VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM
(Deemed to be University)

AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY, CHENNAI
&
VINAYAKA MISSION'S KIRUPANANDA VARIYAR ENGINEERING COLLEGE, SALEM

FACULTY OF ENGINEERING AND TECHNOLOGY

STRUCTURED CHOICE BASED CREDIT SYSTEM

BOARD : MECHANICAL ENGINEERING
REGULATION : 2017
PROGRAM : B.Tech., – MECHANICAL ENGINEERING (FULL TIME - REGULAR)

CURRICULUM AND SYLLABUS

SEMESTER – II								
S.NO	**COURSE CODE**	**COURSE TITLE**	**OFFERING DEPARTMENT**	**CATEGORY**	**L**	**T**	**P**	**C**
THEORY								
1		MATHEMATICS FOR MECHANICAL SCIENCES	MATHEMATICS	FC(BS)	2	2	0	**3**
2		PROGRAMMING IN PYTHON	CSE	FC(ES)	3	0	0	**3**
3		BASIC MANUFACTURING PROCESS	MECHANICAL	CC	3	0	0	**3**
4		SMART MATERIALS	PHYSICS	FC(BS)	3	0	0	**3**
5		BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	EEE & ECE	FC(ES)	4	0	0	**4**
PRACTICAL								
6		PROGRAMMING IN PYTHON LAB	CSE	FC(ES)	0	0	4	**2**
7		ENGINEERING GRAPHICS (Theory + Practice)	MECHANICAL	FC(ES)	1	0	4	**3**
8		MANUFACTURING PROCESS LAB	MECHANICAL	CC	0	0	4	**2**
9		ENGINEERING SKILLS PRACTICE LAB A. BASIC ELECTRICAL ENGINEERING B. BASIC ELECTRONICS ENGINEERING	EEE & ECE	FC(ES)	0	0	4	**2**
TOTAL					**16**	**2**	**16**	**25**
L – LECTURE HOUR		T – TUTORIAL HOUR		P – PRACTICAL HOUR		C – CREDIT		

HSS	HUMANITIES AND SOCIAL SCIENCES	CC	CORE COURSES
BS	BASIC SCIENCES	EC	ELECTIVE COURSES
ES	ENGINEERING SCIENCES	EEC	EMPLOYABILITY ENHANCEMENT COURSES + EXTRA CURRICULAR COURSES + CO - CURRICULAR COURSES
PII	PROJECT + INTERNSHIP + INDUSTRY ELECTIVES		

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE : **MATHEMATICS FOR MECHANICAL SCIENCES**	**L**	**T**	**P**	**C**
	TOTAL HOURS : **60**	**2**	**2**	**0**	**3**
	PREREQUISITE : **ENGINEERING MATHEMATICS**				

PURPOSE:

To impart analytical ability in solving mathematical problems as applied to Mechanical Engineering.

INSTRUCTIONAL OBJECTIVES:

1.	Partial Differential equation arises in most of the engineering discipline when the number of independent variables in the given problem under discussion is two or more.
2.	Fourier series is used to express even aperiodic functions in term of periodic function making them amenable for further processing.
3.	Fourier series has the wide application in the field of heat diffusion, wave propagation and in signal and systems analysis.
4.	Common applications of this distribution range from scientific and engineering applications to military and medical ones like Formulation of Business Problem Models, traffic flow, lottery tickets etc.
5.	Common applications of this distribution range from scientific and engineering applications to military and medical ones like Formulation of Business Problem Models, traffic flow, lottery tickets etc.

UNIT – I	**PARTIAL DIFFERENTIAL EQUATIONS**	**12**

Formation – Solutions of standard types, clairauts form, first order equations – Lagrange's Linear equation – Linear partial differential equations of second and higher order with constant coefficients.

UNIT – II	**FOURIER SERIES**	**12**

Dirichlet's conditions – General Fourier series – Half -range Sine and Cosine series – Parseval's identity – Harmonic Analysis.

UNIT – III	**BOUNDARY VALUE PROBLEMS**	**12**

Classification of second order linear partial differential equations – Solutions of one – dimensional wave equation, one – dimensional heat equation – Steady state solution of two – dimensional heat equation – Fourier series solutions in Cartesian coordinates.

UNIT – IV	**STANDARD DISTRIBUTIONS**	**12**

Moment generating function of random variables – Binomial – Poisson – Geometric – Uniform – Exponential – Gamma and Normal Distributions and their Properties (Mean Variance and Problems).

