Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

ML307 ENVIRONMENTAL MANAGEMENT AND SUSTAINABILITY

SUBJECT CODE	CATEGORY	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
ML-307	Compulsory	Environmental Management and Sustainability	60	20	20	0	0	4	0	0	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher's Assessment** shall be based upon following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

1. To create awareness towards various environmental problems.
2. To create awareness among students towards issues of sustainable development.
3. To expose students towards environment friendly practices of organizations.
4. To sensitize students to act responsibly towards environment.

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. The course will give students an overview of various environmental concerns and practical challenges in environmental management and sustainability.
2. Emphasis is given to make students practice environment friendly behavior in day-to-day activities.

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COURSE CONTENT

Unit I: Introduction to Environment Pollution and Control

1. Pollution and its types (Air, Water, and Soil): Causes, Effects and Control measures
2. Municipal Solid Waste: Definition, Composition, Effects
3. Electronic Waste: Definition, Composition, Effects
4. Plastic Pollution: Causes, Effects and Control Measures

Unit II: Climate Change and Environmental Challenges

1. Global Warming and Green House Effect
2. Depletion of the Ozone Layer
3. Acid Rain
4. Nuclear Hazards

Unit III: Environmental Management and Sustainable Development

1. Environmental Management and Sustainable Development: An overview
2. Sustainable Development Goals (17 SDGs)
3. Significance of Sustainable Development
4. Environment Friendly Practices At Workplace and Home (Three Rs' of Waste Management, Water Conservation, Energy Conservation)

Unit 1V: Environmental Acts

1. The Water (Prevention and Control of Pollution) Act, 1974: Objectives, Definition of Pollution under this act, Powers and Functions of Boards
2. The Air (Prevention and Control of Pollution) Act, 1981:Objectives, Definition of Pollution under this act, Powers and Functions of Boards
3. The Environment (Protection) Act, 1986: Objectives, Definition of important terms used in this Act, Details about the act.
4. Environmental Impact Assessment: Concept and Benefits

Unit V:Role of Individuals, Corporate and Society

1. Environmental Values
2. Positive and Adverse Impact of Technological Developments on Society and Environment
3. Role of an individual/ Corporate/ Society in environmental conservation
4. Case Studies: The Bhopal Gas Tragedy, New Delhi's Air Pollution, Arsenic Pollution in Ground Water (West Bengal), Narmada Valley Project, Cauvery Water Dispute,Fukushima Daiichi Disaster (Japan), Ozone Hole over Antarctica, Ganga Pollution, Deterioration of Taj Mahal, Uttarakhand flash floods

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Suggested Readings:

1. Rogers, P.P., Jalal, K.F. , Boyd, J.A.(Latest Edition) . **An Introduction to Sustainable Development.** Earthscan
2. Kalam, A.P.J. (Latest Edition) .***Target 3 Billon: Innovative Solutions Towards Sustainable Development.*** Penguin Books
3. Kaushik , A. and Kaushik (Latest Edition).***Perspectives in Environmental Studies***. New Delhi: New Age International Publishers.
4. Dhameja, S.K. (Latest Edition). ***Environmental Studies***. S.K. Kataria and Sons.New Delhi
5. Bharucha,E. (Latest Edition). ***Environmental Studies for Undergraduate Courses.*** New Delhi: University Grants Commission.
6. Wright, R. T. (Latest Edition). ***Environmental Science: towards a sustainable future*** .New Delhi: PHL Learning Private Ltd.
7. Rajagopalan, R. (Latest Edition). ***Environmental Studies***. New York: Oxford University Press.

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Vishwavidyalaya, Indore	Vishwavidyalaya, Indore			

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Name of Program: Bachelor of Technology in Electronics & Communication

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTEC302	EC	Network Analysis & Synthesis	60	20	20	30	20	3	1	2	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):
Being one of the fundamental courses of Electronics stream its prime objective is to make the students capable of analyzing given electrical network composed by passive element and some active element. To make the students learn how to synthesize an electrical network from a given impedance/admittance function.

