

LESSON PLAN

- 1) Subject Code: Th-1
- 2) Subject Title: Engg.Math-III
- 3) Semester: 3rd
- 4) Branch: Electrical
- 5) Faculty: Sima Rout & Laxmipriya Swain
- 6) No. of Classes / Week: 4 regular class + 1 practice class
- 7) Pre Requisite for the Subject: All calculus formula(Trigonometry,derivative,integration)
- 8) Text Book to be referred by students:

Sl No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
i	Higher Engg Mathematics	Dr B S Grewal	Khanna publication	80%	44 th edition	Available
ii	Elements of mathematics vol-I	Odisha State bureau of Text book.	Odisha State bureau of Text book	10%	2016	Available

9) Course Coverage Schedule:

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
1	Complex number	1.1 - Real and imaginary numbers	01	04+1(P)	
		1.2 - Complex numbers, conjugate complex numbers, modulus and Amplitude of a complex number			
		1.3, 1.4 - Geometrical Representation of Complex Numbers. Properties of Complex Numbers	01		
		1.5 - Determination of three cube roots of unity and their properties	01		
		1.6, 1.7, 1007 - De Moivre's theorem and problem	01		
		practice	01		
2	Matrices	2.1, 2.2 - Define rank of a matrix. Perform elementary row transformation to determine rank of a matrix.	01	03+02(P)	
		2.3 - State Rouches theorem for consistency of a system of linear equations in 'n' unknowns	01		
		2.4 - Steps to solve Equations in three unknowns using Rouché's Theorem	01		
		2.5, 1002 - Solve problems			
		practice	02		
3	Differential Equations	3.1 - Formulae of Derivative, Integration and differential Equation & related Examples.	01	09+1(P)	
		3.2 - Linear Homogeneous D. E, Non - Homogeneous L.D.E, General Solution and Rules for Finding C. F	01		
		3.3 - Rules for Finding C. F. and Solve LDE Problem	02		
		3.3 - Rules for Finding P.I and Solve LDE Problem.	02		
		3.4, 3.5 - Define P. D.E. Formation P.D.E by eliminating arbitrary Constants and arbitrary Functions	01		
		3.6 - Solve PDE Problem	02		
		3.7, 1003 Solving problem			
		practice	01		
		4.1 - Define Gamma Function and Derive reduction	01		

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
4	Laplace transforms	formula . $\Gamma(n+1) = n\Gamma(n)$ and $\Gamma(\frac{1}{2}) = \sqrt{\pi}$		08+2(P)	
		4.2 - Define L. T, L. T of Standard Function	01		
		4.3 - Existence Conditions of L. T linearity, Shifting and change. Scale property of L.T	01		
		4.4,4.5 L.T of derivatives, integrals, multiplication by t^n , Division by t	02		
		4.6 Derive Formula of Inverse L.T	01		
		4.7 Solve Inverse L.T. Problem	02		
		1004 Solve differential equation			
		practice	02		
5	Fourier Series	5.1 Define Periodic functions Fourier expansion of a function	01	07+1(P)	
		5.2, 5.3 State Dirichlet's conditions for the Fourier Expansion of a function and it's convergence.	01		
		5.4 State Euler's Formulae	01		
		5.5 Define even and odd functions and find Fourier Series in $(0 \leq x \leq 2\pi$ and $-\pi \leq x \leq \pi)$.	01		
		5.6 Obtain F. S. of continuous functions and functions having points of discontinuity in $(0 \leq x \leq 2\pi$ and $-\pi \leq x \leq \pi)$.	02		
		5.7,1005 Solve problems on 5.1-5.6	01		
		practice	01		
6	Numerical Methods	6.1 Appraise, limitation of analytic method of solution of algebraic & transcendental equations.	01	02+1(P)	
		6.2 Derive Iterative formula for finding the solutions of Algebraic Equations by :			
		6.2.1 Bisection method			
		6.2.2 Newton-Raphson method	01		
		6.3,1006 Solve problems on 6.2			
		Practice	01		
7	Finite Difference & Interpolation	7.1 - Explain finite difference & formation of forward & Backward difference table	02	07+2(P)	
		7.2 - Define shift Operator (E) and establish relation between E & difference operator (Δ).	01		
		7.3 - Derive Newton's forward & Backward interpolation formula for equal interval	01		
		7.4 - State lagrange's interpolation formula for unequal intervals	01		
		7.5 - Explain Numerical Integration and state : Newton-cote's formula, Trapezoidal rule, Simpson's 1/3 Rule	01		
		7.6,1007- Solve problems on 7.1 - 7.5	01		
		practice	02		