UNIT – V	**STATISTICS**	**12**

Measures of central tendency, Curve fitting – Straight line and Parabola by least square method, Correlation, Rank correlation and Regression.

TEXT BOOKS:

1. Dr.A.Singaravelu, "Transforms and Partial differential Equations", 18th Edition, Meenakshi Agency, Chennai (2013).
2. A.Singaravelu, "Probability and Statistics", Meenakshi Agencies, Chennai (2016).
3. S.C.Gupta, V.K.Kapoor, "Fundamentals of mathematical statistics", Sultan Chand & Sons (2006).

REFERENCES:

1. T. Veerarajan, "Engineering Mathematics" (for semester III), Third Edition, Tata McGraw-Hill Publishing Company limited (2011).
2. Grewal, B.S., "Higher Engineering Mathematics", 42nd Edition, Khanna Publishers, Delhi (2012).
1. Kreyszig, E., "Advanced Engineering Mathematics", 8th Edition, John Wiley and Sons (Asia) Pvt Ltd., Singapore (2012).
2. T. Veerarajan, "Probability, Statistics and Random processes" 2nd Edition, Tata McGraw-Hill Publishing Company Ltd., New Delhi (2006).
3. Johnson. R.A., "Miller & Freund's Probability and Statistics for Engineers", Sixth Edition, Pearson education, Delhi, 2000. (Chapters 7, 8, 9, 12).

COURSE CODE :
NAME OF THE COURSE : MATHEMATICS FOR MECHANICAL SCIENCES

COURSE DESIGNED BY		**DEPARTMENT OF MATHEMATICS**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
		√				√						
2	Mapping of instructional objectives with student outcome	1,2				3,4,5						
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
			√									

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE : **PROGRAMMING IN PYTHON**	**L**	**T**	**P**	**C**
	TOTAL HOURS : **45**	**3**	**0**	**0**	**3**
	PREREQUISITE : **NIL**				

PURPOSE:

The purpose of this course is to introduce Python, a remarkably powerful dynamic programming language, to write code for different operating systems along with application domain. Python has evolved on more popular and powerful open source programming tool.

INSTRUCTIONAL OBJECTIVES:

1.	Able to setup Python working environment.
2.	To understand the object oriented features of Python.
3.	To develop Network Applications using Python.
4.	To develop Web Applications using Python.
5.	To use and develop GUI applications in Python programming.

UNIT – I	**INTRODUCTION**	**9**

Introduction to Python – Advantages of Python programming – Tokens – Keywords - Variables – I/O methods - Data types – Operators.

UNIT – II	**DATA STRUCTURES**	**9**

Strings - List - Tuples - Dictionaries – Sets.

UNIT – III	**CONTROL STATEMENTS**	**9**

Flow Control – Selection Control Structure – If – if-else – if-elif-else – nested if Iterative control structures: while loop, for loop and range.

UNIT – IV	**FUNCTIONS**	**9**

Declaration – Types of arguments – Fixed arguments, default arguments, keyword arguments, variable arguments, and keyword variable arguments – Recursion – Anonymous functions: lambda - Generators – Decorators.

UNIT – V	**EXCEPTION HANDLING**	**9**

Exception Handling - Regular Expression - Calendars and Clocks Files: File I/O operations – Directory Operations– Reading and Writing in Structured Files: CSV and JSON.

TEXT BOOK:

1. Bill Lubanovic, "Introducing Python Modern Computing in Simple Packages", 1st Edition, O'Reilly Media, 2014.

REFERENCES:

1. Mark Lutz, “Learning Python”, 5th Edition, O'Reilly Media, 2013.
2. David Beazley, Brian K. Jones, "Python Cookbook", 3rd Edition, O'Reilly Media, 2013.
3. Mark Lutz, “Python Pocket Reference”, 5th Edition, O'Reilly Media, 2014.
4. www.python.org.
5. www.diveintopython3.net.

COURSE CODE : **NAME OF THE COURSE : PROGRAMMING IN PYTHON**												
COURSE DESIGNED BY		**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
		√				√						√
2	Mapping of instructional objectives with student outcome	1-5				1-5						1-5
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
				√								

COURSE CODE	SEMESTER -II				
	NAME OF THE COURSE : **BASIC MANUFACTURING PROCESSES**	**L**	**T**	**P**	**C**
	Total Hours **: 45**	**3**	**0**	**0**	**3**
	Prerequisite **: NIL**				

PURPOSE:

The aim of the subject is to provide a fundamental knowledge of manufacturing sector.

