Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
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Choice Based Credit System (CBCS) in Light of NEP-2020
BBA+MBA - II SEMESTER (2022-2026)

ML307 ENVIRONMENTAL MANAGEMENT AND SUSTAINABILITY

COURSE CODE	CATEGORY	COURSE 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*				
ML307	AECC	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; **AECC**- Ability Enhancement Compulsory Course

***Teacher Assessment** shall be based on 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.

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

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Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical: C - Credit; AECC- Ability Enhancement Compulsory Course

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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 IV: 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

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ML307	AECC	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; **AECC**- Ability Enhancement Compulsory Course

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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

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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			THEORY			PRACTICAL		L	T	P	CREDITS
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DTMT302	DCC	Basic Digital Electronics	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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Course Educational Objectives (CEOs):

1. To present the Digital fundamentals, Boolean algebra, and its applications in digital systems
2. To present a problem oriented introductory knowledge of combinational digital circuits and its applications.
3. To explain the various semiconductor memories and related technology.
4. To introduce the sequential circuits involved in the making various digital circuits.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills, and attitudes.

The students will be able to:

1. Describe the number systems, conversions, and their applications.
2. Apply minimization techniques such as K maps, Tabular method etc. for the design of digital circuits.
3. Understand combinational and sequential circuits.
4. Differentiate various type of memories and there use in different applications.

Syllabus

UNITI **10 Hrs.**

Binary Number System:

Binary arithmetic: addition, subtraction, multiplication and division, Complements: 1's, 2's, 9's

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DTMT302	DCC	Basic Digital Electronics	60	20	20	30	20	3	0	2	4

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and 10's. Subtraction using complements, Octal number system, Hexadecimal number system, Conversion among binary, octal, decimal, and hexadecimal number systems, Codes: BCD, Gray, Excess-3, the parity bit.

UNITII **9Hrs.**

Logic Gates and Boolean Algebra:

Primary Gates: symbol, operation and truth-table, NAND, NOR, EX-OR, EX-NOR gates: symbol, operation, truth- table, Positive and Negative logic, De Morgan's theorems, Universal Gate, Laws and theorems of Boolean algebra, simplification of Boolean expression, Sum of products (SOP) and product of sums (POS) expression, Karnaugh maps: Four variable K-maps and their simplification techniques, Don't care condition.

UNIT III **8Hrs.**

Combinational Logic Circuits:

Arithmetic Circuits: Half adder, full adder, parallel binary adder, 1's complement subtractor circuit, 2's complement subtractor/adder circuits, 8421 adder, half and full subtractor, parallel binary subtractor, Binary to gray and gray to binary code converters, Decoder and Encoder, Multiplexer and Demultiplexers.

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UNIT IV **7Hrs.**

Memory and Programmable Logic:

Memory Classifications, RAM: Static and Dynamic, ROM: ROM, PROM, EPROM. Programmable Logic Array (PLA), Programmable Array Logic (PAL) and Structure. A/D and D/A Converter.

UNIT V **8Hrs.**

Flip-Flops:

S-R latch, S-R flip-flops asynchronous and synchronous, timing diagram, truth table, excitation table, D flip floptiming diagram, truth table, excitation table T flip floptiming diagram, truth table, excitation table, J K flip flop timing diagram, truth table.

Text Books:

1. Mano M. M. and Ciletti M., "Digital Design", Pearson Education (2008) 4th ed.
2. Leach D. P., Malvino A. P., Saha G.," Digital Principles and Applications", TMH, (2014), 8th ed.

References:

1. Floyd T. L. and Jain R. P.," Digital Fundamentals", Pearson Education (2008) 10th ed.
2. Tocci R. and Widmer N., "Digital Systems: Principles and Applications", Pearson Education (2007) 10th ed.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTMT302	**DCC**	**Basic Digital Electronics**	60	20	20	30	20	3	0	2	**4**

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List of Experiments:

1. To realize the basic logic gates.
2. To realize the NAND gate as a universal building block.
3. To realize the NOR gate as a universal building block.
4. To realize the HALF ADDER circuit
5. To realize the FULL ADDER circuit.
6. To realize the HALF SUBTRACTOR circuit.
7. To realize the AND-OR-INVERT circuit.
8. To realize the parity checker circuit.
9. To realize the exclusive-OR gate.
10. To realize the SR & JK flip-flop.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTET301		Signals and Systems	60	20	20	-	-	3	0	0	3

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):

1. To introduce the basic concepts of signals and systems.
2. To learn the concepts and analyze signals in time and frequency domains.
3. To familiarize students with Laplace and Z-transform techniques.
4. To understand basics of random signals and their use in real systems.

Course Outcomes (COs):

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

1. Classify and represent different types of signals and perform fundamental signal operations.
2. Apply Fourier, Laplace, and Z-transform techniques to analyze continuous and discrete-time systems.
3. Evaluate the response and properties of LTI systems for deterministic and random signals.

Syllabus:

UNIT I — 7 Hrs.

Introduction to signal and systems: Classification. definition and representation of various types of Signals. representation of basic time domain functions. Various signal operations: shifting. scaling and inversion. System properties: Linearity, Causality, time invariance and stability.

UNIT II — 6 Hrs.

Signal Transformation: Fourier transformation of continuous and discrete time signals and their properties. Fourier transformation-analysis with examples and properties. Convolution in time and frequency domain with magnitude and phase response of LTI systems.

UNIT III — 6 Hrs.