Signature
17/07/2023
Faculty

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HOD 17.7.23

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LESSON PLAN

- 1) Subject Code: Th.2
- 2) Subject Title: Circuit and Network theory
- 3) Semester: 3rd
- 4) Branch: Electrical
- 5) Faculty: Arun Ranajan Nayak
- 6) No. of Classes / Week: 4
- 7) Pre Requisite for the Subject: NIL / YES, If YES, give details:
- 8) Text Book to be referred by students:

Sl No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
i	Circuit Theory	A.chakrabati	Dhanpat rai	80	2017	Yes
ii	Electrical Networks	Ravish R Singh	Mc Graw Hill	60%	2013	Yes

9) Course Coverage Schedule:

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
1	Magnetic Circuits	1.1 Introduction	1	03 (Week 08- Week 09)	
		1.2 MMF, flux & their relations			
		1.3 Permeability, reluctance			
		1.4 Analogy between electrical & magnetic circuit	1		
		1.5 B-H curve			
		1.6 Series & Parallel magnetic circuit	1		
		1.7 Hysteresis loop			
2	Coupled Circuit	2.1 Self inductance & mutual inductance	1	03 (Week 09 – Week 10)	
		2.2 conductively coupled circuit and Mutual impedance	1		
		2.3 Dot convention	1		
		2.4 coefficient of coupling			
		2.5 Series & Parallel connection of coupled inductors			
		2.6 Solve numerical problems			
3	Circuit elements and analysis	3.1 Active, passive, unilateral & bilateral, linear & non linear elements	1	07 (Week 1- Week 2)	
		3.2 Mesh analysis, Mesh equation by inspection	1		
		3.2 Mesh analysis, Mesh equation by inspection	1		
		3.3 Super mesh analysis	1		
		3.4 Nodal analysis	1		
		3.5 Super node analysis			

		3.6 Source transformation technique	1		
		3.7 Solve numerical problems	1		
4	Network Theorems	4.1 Star to delta & delta to star transformation	1	08 (Week 2-Week 3)	
		4.2 Super position	02		
		4.3 Thevenin's Theorem	02		
		4.4 Norton's Theorem	02		
		4.5 Maximum Power transfer theorem	1		
		4.6 solve numerical problems			
5	AC circuit & resonance	5.1 A.C through R-L, R-C, R-L-C circuit	1	04 (Week 3-Week 4)	
		5.2 Solve problems of series circuit			
		5.3 Solve problems of parallel circuit	1		
		5.4 Power factor & Power triangle			
		5.5 Deduce expression for active ,reactive & apparent power			
		5.6 Series resonance & parallel resonance	1		
		5.7 Band width, selectivity, Q-factor	1		
		5.8 Solve problems			
6	Poly phase circuit	6.1 Concept of poly phase system and phase sequence	1	03 (Week 5)	
		6.2 Relation between phase and delta connection			
		6.3 Power equation in 3-phase balance circuit	1		
		6.4 Solve problems			
		6.5 Measurement of power by 2 wattmeter method	1		
		6.6 Solve problems			
7	Transients	7.1 Steady state and transient state response	1	03 (Week 6)	
		7.2 Response to R-L,R-C,R-L-C circuit under DC condition	1		
		7.3 Solve numerical problems	1		
8	Two port network	8.1 Open circuit Z parameters	1	06 (Week 7-Week 8)	
		8.2 Short circuit Y parameters	1		
		8.3 Transmission ABCD parameters	1		
		8.4 Hybrid parameters			
		8.5 Inter relationships of different parameters	1		
		8.6 T and PI representation	1		
		8.7 Solve numerical problems	1		
9	Filters	9.1 Define filter	1	05 (Week 10)	
		9.2 Classification of stop band pass band cut-off frequency			
		9.3 Classification of filters	1		
		9.4 Constant-k low pass filter			
		9.5 Constant k high pass filter	1		
		9.6 Constant k band pass filter	1		
		9.7 Constant k elimination filter	1		
		9.8 solve numerical problems			

