), Analyze(K4),
4	3D Object motion	CO3	Apply(K3), Analyze(K4),
5	3D Character walk cycle	CO4	Apply(K3), Analyze(K4),
6	Acting and emotion	CO5,CO6	Evaluate(K5),Create(K6)

Examination Scheme and Guidelines: (Sample)

CIE-I 20Marks	Examination of 20marks based on Units 1,2,and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ‟s compulsory.
CIE-I 20Marks	Examination of 20marks based on Units 4,5and 6 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05Marks based on MCQ‟s compulsory.
ISE 10Marks	ISE/CA-In Semester Evaluation/Continuous Assessment

ESE 50Marks	ESE-End Semester Examination(Sample)
	Que.1:MCQ‟sbasedonAll Units(Carries 14 Marks)
	Que.2:based on Unit1,2,3(Carries11Marks)
	Que.3:based on Unit1,2,3(Carries11 Marks)
	Que.4:based on Unit4,5,6(Carries11Marks)
	Que.5:based on Unit4,5,6(Carries11Marks)

Dr J J Magdum College Of Engineering, Jaysingpur
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
SY- B.Tech -SEM-IV
Microcontroller (AVR)Programing

Course Details:

<table>
<tr><td colspan="2">Class</td><td colspan="2">SY- B.Tech</td><td colspan="2">Semester</td><td colspan="2">IV</td></tr>
<tr><td colspan="2" rowspan="2">Course Title</td><td colspan="2" rowspan="2">Microcontroller Programing</td><td colspan="2" rowspan="2">Course Code
1ETCVSEC211</td><td colspan="2">Theory : 01</td></tr>
<tr><td colspan="2">Practical : 02</td></tr>
<tr><td colspan="4">Prerequisites:</td><td colspan="4">Microprocessor, Microcontroller ,C++</td></tr>
<tr><td colspan="2" rowspan="2">Teaching scheme:</td><td>Theory Hours:</td><td>1</td><td>Practical Hours:</td><td>2</td><td>Tutorial Hours:</td><td></td></tr>
<tr><td>Credits:</td><td>1</td><td>Credits:</td><td>1</td><td>Credits:</td><td></td></tr>
<tr><td colspan="8">Evaluation scheme</td></tr>
<tr><td colspan="4">Theory</td><td colspan="2">Practical</td><td colspan="2">Total</td></tr>
<tr><td>CIE-I</td><td>CIE-II</td><td>ISE</td><td>ESE</td><td>CIE</td><td>ESE</td><td colspan="2"></td></tr>
<tr><td></td><td></td><td>25</td><td>25</td><td></td><td></td><td colspan="2">50</td></tr>
</table>

Course Objectives:

The course aims to:

Sr No.	Course Objectives
1	To understand architecture microcontroller
2	To understand Basics of Arduino board.
3	To write programs using microcontroller boards.
4	To write programs using microcontroller boards with analog input-output.
5	To interface peripherals with microcontrollers
6	To design Smart system using microcontroller.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCVSEC211.1	Understand architecture microcontroller	K2 (Understanding)
1ETCVSEC211.2	Understand Basics of Arduino board.	K2 (Understanding)
1ETCVSEC211.3	Write programs using microcontroller boards.	K3 (Applying)
1ETCVSEC211.4	Write programs using microcontroller boards with analog input-output.	K3 (Applying)
1ETCVSEC211.5	Interface peripherals with microcontrollers	K4 (Analyzing)
1ETCVSEC211.6	Design Smart system using microcontroller.	K6 (Creating)

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Introduction to Arduino** Introduction to Arduino , Introduction to Embedded Systems & Microcontrollers	2	K2 (Understanding)
Unit-02	**Overview of Arduino boards** (UNO, Nano) ,Arduino IDE and basic programming structure ,Digital I/O: Reading switches, controlling LEDs	2	K2 (Understanding)
Unit-03	**Programming Basics** Data types, variables, operators, control structures , Functions, loops, and timing functions (delay, millis) ,Serial communication .	2	K3 (Applying)
Unit-04	**Programming with Analog I/O** Analog sensors and analogRead(),Potentiometers, LDRs, temperature sensors (e.g. LM35)	2	K3 (Applying)
Unit-05	**Interfacing and Libraries** Using built-in and external libraries , Interfacing LCD (16x2), Keypads, buzzers	2	K4 (Analyzing)
Unit-06	**Project Design** Mini-project design using Arduino	2	K6 (Creating)