Course Outcomes (COs):
After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes:
1. Apply the fundamental concepts in solving and analyzing different Electrical networks.
2. Select appropriate and relevant technique for solving the Electrical network in different conditions.
3. Apply mathematics in analyzing and synthesizing the networks in time and frequency domain.
4. Estimate the performance of a particular network from its analysis.

Syllabus

UNIT I **9 Hrs**

Network Theorems: Preliminaries of Electrical elements R, L, C, and circuits; Kirchhoff's laws Basic elements: Voltage and current sources, Linearity of elements, Power and energy in electrical elements. Circuit Analysis Methods: Nodal analysis, Mesh analysis, Circuit Theorems: Thevenin's theorem, Norton's theorem, Maximum power transfer theorem, Superposition theorem, Reciprocity theorem.

UNIT II **8 Hrs**

Transient Analysis: Source free RL and RC circuits, Elementary function unit step, unit ramp, unit impulse function and synthesis from source free parallel and series RLC circuit, complete response of the RLC circuit, lossless LC circuit.

UNIT III **8 Hrs**

Frequency Domain Analysis: The phasor concept, sinusoidal steady state analysis; Resonance, Network theorem in ac domain. AC circuit power analysis, Laplace transform: Application in circuit analysis, frequency response of simple passive filters.

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UNIT IV **9 Hrs**

Two Port Networks: Z, Y, h and ABCD parameters, analysis of interconnected (magnetically coupled) two port networks. Transfer function, immitance function.

UNIT V **10 Hrs**

Network Synthesis: Positive real function, Hurwitz polynomial LC, RL, RC, and RLC network synthesis, Foster and Cauer network realization, Brune's method, Synthesis-Coefficient.

Text Books:

1. M.E. Van Valkenburg, Network Analysis, Pearson Education India; 3rd edition. 2015.
2. S P Ghosh A K Chakraborty, Network Analysis & Synth. Tata McGraw-Hill Education, 7st edition 2015.
3. Franklin F. Kuo, Network analysis and synthesis, Wiley publication, 2nd Edition 2013.

References:

1. Gordon J. Alexander and Matthew N.O. Sadiku, Fundamentals of Electric Circuits, McGraw-Hill Education; 5th edition. 2013
2. Jack Ellsworth Kemmerly and William H. Hayt, Engineering Circuit Analysis, McGraw-Hill Education; 8th edition. 2013
3. Pen-Min Lin and Raymond A DeCarlo, Linear Circuit Analysis, Oxford university press, 2nd edition 2012
4. http://www.nptelvideos.in/2012/11/networks-and-systems.html

List of Experiments:

1. Introduction of Simulation software Tina-TI.
2. To verify Thevenin's Theorem and Norton's Theorem.
3. To verify Superposition Theorem and Reciprocity Theorem.
4. To verify Maximum Power Transfer Theorem.
5. To determine Open Circuit and Short Circuit parameters of a Two Port Network.
6. To determine A, B, C, D parameters of a Two Port Network.
7. To determine h-parameters of a Two Port Network.
8. To find Frequency Response of RLC Series Circuit RLC parallel Circuit.
9. To determine resonance and 3dB frequencies.
10. To determine charging and discharging times of Capacitors.

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Name of Program: Bachelor of Technology in Electronics & Communication

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTEC303	EC	Electronic Measurement & Instrumentation	60	20	20	30	20	3	1	2	5

Legends: L - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):
Student will be able to identify the different latest measurement techniques available for specific engineering applications, understand the errors in measurements and their rectification and also understand the construction and working of different types of Analog and Digital Instruments.