INSTRUCTIONAL OBJECTIVES:

1.	To acquire the knowledge about mould making, metal melting and casting processes.
2.	To acquire the knowledge about various metal joining processes.
3.	To acquire the knowledge about various hot and cold working processes.
4.	To acquire the knowledge about various sheet metal forming processes.
5.	To acquire the knowledge about various plastic processing.

UNIT – I	**INTRODUCTION TO CASTING PROCESSES**	**9**

Introduction: Concept of manufacturing process, Classification and its importance of manufacturing processes, Casting processes: steps involved, advantages and limitations - allowances and their importance, core making process - Moulding sand: constituents, types, properties, Cupola furnace and Electric Arc furnace - Sand casting processes: mould making, pouring, casting. Special casting processes - Shell and investment casting - Centrifugal casting - Casting defects and remedies.

UNIT - II	**METAL JOINING PROCESSES**	**9**

Introduction to various Welding processes – Classification of welding processes –Gas welding, Arc welding, TIG, MIG, Submerged arc welding–Resistance welding – Friction welding - seam welding – Percussion welding – Introduction to friction stir welding, Brazing and soldering processes - Weld defects and control measures. Introduction to inspection methods.

UNIT - III	**MECHANICAL WORKING OF METALS**	**9**

Hot and Cold working of materials - Forging: hot and cold forging, open and close forging, types forging machines, types of forging operations. Extrusion: hot and cold extrusion, forward and backward extrusion, types operations. Rolling: hot and cold rolling, types and operations, wire drawing and tube piercing. Drawing: Hot and cold drawing – sheet metal drawing, deep drawing, bar drawing, tube drawing, tube piercing, wire drawing, plastic drawing.

UNIT - IV	**SHEET METAL FORMING PROCESSES**	**9**

Sheet metal processes: characteristics, Typical shearing, bending, curling, embossing, coining and drawing operations – Stretch forming operations: Formability of sheet metal – Working principle and applications– various special forming processes.

UNIT – V	**PLASTIC ENGINEERING**	**9**

Plastics: Etymology -classification and properties– applications and environmental effects- Manufacturing processes of plastics -High performance plastics– plastic joining methods.

TEXT BOOKS:

1. Elements of Workshop Technology- Vol. I -SK Hajra Choudhury - Indian book distributing company, Calcutta-1986.
2. "Manufacturing Engineering and Technology", Serope Kalpakjian-Steven R.Schmid - Pearson Education- Inc. 2002 (Second Indian Reprint).
3. "Manufacturing Technology", Vol-1- P.N.Rao - Tata McGraw-Hill Publishing Limited- IInd Edition- 2002.

REFERENCES:

1. "Elements of Manufacturing Processes", B.S. Nagendra Parashar & R.K. Mittal- Prentice Hall of India learning pvt. ltd- 2012.
2. "A text book of production technology", P.C. Sharma- S. Chand and Company, 2006.
3. "Manufacturing science", Amithaba Gosh & Asok kumar Malik, Ellis horwood, 1986.

COURSE CODE : **NAME OF THE COURSE : BASIC MANUFACTURING PROCESSES**												
COURSE DESIGNED BY		**DEPARTMENT OF MECHANICAL ENGINEERING**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
		√		√		√						√
2	Mapping of instructional objectives with student outcome	1-5		1-5		1-5						1-5
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
					√							

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE : **SMART MATERIALS**	**L**	**T**	**P**	**C**
	TOTAL HOURS : **45**	**3**	**0**	**0**	**3**
	PREREQUISITE : **PHYSICAL SCIENCES**				

PURPOSE:

The fundamental knowledge gained will be useful for various applications in Engineering & Technology.

INSTRUCTIONAL OBJECTIVES:

1.	To understand the properties of smart materials.
2.	To understand the structure of crystalline materials.
3.	To learn the synthesis of Nano materials.
4.	To learn the properties and classification of magnetic materials.
5.	To understand the concept of superconducting materials and their properties.

UNIT – I	**SMART MATERIALS**	**9**

Shape Memory Alloys (SMA) – Characteristics and properties of SMA, Application, advantages and disadvantages of SMA. Metallic glasses – Preparation, properties and applications.

UNIT – II	**CRYSTALLINE MATERIALS**	**9**

Unit cell – Bravais lattice – Miller indices – Calculation of number of atoms per unit cell – atomic radius – coordination number – packing factor for SC, BCC, FCC, HCP structures.