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1		AVR Microcontroller and Embedded Systems: Using Assembly and C	Mazidi, Naimi, Naimi	Pearson	First Edition	
2		Internet of Things with Arduino Blueprints	by Pradeeka Seneviratne	Packt Publishing Limited		27 October 2015

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	Coursera	https://www.coursera.org/courseraplus?utm_medium=sem&utm_source=gg&utm_campaign=b2c_india_x_coursera_ftcof_courseraplus_cx_dr_bau_gg_sem_bd-ph_in_all_m_hyb_25-01_x&campaignid=22126554907&adgroupid=177023529801&device=c&keyword=coursera&matchtype=p&network=g&devicemodel=&creativeid=728953085431&assetgroupid=&targetid=kwd-47214992984&extensionid=&placement=&gad_source=1&gad_campaignid=22126554907&gbraid=0AAAADdKX6YbYLbcJ8t5Vm-7SKjq5-p7-&gclid=CjwKCAjw6NrBBhB6EiwAvnT_rnIkkYb1pSfV5BljPJK-T8YbcudNuKNXRL25OkpA1N2DEPg37qSXXRoCoJgQAvD_BwE	1 To 6
2	NPTL	https://onlinecourses.swayam2.ac.in/aic20_sp04/preview	1 To 6
3	General websites	http://www.mouser.in/applications/open-source-hardware-galileo-pi/	3 To 6
4	General websites	https://projecthub.arduino.cc/	6

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.

Suggested List of Practical/Experiment for CIE/ESE:

- Minimum 10 Experiments based on the curriculum.

Experiment Number	Type of Experiment (Basic /Design/Advanced/Mini/ Minor Projects/ Seminar/ Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	**Design**	Output device interfacing - Blink LED + Pattern	K3 (Applying)

		Blinking	
2.	**Design**	Input device interfacing - Push Button + 7 segment Display	K3 (Applying)
3.	**Design**	Analog input interfacing - LDR	K3 (Applying)
4.	**Design**	16x2 LCD Interfacing	K3 (Applying)
5.	**Design**	Ultrasonic sensor interfacing	K3 (Applying)
6.	**Design**	IR sensor interfacing	K3 (Applying)
7.	**Design**	Buzzer interfacing	K3 (Applying)
8.	**Design**	Relay interfacing	K3 (Applying)
9.	**Design**	DC motor interfacing	K3 (Applying)
10	Mini Projects	Mini Projects	K6 (Creating)

Examination Scheme and Guidelines:(Sample)

ISE **25 Marks**	ISE/CA -In Semester Evaluation/Continuous Assessment
CIE (Practical) **(25 Marks)**	Continuous Assessment **,** As per institute policy

Dr J J Magdum College Of Engineering, Jaysingpur
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
SY- B.Tech -SEM-IV

PCB Design

Course Details:

Class	SY		**Semester**		IV	
Course Title	PCB Design		**Course Code** 1ETCAEC212		Theory:01 Practical:02	
Prerequisites:						
Teaching scheme:	**Theory Hours:**	1Hr/Week	**Practical Hours:**	2Hr/Week	**Tutorial Hours:**	-
	Credits:	01	**Credits:**	01	**Credits:**	-

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
				25	-	25

Course Objectives:

The course aims to:

Sr No.	Course Objectives
1	To study basics of PCB Design
2	To understand details of electronic components
3	To understand and study simulation tools for PCB designing
4	To develop PCB for electronic circuits

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCAEC212.1	Understand basics of PCB designing.	K2
1ETCAEC212.2	Understand PCB Designing Technology.	K2
1ETCAEC212.3	Understand and classify electronics Components.	K2
1ETCAEC212.3	Apply advance techniques, skills and modern tools for designing and fabrication of PCBs.	K3
1ETCAEC212.4	Apply modern tool for PCB Layout Design.	K3
1ETCAEC212.5	Develop a PCB for electronic circuits.	K5