Course outcomes

1. An ability to understand the different types of Analog and Digital Instruments.
2. An ability to define the errors and their elimination.
3. An ability to measure different quantities like voltage, current, resistance etc
4. An ability to understand principle and working of various instruments.
5. An ability to operate different measuring instruments like Multimeter, CRO, DSO, Transducers etc

Syllabus

UNIT I **9 Hrs**

Principles of Measurements – Principles of Measurement, Static/dynamic characteristics of measurement systems, Types of Errors, Statistical analysis, Measurement of resistance, inductance and capacitance – Wheatstone's bridge, Maxwell's bridge, Hay's bridge, De Sauty's bridge, Schering Bridge Wien's bridge, Wagner's earth connection, Q meter.

UNIT II **8 Hrs**

Analog and Digital Measuring Instruments – Comparison of Analog & Digital techniques, Analog Instruments – DC ammeters, Multirange voltmeter, AC voltmeter using Rectifiers – Half wave and full wave, Chopper type, Peak responding and True RMS voltmeters, Series and Shunt Type Ohmmeter, Digital Instruments – Digital voltmeter, Multimeter.

UNIT III **9 Hrs**

Oscilloscopes – Introduction, CRT, Principle of signal display, Dual Trace & Dual Beam Oscilloscopes, Measurement of voltage, frequency and phase by CRO, Sampling Oscilloscope, Storage Oscilloscope – Analog and Digital Storage Oscilloscopes, DSO Applications.

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UNIT IV **10 Hrs**

Transducers – Introduction, Electrical transducers, Resistive transducer, Resistive Strain gauges, Resistance thermometer, Inductive transducer, LVDT & RVDT, Thermistor, Piezoelectric transducer, Photoelectric transducer, Photovoltaic transducer, Temperature transducers-RTD, Thermocouple.

UNIT V **9 Hrs**

Signal Generators & A/D, D/C Converters – Sine Wave Generator, Sweep Frequency Generator, Function Generator, Pulse and Square wave Generator,
D/A conversion – Variable Resistance network, Binary Ladder, R/2R ladder DAC, A/D conversion – Successive approximation method, Flash type and dual slope,

Text Books:

1. H. S. Kalsi, "Electronic Instrumentation", Tata McGraw Hill Publishing Company Ltd., Third Edition, 2017.
2. A.K.Sawhney, "Electronic Instrumentation", Dhanapat Rai & Sons, 2013.

References:

1. Albert.D. Helfrick and William. D. Cooper, "Modern Electronic Instrumentation and Measurement Techniques", Pearson education, 2016.
2. A.J.Bouwens, "Digital Instrumentation", McGraw Hill, 1986.

List of Experiment:

1. To study and test the operation of different types of Ammeters and Voltmeters.
2. To learn the technique of measurement of Inductance by using Maxwell's bridge.
3. To learn the technique of measurement of Inductance by using Hay's bridge.
4. To learn the technique of measurement of Capacitance by using Schering's bridge.
5. Learning the techniques of measurement of Q Factor by using Q Meter.
6. Demonstration of Cathode Ray Oscilloscope.
7. To study the use of CRO for measurements
8. To learn the construction and operation of LVDT.
9. To study Load measurement using Strain Gauge.
10. Study of Function Generator.

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Name of Program: Bachelor of Technology in Electronics and Communication

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTEC305	EC	Electronic Circuits	60	20	20	30	20	3	1	2	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):
The objective of this course is to- Use abstractions to analyze and design simple electronic circuits and also design and construct circuits, take measurements of circuit behavior and performance, compare with predicted circuit models and explain discrepancies.

Course Outcomes (COs):
Students who are successful in this course will be able to:
1. Understand the basic physics of carrier transport in bulk semiconductors and real device structures.
2. Understand the fundamentals of operation of the main semiconductor electronic devices.
3. Understand the basic parameters of electronic devices, their performance, and limiting factors.
4. Understand the basic principles of electronic device.