UNIT – III	**NANO MATERIALS**	**9**

Nanophase materials – Top-down approach - Mechanical Grinding – Lithography – Bottom-up approach – Sol-gel method – Carbon nanotubes – Fabrication – applications.

UNIT – IV	**MAGNETIC MATERIALS**	**9**

Basic concepts – Classification of magnetic materials – Domain theory – Hysteresis – Soft and Hard magnetic materials.

UNIT – V	**SUPERCONDUCTING MATERIALS**	**9**

Superconducting phenomena – properties of superconductors – Meissner effect – isotope effect – Type I and Type II superconductors – High T_c Superconductors – Applications of superconductors.

TEXT BOOK:

1. Mani P, “Engineering Physics II”, Dhanam Publications, 2011.

REFERENCES:

1. Pillai S.O., “Solid State Physics”, New Age International (P) Ltd., publishers, 2009.
2. Senthilkumar G., “Engineering Physics II”, VRB Publishers, 2011.

COURSE CODE : NAME OF THE COURSE : SMART MATERIALS												
COURSE DESIGNED BY		**DEPARTMENT OF PHYSICS**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
		√	√	√	√	√		√	√	√	√	√
2	Mapping of instructional objectives with student outcome	3	1	1	3	5		2	4	3	5	1
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
			√									

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE : **BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING** **PART A - BASIC ELECTRICAL ENGINEERING**	**L**	**T**	**P**	**C**
	TOTAL HOURS : **30**	**2**	**0**	**0**	**2**
	PREREQUISITE : **NIL**				

PURPOSE:

This course provides comprehensive idea about circuit analysis, working principles of machines and common measuring instruments.

INSTRUCTIONAL OBJECTIVES:

1.	Understand the basic concepts of AC and DC circuits.
2.	Gain knowledge about the working principle, construction, applications of DC, AC machines and measuring instruments.
3.	Understand the fundamentals of safety procedures, Earthing and Power system.

UNIT – I	HISTORY OF ELECTRICITY, QUANTITIES AND CIRCUITS	10

Evolution of Electricity and Electrical inventions, Electrical quantities- Charge, Electric potential, voltage, current– DC & AC, power, energy, time period, frequency, phase, flux, flux density, RMS, Average, Peak, phasor & vector diagram. Electric Circuits - Passive components (RLC), Ohm's law, KCL, KVL, Faraday's law, Lenz's law. Electrical materials – Conducting and insulating materials.

UNIT – II	MEASURING INSTRUMENT AND ENERGY CALCULATION	10

Measuring Instruments – Analog and Digital meters – Types and usage. AC and DC Machines & Equipment- Types, Specifications and applications.

Loads – Types of Loads- Power rating and Energy calculation – for domestic loads. Energy Efficient equipments – star ratings.

UNIT – III	ELECTRICAL SAFETY AND INTRODUCTION TO POWER SYSTEM	10

Protection & Safety - Hazards of electricity - shock, burns, arc-blast, Thermal Radiation, explosions, fires, effects of electricity on the human body. Electrical safety practices, Protection devices. Electric Power- Generation resources, Transmission types & Distribution system (levels of voltage, power ratings and statistics) - Simple layout of generation, transmission and distribution of power.

TEXT BOOKS:

1. R.K.Rajput , "Basic Electrical and Electronics engineering", Second Edition, Laxmi Publication, 2012.
2. "Basic Electrical and Electronics Engineering", Department of EEE & ECE, Faculty of Engineering & Technology, VMRFDU, Anuradha Agencies, 2017.
3. Kothari.D.P and Nagrath.I.J, "Basic Electrical Engineering", Second Edition, Tata McGraw - Hill, 2009.
4. Metha.V.K, Rohit Metha, "Basic Electrical Engineering", Fifth Edition, Chand. S & Co, 2012.

REFERENCE:

1. Smarajt Ghosh, "Fundamentals of Electrical & Electronics Engineering", Second Edition, PHI Learning, 2007.

COURSE CODE : **NAME OF THE COURSE : BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING** **PART A - BASIC ELECTRICAL ENGINEERING**												
COURSE DESIGNED BY		**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
		√				√						
2	Mapping of instructional objectives with student outcome	1 -3				1						
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
				√								

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE : **BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING PART B - BASIC ELECTRONICS ENGINEERING**	**L**	**T**	**P**	**C**
	TOTAL HOURS : **30**	**2**	**0**	**0**	**2**
	PREREQUISITE : **NIL**				

PURPOSE:

Basic information on how to use electronic components and explains the logic behind solid state circuit design. Starting with an introduction to semiconductor physics, the tutorial moves on to cover topics such as resistors, capacitors, inductors, transformers, diodes, and transistors.