Course Contents

Unit Number	Unit Title	Hours	CO	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Introduction to PCB designing concepts:** Fundamental of electronic components, basic electronic circuits, Need for PCB, Types of PCBs: Single and Multilayer.	2	CO1	K2
Unit-02	**PCB Designing Technology:** Technology: Plated Through Hole, Surface Mount. PCB Material, Electronic Component packaging, Basics of printed circuit board designing: Layout planning, general rules and parameters, ground conductor considerations	2	CO2	K2
Unit-03	**Component introduction and their categories:** Types of Components: Active Components: Diode, Transistor, MOSFET, LED, Passive Components: Resistor, Capacitor, Inductor, Transformer, Speaker/Buzzer	2	CO3	K2
Unit-04	**Introduction to Electronic design automation (EDA) tools for PCB designing:** Brief Introduction of various simulators, SPICE,PSPICE and PROTEUS Environment,	2	CO4	K3

Unit-05	**Designing with PROTEUS:** Selecting the Components Footprints as per design, Making New Footprints, Assigning Footprint to components, Net listing, PCB Layout Designing, Auto routing and manual routing.	2	CO5	K3
Unit-06	**Detailed description and practical of PCB designing:** Schematic Entry, Net Listing, PCB Layout Designing, PCB Making: Printing Etching, Drilling, Assembly of components, Description of PCB Layers: Electrical Layers, Mechanical Layers, Documentation Layers.	2	CO6	K5

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Reference	Printed Circuit Handbook	Clyde F. Coombs	McGraw-Hill	6th	2016
2	Reference	Developing Printed Circuit Assemblies: From Specifications to Mass Production	Elaine Rhodes			2008
3	Reference	Signal Integrity Issues and Printed Circuit Boards	Douglas Brooks	Prentice Hall		2003

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1.	You tube	https://youtu.be/f1soGt0uNqc?si=QYyleM9jXqYHi-S5	1,3 & 4

Suggested List of Practical/Experiment for CIE/ESE:

- Minimum 10 Experiments based on the curriculum.

Experiment Number	Type of Experiment (Basic /Design/Advanced/Mini/ Minor Projects/ Seminar/ Case Studies)	Experiment Title	Cognitive levels of attainment as per Bloom's Taxonomy
1.	Basic	Study of circuit creation and simulation using Easy EDA	K2
2.	Basic	Study of Layout Tool, and creating Layout board using Proteus	K2
3.	Design	Design a half wave rectifier using Proteus	K5
4.	Design	Design a full wave center tapped rectifier using Proteus.	K5
5.	Design	Design a clipper circuit using Proteus.	K5
6.	Design	Design a clamper circuit using Proteus.	K5
7.	Design	Design asatble multivibrator circuit using Proteus.	K5
8.	Design	Design Bistable multivibrator circuit using Proteus.	K5
9.	Design	Develop single stage RC coupled amplifier circuit on the general purpose PCB.	K5
10.	Mini project	Develop 5 V power supply circuit on the PCB.	K5

Examination Scheme and Guidelines:

CIE (Practical) (25 Marks)	Continuous Assessment **,**As per institute policy

Dr J J Magdum College of Engineering, Jaysingpur

Electronics & Telecommunication Engineering

SY- B.Tech -SEM-IV

Course Name: Environmental Studies

Course Details:

Class: S.Y.B.Tech.		**Semester: - IV**	
Course Title	Environmental Studies	**Course Code:** 1ETCMCP251	Theory:
			Practical:

Prerequisites: Basic Science Knowledge, Geography, General Awareness, Observation and Critical Thinking, Data Interpretation, Environmental Sensitivity and Responsibility and Ethical Thinking

Teaching scheme:	**Theory Hours:**	--	**Practical Hours:**	02	**Tutorial Hours:**	02
	Credits:	--	**Credits:**	02	**Credits:**	02

Evaluation scheme

Theory				**Practical**		**Total**
T-I	**T-II**	**ISE**	**ESE**	**CIE**	**ESE**	
			50	50	--	100

Course Objectives:

The course aims to:

Sr No.	Course Objectives
1	**To introduce the scope, importance, and multidisciplinary nature** of Environmental Studies, helping students understand the relationship between humans and the environment.
2	**To explore various types of natural resources,** their uses, associated problems, and the importance of sustainable management.
3	**To provide foundational knowledge on ecosystems and biodiversity**, highlighting their structure, function, and significance, and to raise awareness about threats to biodiversity and conservation strategies.
4	**To examine different types of environmental pollution,** their causes, effects, and control measures, and to understand major social issues and policies related to environmental protection.
5	**To promote hands-on learning through environmental field projects,** enabling students to observe, analyze, and report on real-life environmental issues and propose sustainable solutions.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
1ETCMCP251.1	Explain the scope and significance of Environmental Studies and demonstrate an understanding of the interconnectedness between human activities and the environment	Understand
1ETCMCP251.2	Identify various natural resources, describe their uses and associated challenges, and analyze the need for sustainable resource management practices.	Analysis
1ETCMCP251.3	Describe the structure and functions of ecosystems, classify biodiversity types, and evaluate threats to biodiversity along with conservation strategies.	Evaluate
1ETCMCP251.4	Analyze the sources, effects, and control measures of major types of pollution and assess the role of environmental policies and social movements in addressing environmental issues.	Analyze
1ETCMCP251.5	Design and execute a basic environmental field project, involving data collection, interpretation, and presentation of findings to propose feasible environmental solutions.	Create

Course Contents

Unit Number	Unit Title	Hours	Cognitive Levels of Attainment as per Revised Bloom's Taxonomy
Unit-01	**Unit Title: Nature of Environmental Studies.** **1.1** Definition, scope and importance of Environment. Structure of Environment. **1.2** Need for public awareness. Sustainable Development.	**02**	Remembering, Understanding
	Unit Title: Natural Resources and Associated Problems **1.1** Introduction, types of Natural Resources. **Forest resources:** Use and over exploitation, deforestation, Dams: Benefits and its effects.		Remembering, Understanding, Analyzing

Unit-02	**1.2 Water resources:** Use and over - utilization of surface and ground Water, Floods, drought. **1.3 Mineral resources:** Usage and exploitation, environmental effects of extracting and using mineral resources. Renewable Energy Resources. **1.4 Food Resources :** World Food Problems, Changes caused by Modern Agriculture Practices (Fertilizers ,Pesticides Problems) **1.5 Land resources:** Land as a resource, Man induced landslides, soil erosion Role of an individual in conservation of natural resources.	**05**	
Unit-03	**Unit Title: Ecosystem /Ecology** **1.1** Introduction of Ecosystems, Structure and function of an ecosystem. Producers, consumers and decomposers. **1.2** Food chains, food webs. Energy flow in the ecosystem. **1.3** Ecological pyramids.	**03**	Remembering, Understanding
Unit-04	**Unit Title: Biodiversity & Its Conservation** **1.1** Introduction & Types of Biodiversity (Genetic, Species and Ecosystem) **1.2** Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic, National values, India as a mega-diversity nation **1.3** Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, Hot-spots of biodiversity. **1.4** Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity	**04**	Remembering, Understanding, Evaluating
Unit-05	**Unit Title: Environmental Pollution, Social Issues & Environmental** **1.1** Definition of Environmental Pollution, Causes, Effects and Control measures of Air Pollution. **1.2** Water Pollution, Marine Pollution, Soil Noise Pollution. **1.3** Global Warming, Acid Rain. Ozone layer Depletion, **1.4** Solid waste Management (causes, Effects and Control measures of Urban & Industrial waste) Role of an individual in prevention of pollution **1.5** Disaster management: Floods, Earthquake, landslides.	**05**	Remembering, Understanding, Applying

Unit-06	**Environmental Field Project – Key Activities:** **Topic Selection:** Choose a relevant environmental issue (e.g., water pollution, waste management, biodiversity, air quality). **Site Visit / Field Observation:** Visit a local area such as a forest, lake, industrial site, park, landfill, or village. Observe and document environmental conditions. **Data Collection:** Use surveys, interviews, sampling, photography, and GPS mapping. Collect data on pollution levels, species diversity, waste generation, etc. **Interaction with Stakeholders:** Talk to local residents, authorities, farmers, workers, or NGOs to gather insights. **Data Analysis:** Interpret findings using charts, graphs, and tables. Identify patterns, problems, and possible causes. **Solution-Oriented Approach:** Suggest practical, sustainable, and low-cost solutions or improvements. **Report Preparation:** Compile observations, analysis, and solutions in a structured report. Include photos, maps, and references. **Presentation / Viva:** Present the findings to classmates or faculty. Answer questions and reflect on learning outcomes.	**05**	Applying, Analyzing, Evaluating, Creating