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LESSON PLAN

- 1) Subject Code: Th-3
- 2) Subject Title: Elements of Mechanical Engg.
- 3) Semester: 3rd
- 4) Branch: Electrical
- 5) Faculty: Debadutta Mohapatra
- 6) No. of Classes / Week: 04
- 7) Pre Requisite for the Subject: NIL / YES, If YES, give details: Nil
- 8) Text Book to be referred by students:

Sl No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
i	Thermal Engg.	RS Khurmi		60%		Yes
ii	FM & HM	RK Bansal		40%		Yes

9) Course Coverage Schedule:

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
1	THERMODYNAICS:	1.1: State Unit of Heat and work, 1st law of thermodynamics.	2	06 1-2 weeks	
		1.2: State Laws of perfect gases	1		
		1.3: Determine relationship of specific heat of gases at constant volume and constant pressure	2		
		Discussion of Question & answer	1		
2	PROPERTIES OF STEAM	2.1: Use steam table for solution of simple problem	3	07 2-3 week	
		2.2: Explain total heat of wet, dry and super heated steam	3		
		Discussion of Question & answer	1		
3	BOILERS:	3.1: State types of Boilers	1	04 4 th week	
		3.2: Describe Cochran, Babcock Wilcox boiler	1		
		3.3: Describe Mountings and accessories	1		
		Discussion of Question & answer	1		
4	STEAM ENGINES	4.1: Explain the principle of Simple steam engine	1	05 5 th week	
		4.2: Draw Indicator diagram	1		
		4.3: Calculate Mean effective pressure, IHP and BHP and mechanical efficiency	1		
		4.4: Solve Simple problem.	1		
		Discussion of Question & answer	1		

5	STEAM TURBINES	5.1: State Types	1	03 6 th week	
		5.2: Differentiate between impulse and reaction Turbine	1		
		Discussion of Question & answer	1		
6	CONDENSER:	6.1: Explain the function of condenser	1	04 6 th & 7 th week	
		6.2: State their types	2		
		Discussion of Question & answer	1		
7	I.C. ENGINE:	7.1: Explain working of two stroke and 4 stroke petrol and Diesel engines.	1	03 7 th week	
		7.2: Differentiate between them	1		
		Discussion of Question & answer	1		
8	HYDROSTATICS:	8.1: Describe properties of fluid	2	06 8 th & 9 th week	
		8.2: Determine pressure at a point, pressure measuring Instruments	3		
		Discussion of Question & answer	1		
9	HYDROKINETICS:	9.1: Deduce equation of continuity of flow	2	06 9 th & 10 th week	
		9.2: Explain energy of flowing liquid	1		
		9.3: State and explain Bernoulli's theorem	2		
		Discussion of Question & answer	1		
10	HYDRAULIC DEVICES AND PNEUMATICS	10.1: Intensifier	2	06 10 th week	
		10.2: Hydraulic lift	1		
		10.3: Accumulator	1		
		10.4: Hydraulic ram	1		
		Discussion of Question & answer	1		

Faculty

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LESSON PLAN

- 1) Subject Code: TH-4
- 2) Subject Title: Electrical Engg. Material
- 3) Semester: 3rd
- 4) Branch: Electrical
- 5) Faculty: Prangyamayee Mahapatra
- 6) No. of Classes / Week: 03
- 7) Pre Requisite for the Subject: NIL
- 8) Text Book to be referred by students:

Sl No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
1	Electrical Engineering Material & Electronic components	K.B.Raina, S.K. Bhattacharya, T. Joneja	S. K. Kataria & Sons	80	2011	YES