Syllabus:

UNIT I **9 Hrs.**

Physical Electronics: Electrons and holes in semiconductors, Carrier Statistics, Energy bands in intrinsic and extrinsic silicon; Mechanism of current flow in a semiconductor; Carrier transport: diffusion current, drift current, mobility and resistivity; Generation and recombination of carriers; Poisson and continuity equations, Hall Effects.

UNIT II **10 Hrs.**

PN junction diode: PN junction diode in forward and reverse bias, temperature dependence of V-I characteristics, diode resistances, diode junction capacitance. Types of diodes: Zener Diode, Varactor Diode, Tunnel Diode, PIN Diode, Schottky Diode, LED and Photo Diodes, Switching characteristics of diode.

Bipolar junction transistor: Construction, basic operation, current components and equations, CB, CE and CC configuration, input and output characteristics, Early effect, Region of operations: active, cut-off and saturation region. BJT as an amplifier. Ebers-Moll model, Power dissipation in transistor (Pd, max rating), Photo transistor.

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UNIT III **9 Hrs.**

Transistor biasing circuits and analysis: Introduction, various biasing methods: Fixed bias, Self bias, Voltage Divider bias, Collector to base bias, Load-line analysis: DC and AC analysis, Operating Point and Bias Stabilization and Thermal Runaway. Transistor as a switch.

UNIT IV **10 Hrs.**

Small Signal analysis: Small signal Amplifier, Amplifier Bandwidth, Hybrid model, analysis of transistor amplifier using h-parameter, Multistage Amplifier: Cascading amplifier, Boot-strapping Technique, Darlington amplifier and cas-cade amplifier, coupling methods in multistage amplifier, Low and high frequency response, Hybrid π model, Current Mirror circuits.

Large Signal analysis and Power Amplifiers: Class A, Class B, Class AB, Class C, Class D, Transformer coupled and Push-Pull amplifier

UNIT V **10 Hrs.**

FET: JFET- Construction, n-channel and p-channel transistors, drain and transfer characteristics, parameters, Equivalent model and voltage gain, analysis of FET in CG, CS and CD configuration. Enhancement and Depletion MOSFET drain and transfer Characteristics.

Uni-junction Transistor (UJT): UJT - Principle of operation, characteristics, UJT relaxation oscillator, PNPN Diode and its characteristics,

Thyristors: Silicon controlled rectifier: V-I characteristics, DIAC and TRIAC, Thyristors parameters and applications.

Text Books:

1. Boylestad and Nashelsky: Electronic Devices and Circuit Theory, Pearson Education, 2013.
2. Sedra and Smith: Microelectronics, Oxford Press, 2015.

References:

1. Ben G. Streetman, Sanjay Bannerjee, Solid State Electronic Devices, 2006.
2. Graham Bell: Electronic Devices and Circuits, PHI, 2008.
3. Millman and Halkias: Integrated electronics, TMH, 2017.
4. Donald A Neamen: Electronic Circuits Analysis and Design, 2006.
5. Robert F. Pierret, Semiconductor Device Fundamentals, 2006.

List of Experiments:

1. To determine and analyze the V-I characteristics of PN Junction diode.
2. To determine and analyze the V-I characteristic of Zener diode and its load regulation capability.
3. To design clipper and clamper circuits.
4. To determine input and output characteristics of transistor amplifiers in CE configurations.
5. To determine input and output characteristics of transistor amplifiers in CC configurations.
6. To determine input and output characteristics of transistor amplifiers in CB configurations.
7. To determine the frequency response of CE amplifier, direct coupled and RC coupled amplifier.
8. To determine Drain and Transfer Characteristics of JFET Amplifier.
9. To determine Drain and Transfer Characteristics of MOSFET Amplifier.
10. To determine characteristics of class A and B power amplifiers.