Text Books/Reference Books:

Sr. No	Book Type	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
01	Text Books	Textbook of Environmental Studies for Undergraduate Courses	Erach Bharucha	Orient BlackSwan	2nd Edition	2013
02		Environmental Studies	R. Rajagopalan	Oxford University Press	3rd Edition	2016
03		Environmental Science: Toward a Sustainable Future	Richard T. Wright, Dorothy F. Boorse	Pearson Education	13th Edition	2021
04		Principles of Environmental Science: Inquiry and Applications	William P. Cunningham, Mary Ann Cunningham	McGraw Hill Education	9th Edition	2020
05		Environmental Studies	Benny Joseph	McGraw Hill Education	3rd Edition	2017
06		Environment: Problems and Solutions	D.K. Asthana, Meera Asthana	S. Chand Publishing	5th Revised Edition	2018
07		Environmental Science	G. Tyler Miller Jr., Scott Spoolman	Cengage Learning	16th Edition	2020
08		Fundamentals of Environmental Studies	S. Arora	Kalyani Publishers	1st Edition	2015
09		Environmental Studies	Anubha Kaushik, C.P. Kaushik	New Age International Publishers	5th Edition	2019
10		Environmental Studies	Dr.P.D.Raut	Shivaji University,Kolhapur	6th Edition	2014
11	Reference Books	Environmental Chemistry	A.K. De	New Age International Publishers	9th Edition	2018
12		Ecology and Environment	P.D. Sharma	Rastogi Publications	Revised Edition	2020
13		Introduction to Environmental Engineering and Science	Gilbert M. Masters, Wendell P. Ela	Pearson Education	3rd Edition	2013
14		Environmental Pollution Control Engineering	C.S.Rao	New Age International Publishers	3rd Edition	2007
15		Environmental Management	Dr.S.N.Chatterjee	Katson Books	Revised Edition	2015

Online References: Coursera /NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
01	Ministry of Environment, Forest and Climate Change (MoEFCC), Govt. of India	https://moef.gov.in	Units 2, 4, 5 (Natural resources, Policies, Field-based data)
02	ENVIS – Environmental Information System	http://envis.frlht.org	Units 1, 3 (Biodiversity, Environment basics)
03	United Nations Environment Programme (UNEP)	https://www.unep.org	Units 3, 4 (Global pollution, conservation, sustainability)
04	Centre for Science and Environment (CSE), India	https://www.cseindia.org	Units 2, 4, 5 (Pollution, Environmental laws, Water & air)
05	National Biodiversity Authority (NBA), India	https://nbaindia.org	Unit 3 (Biodiversity, Conservation policies)
06	India Biodiversity Portal	https://indiabiodiversity.org	Unit 3, 5 (Species data, Field projects)
07	Sustainable Development Goals – UN	https://sdgs.un.org/goals	Unit 1, 4 (Global sustainability, Social issues)
08	Pollution Control Boards (CPCB/SPCBs)	https://cpcb.nic.in	Unit 4 (Pollution types, standards, control)

List of Environmental Field project Report (ISE) :

Sr. No.	Name of Subject
01	Survey of Local Biodiversity (Flora and Fauna)
02	Water Quality Assessment of Nearby River/Lake
03	Study of Noise Pollution Levels in Urban Areas
04	Air Pollution Monitoring Near Traffic Zones
058	Study of Noise Pollution Levels in Urban Areas
06	Composting Organic Waste at Institutional Level
07	Awareness Campaign on Plastic Waste Reduction
08	Mapping and Survey of Local Water Bodies
09	Tree Plantation Drive and Carbon Sequestration Estimation
10	Study of Medicinal Plants in the Local Area
11	Rainwater Harvesting Feasibility Study
12	Study of Energy Consumption in Campus/Community
13	E-Waste Collection and Management Survey
14	Soil Quality Analysis from Agricultural Fields
15	Visit and Report on a Wildlife Sanctuary/National Park
16	Study of Local Climate Change Indicators
17	Field Study of a Wetland Ecosystem
18	Household Survey on Environmental Awareness
19	Analysis of Groundwater Quality in Different Areas
20	Eco-Friendly Lifestyle Practices in Community
21	Study of Mangrove or Coastal Ecosystem (if applicable
22	Environmental Impact Assessment (EIA) of a Small Construction Site
23	Study of Local Transportation and Its Carbon Footprint
24	Biodiversity Index Calculation in a Green Campus
25	Wastewater Treatment Plant Visit and Process Analysis
26	Analysis of Effects of Deforestation in Nearby Area