9) Course Coverage Schedule:

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
01	Conducting materials	1. 1 Introduction	01	05 Week (1-2)	
		1. 2 Resistivity, factors affecting resistivity			
		1. 3 Classification of conducting materials into low-resistivity and high resistivity materials	01		
		1. 4 Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)			
		1. 5 Stranded conductors	01		
		1. 6 Bundled conductors			
02	Semiconducting Materials	1. 7 Low resistivity copper alloys		07 Week (2-3-4)	
		1. 8 High Resistivity Materials and their Applications (Tungsten, Carbon, Platinum, Mercury)	01		
		1. 9 Superconductivity	01		
		1. 10 Superconducting materials			
		1. 11 Application of superconductor materials			
		2. 1 Introduction	01		
		2. 2 Semiconductors			
		2. 3 Electron Energy and Energy Band Theory			
		2. 4 Excitation of Atoms	01		
		2. 5 Insulators, Semiconductors and Conductors			
		2. 6 Semiconductor Materials			
		2. 7 Covalent Bonds	01		
		2. 8 Intrinsic Semiconductors			
		2. 9 Extrinsic Semiconductors			
		2. 10 N-Type Materials	01		
		2. 11 P-Type Materials			
		2. 12 Minority and Majority Carriers			
		2. 13 Semi-Conductor Materials			

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
		2. 14 Applications of Semiconductor materials 2.14.1 Rectifiers 2.14.2 Temperature-sensitive resistors or thermistors	01		
		2.14.3 Photoconductive cells 2.14.4 Photovoltaic cells 2.14.5 Varistors	01		
		2.14.6 Transistors 2.14.7 Hall effect generators 2.14.8 Solar power	01		
3	Insulating Materials	3. 1 Introduction 3. 2 General properties of Insulating Materials 3.2.1 Electrical properties 3.2.2 Visual properties 3.2.3 Mechanical properties 3.2.4 Thermal properties 3.2.5 Chemical properties 3.2.6 Ageing	01	07 Week (4-5-6)	
		3.3 Insulating Materials – Classification, properties, applications 3.3.1 Introduction 3.3.2 Classification of insulating materials on the basis physical and chemical structure	05		
		3.4 Insulating Gases 3.4.1 Introduction. 3.4.2 Commonly used insulating gases	01		
4	Dielectric Materials	4.1 Introduction 4.2 Dielectric Constant of Permittivity 4.3 Polarization 4.4 Dielectric Loss	01	04 Week (7-8)	
		4.5 Electric Conductivity of Dielectrics and their Break Down	02		
		4.6 Properties of Dielectrics 4.7 Applications of Dielectrics	01		
5	Magnetic Materials	5.1 Introduction 5.2 Classification 5.2.1 Diamagnetism 5.2.2 Para magnetism 5.2.3 Ferromagnetism	01	05 Week (8-9-10)	
		5.3 Magnetization Curve 5.4 Hysteresis	01		
		5.5 Eddy Currents 5.6 Curie Point 5.7 Magneto-striction	01		
		5.8 Soft and Hard magnetic Materials 5.8.1 Soft magnetic materials 5.8.2 Hard magnetic materials	02		

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
6	Materials for Special Purposes	6.1 Introduction 6.2 Structural Materials 6.3 Protective Materials 6.3.1 Lead 6.3.2 Steel tapes, wires and strips	01	02 Week (10)	
		6.4 Other Materials 6.4.1 Thermocouple materials 6.4.2 Bimetals 6.4.3 Soldering Materials 6.4.4 Fuse and Fuse materials. 6.4.5 Dehydrating material	01		

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LESSON PLAN

- 1) Subject Code: TH 5
- 2) Subject Title: ENVIRONMENTAL STUDIES
- 3) Semester: 3rd
- 4) Branch: Civil/Comp.Sc/Elect./Mech. Engg.
- 5) No. of Classes / Week: 3P/Week
- 6) Faculty: Aparajita Mohapatra
- 7) After completion of study of environmental studies, the student will be able to:
 1. Gather adequate knowledge of different pollutants, their sources and shall be aware of solid waste management systems and hazardous waste and their effects.
 2. Develop awareness towards preservation of environment.
- 8) Text Book to be referred by students:

Sl No.	Book	Author	Publication	% of Questions Asked	Year (Edition)	Whether available in Library
i	Fundamental concepts in Environmental Studies	D.D. Mishra	S.Chand & Co-Ltd	90%	2009 1st	YES

9) Course Coverage Schedule:

Ch. No.	Name of Chapter	Course to be Covered	No of periods Required	Total Class for Chapter/ Week (From-To)	Remarks
01	The Multidisciplinary nature of environmental studies	1.1 Definition, scope and importance, Need for public awareness.	1	2 Week(1)	
		1001 Topic End	1		
02	Natural Resources	2.1 Renewable and non renewable resources: a) Natural resources and associated problems.	1	8 Week(1-4)	
		Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction mining, dams and their effects on forests and tribal people			
		Water resources:- Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems.	1		
		Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources.	1		
		Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture,	1		

		fertilizers- pesticides problems, water logging, salinity,.			
		Energy Resources: Growing energy need, renewable and nonrenewable energy sources, use of alternate energy sources, case studies	1		
		Land Resources:- Land as a resource, land degradation, man induces landslides, soil erosion, anddesertification.	1		
		2.2Role of individual in conservation of natural resources.	1		
		2.3Equitable use of resources for sustainable life styles. Equitable use of resources for sustainable life styles.	1		
		1002 Topic End			
03	Systems	3.1 Concept of an eco system.	1	5 Week(4-5)	
		3.2 Structure and function of an eco system.			
		3.3 Producers, consumers,decomposers.	1		
		3.4 Energy flow in the eco systems.			
		3.5 Ecological succession.	1		
		3.6 Food chains, food webs and ecological pyramids	1		
		3.7 Introduction, types, characteristic features, structure and function of the following eco system: - Forest ecosystem: - Aquatic eco systems (ponds, streams, lakes,rivers, oceans, estuaries)	1		
		1003 Topic End			
04	Biodiversity and it's Conservation	4.1 Introduction-Definition: genetics, species and ecosystem diversity.	1	3 Week(6)	
		4.2 Biogeographically classification of India.			
		4.3 Value of biodiversity: consumptive use, productive use, social ethical, aesthetic and optinvalues.	1		
		4.4 Biodiversity at global, national and local level.			
		4.5 Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.	1		
		1004 Topic End			
05	Environmental Pollution.	5.1Definition Causes, effects and control measures of: a) Air pollution. b) Water pollution. c) Soil pollution d) Marine pollution e) Noise pollution. f) Thermal pollution	1	3 Week(7)	

		g) Nuclear hazards.			
		5.2 Solid waste Management: Causes, effects and control measures of urban and industrial wastes.	1		
		5.3 Role of an individual in prevention of pollution. Disaster management: Floods, earth quake, cyclone and landslides.	1		
		1005 Topic End			
06	Social issues and the Environment	6.1 Form unsustainable to sustainable development.	1	5 Week(8-9)	
		6.2 Urban problems related to energy.			
		6.3 Water conservation, rain water harvesting, water shed management.	1		
		6.4 Resettlement and rehabilitation of people; its problems and concern	1		
		6.5 Environmental ethics: issue and possible solutions.			
		6.6 Climatechange, globalwarming, acidrain, ozonelayer depletion, nuclear accidents and holocaust, case studies.	1		
		6.7 Air (prevention and control of pollution) Act.			
		6.8 Water (prevention and control of pollution) Act.	1		
		6.9 Public awareness.			
		1006 Topic End			
07	Human population and the environment	7.1 Population growth and variation among nations	1	4 Week (9-10)	
		7.2 Population explosion- family welfare program.	1		
		7.3 Environment and humanhealth.	1		
		7.4 Human rights.			
		7.5 Value education			
		7.6 Role of information technology in environment and human health.	1		
		1007 Topic End			

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