INSTRUCTIONAL OBJECTIVES:

1.	Acquire knowledge in real life applications.
2.	Fundamentals of semiconductor devices and transducers.
3.	Principles of digital electronics.
4.	Principles of various communication systems.
5.	Knowledge on electronic components and communication engineering concepts.

UNIT – I	**SEMICONDUCTOR DEVICES**	**10**

Passive and Active Components - Resistors, Inductors, Capacitors, Characteristics of PN Junction Diode - Zener Diode and its Characteristics - Half wave and Full wave Rectifiers - Voltage Regulation. Bipolar Junction Transistor, JFET, MOSFET & UJT.

UNIT – II	**DIGITAL FUNDAMENTALS**	**10**

Number Systems – Binary, Octal, Decimal and Hexa-Decimal – Conversion from one to another – Logic Gates – AND, OR, NOT, XOR, Universal Gates – Adders, Multiplexer, De Multiplexer, Encoder, Decoder – Memories

UNIT – III	**COMMUNICATION AND ADVANCED GADGETS**	**10**

Modulation and Demodulation – AM, FM, PM – RADAR – Satellite Communication – Mobile Communication, LED, HD, UHD, OLED, HDR & Beyond, Smart Phones – Block diagrams Only.

TEXT BOOKS:

1. R.K. Rajput, "Basic Electrical and Electronics Engineering", Laxmi Publications, Second Edition, 2012.
2. "Basic Electrical and Electronics Engineering", Department of EEE & ECE, Faculty of Engineering & Technology, VMRFDU, Anuradha Agencies, 2017.
3. Edward Hughes, "Electrical and Electronics Technology", Pearson Education Limited, Ninth Edition, 2005.

REFERENCE:

1. John Kennedy "Electronics Communication System", Tata McGraw Hill, 2003.

COURSE CODE : **NAME OF THE COURSE : BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING** **PART B - BASIC ELECTRONICS ENGINEERING**												
COURSE DESIGNED BY		**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
		√	√	√	√	√						
2	Mapping of instructional objectives with student outcome	3,4	1	2	5	3,4						
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
				√								

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE : **PROGRAMMING IN PYTHON LAB**	**L**	**T**	**P**	**C**
	TOTAL HOURS : **60**	**0**	**0**	**4**	**2**
	PREREQUISITE : **NIL**				

PURPOSE:

This course will help the students to gain the in-depth knowledge in Python Programming.

INSTRUCTIONAL OBJECTIVES:

1.	To understand Control Structures.
2.	To understand Concept of Arrays.
3.	To implement Functions and files.

LIST OF EXPERIMENTS:

1. Write a Program to sum the series of N numbers.
2. Write a Program to calculate Simple Interest.
3. Write a Program to generate Fibonacci Series using for loop.
4. Write a program to calculate factorial using while loop.
5. Write a Program to
   a) Find the greatest of three numbers using if condition.
   b) Find the greatest of three numbers using conditional operator.
6. Write a program for finding the roots of a given quadratic equation using conditional control statements.
7. Write a program to compute matrix multiplication using the concept of arrays.
8. Write a program to compute matrix multiplication using the concept of arrays.
9. Write a program to implement recursive function.
10. Write a program to read and write data using file concepts.

REFERENCE:

1. Laboratory Reference Manual.

COURSE CODE :
NAME OF THE COURSE: PROGRAMMING IN PYTHON LAB

COURSE DESIGNED BY		**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
		√				√						√
2	Mapping of instructional objectives with student outcome	1-5				1-5						1-5
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
				√								

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE: **ENGINEERING GRAPHICS (Theory + Practice)**	**L**	**T**	**P**	**C**
	TOTAL HOURS : **60**	**1**	**0**	**4**	**3**
	PREREQUISITE : **NIL**				

PURPOSE:

The aim of the subject is to provide knowledge of fundamentals of mechanical Engineering.

INSTRUCTIONAL OBJECTIVES:

1.	To know about different types of lines and curves and represent letters and numbers in drawing sheets.
2.	To know projection of points, straight lines.
3.	To know projection of various solids.
4.	To know about the section of solids and development of different types of surfaces.
5.	To know about isometric projection and different angle of projection.

UNIT – I	**PLANE CURVES AND FREE HAND SKETCHING**	**9**

Conics – Construction of ellipse– First angle projection – layout views – Developing visualization skills through free hand sketching of multiple views from pictorial views of objects.