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COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY		PRACTICAL		
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BTIT309	**-**	**Introduction to Core Java**	**2**	**-**	**2**	**3**	**60**	**20**	**20**	**30**	**20**

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;
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COURSE OBJECTIVES

The student will have ability to:

1. Understand Java Environment for application development.
2. Understand Programing using Object Oriented Technology,
3. Develop computer program to solve specific problems with high performance.
4. Create debug and run java standalone applications.

COURSE OUTCOMES

Upon completion of the subject, students will be able to:

1. Design new applications using object oriented methodologies.
2. Explore various system libraries
3. Analyze and improve performance of applications.
4. Design Data base connectivity program for simple problems

SYLLABUS

UNIT–I

The Java Environment: Basic History of Java and its Features, JVM, JRE and JDK, its Libraries and Functionalities, Why Java? Installing Java, Java Classes and Objects, Variables and Data Types Conditional and Looping Constructs,Arrays.

UNIT–II

The Java Language: Constructors, Inheritance, Packages and Interfaces, Access Specifier, Enumerations, Auto boxing, and Annotations (Metadata) Garbagecollection,Nested Classes, Inner Classes

UNIT–III

Performance: Understanding Threads, Needs of Multi-Threaded Programming ,Thread Life Cycle, Thread Priorities ,Synchronizing Threads, Inter Communication of Threads, The Idea Behind Exception , Exceptions and Errors ,Types of Exception, Control Flow in Exceptions, JVM Reaction to Exceptions , Use of Try,

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Catch, Finally, Throw, Throws in Exception Handling, In-Built and User Defined Exceptions,Checked and Un Checked Exceptions, Generics, Lambda Expressions

UNIT–IV

The Java Library: String Handling, Exploring Java.Lang, Java.Util – The Collection Framework, Exploring Java.IO, Exploring Java.NIO

UNIT–V

Database Connectivity with JDBC: Introduction to JDBC, JDBC Drivers & Architecture, CRUD Operation using JDBC

TEXT BOOKS:

1. Herbert Schildt, "The Complete Reference Java", Ninth Edition, McGraw Hill, 2014
2. Bert Bates, Kathy Sierra, "Head First Java", 2nd Edition, O' Reilly, 2005
3. Cay S Horstman and Gary Cornell, "Core Java", Vol I & II, Pearson Education, 2013
4. Kishore Sharan, "Beginning Java 8 Language Features", Apress, 2014
5. E. Balagurusamy, "Programming with java A Primer", Fourth Edition, Tata McGraw Hill, 2009.
6. Sharanam Shah, "Core Java 8 for Beginners", Shroff Publisher, 2015.

LIST OF EXPERIMENTS:

1. Write a program to show concept of Class in Java?
2. Write a program showing Type Casting
3. Write a program showing Different type of inheritance
4. Write a program showing Different types of Polymorphism
5. Write a program showing Encapsulation
6. Write a program showing Abstraction
7. Write a Multithreaded program
8. Write a program showing Checked and Unchecked Exception
9. Write a program showing Database connectivity.
10. Write a program showing Simple database Operation (CRUD)

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BTEC307	EC	PCB Designing Lab	0	0	0	30	20	0	0	2	1

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Syllabus

Overview and Study of the key features and applications of the software LIVEWIRE & DIPTRACE. Applications of the software in the field of Electronic Circuits and Digital Electronics. Design, Optimization, simulation and verification of Electronic circuits. Realization and verification of various digital electronic circuits. To design PCB for the various Electronics and Digital Circuits.

Experiment List

E.N.	Aim
1.	To Familiarize with Livewire
2.	To Design and Simulate Basic Electronic Circuits
3.	To Familiarize with PCB Wizard
4.	To Design Basic Electronics Circuits PCB
5.	To Familiarize with DipTrace
6.	To Design the Basic Electronic Circuits and PCB Layouts using DipTrace
7.	To Design PCB for Diode Based Circuits
8.	To Design PCB for Transistor Based Circuits
9.	To Design PCB for Digital Gates
10.	To Design PCB for Digital Circuits

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