Laplace Transform: Definition, Region of Convergence, Laplace Transform of some important functions, Convolution Integral and Inverse Laplace Transform. Properties of Laplace Transform. Concepts of s-plane Poles and Zeros & its Plot.

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COURSE CODE	CATE-GORY	COURSE 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*				
DTET301		Signals and Systems	60	20	20	-	-	3	0	0	3

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UNIT IV 7 Hrs.

Z-Transforms: Basic principles of z-transform, z-transform definition, Relationship between z-transform and Fourier transform. Region of convergence and properties of ROC. Properties of z-transform. Poles and Zeros.

UNIT V 6 Hrs.

Random Signals & Systems: Definitions, mean values & moments, function of two random variables, concepts of correlation, spectral densities, response of LTI systems to random inputs.

Text Books:

1. R. Kumar, *Signals and Systems*, PHI Learning, 2013.
2. P. Ramakrishna Rao, *Signals and Systems*, TMH Education, 2008.
3. A. Anand Kumar, *Signals and Systems*, PHI Learning, 2018.

Reference Books:

1. S. Sharma, *Signals and Systems*. New Delhi, India: S. K. Kataria & Sons, 2019.
2. K. Gopalan, *Signals and Systems*, Cengage Learning, 2011.
3. M. E. Van Valkenburg, *Network Analysis*, Pearson, 2015.
4. H. P. Hsu, *Signals and Systems (Schaum's Outline)*, Tata McGraw-Hill India, 2013.

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Diploma in Electronics and Instrumentation Engineering
(2024-2027)

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DTEI307N	DCC	Network Analysis	60	20	20	30	20	3	0	2	4

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***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 subject aims to provide the student with:
1. An understanding of basic Network Circuits.
2. familiarization with various theorem.
3. Knowledge of various Two port networks.

Course Outcomes (COs):
Students will be able to:
1. Define network circuits.
2. Solve various theorem.
3. Solve Two port networks.

Syllabus

UNIT I **8 Hrs.**

Preliminaries of Electrical elements R, L, C, and circuits; Ohm' Law, Kirchhoff's laws Basic elements: Voltage and current sources, M; Linearity of elements, Elements in series and parallel Controlled sources.

UNIT II **9 Hrs.**

Source transformations – Star Delta conversion, Power and energy in electrical elements. Circuit Analysis Methods: Nodal analysis, Mesh analysis. Theorems: Thevenin's, Norton, Max Power Transfer.

UNIT III **8 Hrs.**

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

UNIT IV **8 Hrs.**

Frequency Domain Analysis: The phasor concept, sinusoidal steady state analysis; Laplace transform, initial and final value theorem, circuit analysis in s-domain.

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DTEI307N	DCC	Network Analysis	60	20	20	30	20	3	0	2	4

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9 Hrs.

UNIT V

Two Port Networks: Z, Y, h and ABCD parameters.

Text Books:

1.M.E. Van Valkenburg," Network Analysis", (Pearson), 2019.

References:

1.S P Ghosh A K Chakraborty," Network Analysis & Synth", (MGH).
2. Abhijit Chakrabarti, "Circuit Theory Analysis and Synthesis", Dhanpat Rai & Co., 2018.

List of Experiments:

1. Verification of Superposition Theorem.
2. Verification of Norton's and Thevenin's Theorem.
3. Verification of Maximum Power Transfer Theorem.
4. Performance of R-L-C Series Circuit.
5. Performance of R-L-C Parallel Circuit.
6. Study of Electrical Resonance in Series Circuit.
7. Verification of Relation Between Line and Phase Voltage and Current in 3-Phase Circuit.
8. Study of Transients.
9. Verification of Kirchhoff's Voltage Law (KVL).
10. Verification of Kirchhoff's Current Law (KCL).

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DTET305		PCB Design Lab	-	-	-	30	20	0	0	4	2

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Course Educational Objectives (CEOs)

By the end of this lab, students will:

1. Understand the components by reading the data sheets.
2. Learn schematic entry and PCB layout design using DipTrace.
3. Explain the functionality of components of Arduino Board.
4. Understand the PCB fabrication, assembly, soldering, and testing.

Course Outcomes (COs)

After successfully completing the course, students will be able to:

1. Identify and interpret electronic component specifications from datasheets.
2. Design basic electronic circuits using schematic entry and PCB layout tools in DipTrace.
3. Explain the architecture and working principles of Arduino Uno and its components.
4. Fabricate and test PCB prototypes through assembly, soldering, and troubleshooting techniques.

List of Experiments:

1. To Familiarize with DipTrace.
2. Study of Components and design a Schematic of 3.3V, 5V &12V Regulated Power Supply.
3. Design a PCB layout of 3.3V, 5V & 12 V Regulated Power Supply.

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DTET305		PCB Design Lab	-	-	-	30	20	0	0	4	2

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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4. Study of the components used in Arduino.
5. Create a schematic of Arduino Uno and perform Electrical Rule Check (ERC) in DipTrace.
6. PCB layout creation using Arrangement, Placement & Routing for Single-Side PCB.
7. Design Rule Check (DRC) and update thetrace widths and pad sizes.
8. Printing of PCB layout and transfer it onto PCB board.
9. PCB Etching, Drillingand Mounting of components.
10. Testing of Arduino Board.

References:

1. DipTrace Tutorial available at- https://diptrace.com/support/tutorials/
2. Voltage Regulator IC- https://www.ti.com/lit/ds/symlink/lm1117.pdf
3. Arduino Board info available at- https://www.arduino.cc/

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