27	Survey on Use of Renewable Energy in Households
28	Green Audit of School/College Campus
29	Documentation of Traditional Environmental Knowledge
30	Community-Based River or Lake Cleaning Drive

Evaluation Scheme and Guidelines:

T-I **20 Marks**	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. □ One question of 05 Marks based on MCQ"s compulsory.
T-II **20 Marks**	Examination of 20 marks based on Units 4,and 5 should be conducted, and marks should be communicated to the Exam Cell. □ One question of 05 Marks based on MCQ"s compulsory.
ISE **10 Marks**	ISE-Continuous Assessment of Environmental Field Project based on Units 1-5.
CIE **(50 Marks)**	Continuous Assessment ,As per institute policy

Dr J J Magdum College of Engineering, Jaysingpur

Electronics & Telecommunication Engineering

SY- B. Tech -SEM-IV

Universal Human Values

Class	SY		**Semester**		III	
Course Title	Universal Human Values		**Course Code** **1ETCVECL2014**		**Theory: 02** Practical:	
Prerequisites:						
Teaching scheme:	**Theory Hours:**	2 Hr/ week	**Practical Hours:**	-	**Self-Study**	
	Credits:	2	**Credits:**	-	**Credits:**	

Evaluation scheme						
Theory				**Practical**		**Total**
CIE-I	**CIE-II**	**ISE**	**ESE**	**CIE**	**ESE**	
--	--	--	--	50	--	50

Course Objectives:

The course aims to:

Sr No.	Course Objectives
01	Appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
02	Development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
03	Highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Revised Bloom's Taxonomy
1ADVEL207.01	**Explain** the concepts of right understanding, happiness, and prosperity and their relevance to holistic development.	K^2
1ADVEL207.02	**Distinguish** between the needs of the Self and the Body and analyze their interrelationship for achieving harmony.	K^4
1ADVEL207.03	**Illustrate** the foundational values of trust and respect and **analyze** their role in ensuring harmony in relationships.	K^3, K^4
1ADVEL207.04	**Describe** the concept of harmony in nature and **interpret** co-existence among the four orders of nature.	K^2, K^4
1ADVEL207.05	**Apply** the principles of human values and ethics in real-life situations and **examine** their role in professional conduct.	K^3, K^4

Course Contents

Unit Number	Unit Title	Hours	Revised Bloom's Taxonomy
Unit-01	**Introduction to Value Education** Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human Aspirations	3	K^2
Unit-02	**Harmony in the Human Being** Understanding Human being as the Co-existence of the Self and the Body, distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health	3	K^3
Unit-03	**Harmony in the Family and Society** Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to-Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human Order	3	K^4
Unit-04	**Harmony in the Nature/Existence** Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence	7	K^4
Unit-05	**Implications of the Holistic Understanding – a Look at Professional Ethics** Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order, Competence in Professional Ethics Holistic Technologies, Production Systems and Management Models-Typical Case Studies, Strategies for Transition towards Value-based Life and Profession	5	K^2

Text Books/Reference Books:

Sr. No	Book Type (Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text	The Textbook A Foundation Course in Human Values and Professional Ethics	R R Gaur, R Asthana, G P Bagaria,	Excel Books, New Delhi	2nd	2019
2	Text	The Teachers Manual for A Foundation Course in Human Values and Professional Ethics	R R Gaur, R Asthana, G			
3	Reference	Fundamentals of Ethics for Scientists & Engineers	E G Seebauer & Robert L. Berry	Oxford University Press		2000

Online References: Coursera/NPTL/General websites etc)

Sr. No.	Website Name	URL	Units Covered
1	**You Tube**	https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw	ALL
2	**Website**	https://fdp-si.aicte-india.org/8dayUHV_download.php	ALL

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.

Evaluation Scheme:

CIE (50 Marks)	• Continuous Assessment, as per institute policy 25 Marks • MCQ (multiple choice questions) for 25 Marks can be conducted