UNIT – II	**AUTOMOTIVE ENGINES AND COMPONENTS**	**9**

Projection of points, Projection of straight lines located in the first quadrant: inclined to both planes – Determination of true lengths and true inclinations – rotating line method only.

UNIT – III	**PROJECTION OF SOLIDS**	**9**

Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to any one reference plane by change of position method.

UNIT – IV	**SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES**	**9**

Sectioning of above solids in simple vertical position by cutting planes inclined to any one reference plane and perpendicular to the other – Obtaining true shape of section. Development of lateral surfaces of simple and truncated solids like Prisms, pyramids, cylinders and cones.

UNIT – V	**ISOMETRIC VIEW AND PERSPECTIVE PROJECTION**	**9**

Principles of isometric View – isometric scale – isometric view of simple solids – Introduction to Perspective projection.

TEXT BOOKS:

1. N.D. Bhatt, "Engineering Drawing" Charotar Publishing House, 46th Edition, (2003).
2. K. V. Natarajan, "A text book of Engineering Graphics", Dhanalakshmi Publishers, Chennai (2006).

REFERENCES:

1. M.S. Kumar, "Engineering Graphics", D.D. Publications, (2007).
2. K. Venugopal & V. Prabhu Raja, "Engineering Graphics", New Age International (P) Limited.
3. M.B. Shah and B.C. Rana, "Engineering Drawing", Pearson Education (2005).
4. K. R. Gopalakrishnana, "Engineering Drawing", (Vol.I & II), Subhas Publications (1998).

COURSE CODE: **NAME OF THE COURSE : ENGINEERING GRAPHICS** (Theory + Practice)												
COURSE DESIGNED BY		**DEPARTMENT OF MECHANICAL ENGINEERING**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
		√		√								√
2	Mapping of instructional objectives with student outcome	1-5		1-5								1-5
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
				√								

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE : **ENGINEERING SKILLS PRACTICE LAB** **PART A – BASIC ELECTRICAL ENGINEERING LAB**	**L**	**T**	**P**	**C**
	TOTAL HOURS : **30**	**0**	**0**	**2**	**1**
	PREREQUISITE : **NIL**				

PURPOSE:

To provide exposure to the students with hands on experience on various electrical engineering practices.

INSTRUCTIONAL OBJECTIVES:

1.	Learn the residential wiring and various types of wiring.
2.	Measure the various electrical quantities.
3.	Gain knowledge about the fundamentals of various electrical gadgets, their working and trouble shooting.
4.	Know the necessity and types of earthing and measurement of earth resistance.

LIST OF EXPERIMENTS:

1. Residential house wiring using switches, fuse, indicator, lamp and energy meter.
2. Fluorescent lamp wiring.
3. Stair case wiring.
4. Measurement of electrical quantities – voltage, current, power & power factor in RLC circuit.
5. Measurement of energy using single phase energy meter.
6. Measurement of resistance to earth of electrical equipment.

REFERENCE:

Laboratory Reference Manual.

COURSE CODE :
NAME OF THE COURSE : ENGINEERING SKILLS PRACTICE LAB
PART A - BASIC ELECTRICAL ENGINEERING LAB

COURSE DESIGNED BY		**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
		√	√		√							
2	Mapping of instructional objectives with student outcome	1-4	1-4		1-4							
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
				√								

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE : **ENGINEERING SKILLS PRACTICE LAB PART B - BASIC ELECTRONICS ENGINEERING LAB**	**L**	**T**	**P**	**C**
	Total Hours : **30**	**0**	**0**	**2**	**1**
	Prerequisite : **NIL**				

PURPOSE:

The aim of this course is to impart fundamental hands-on skill in carrying out experiments at higher semester practical courses.

INSTRUCTIONAL OBJECTIVES:

1.	To familiarize the electronic components and basic electronic instruments.
2.	To analyze characteristics of Diodes, BJT and FET.
3.	To analyze the principles of digital logic gates.
4.	To understand the concept of basic modulation techniques.
5.	To Understand specifications of basic electronic components.

LIST OF EXPERIMENTS:

1. Identifying Electronics Components.
2. Practicing of Soldering and Desoldering.
3. Characteristics of PN junction Diode.
4. Characteristics of Zener diode.
5. Input & Output characteristics of BJT.
6. Transfer characteristics of JFET.
7. Verification of Logic Gates.
8. Study of Amplitude Modulation.
9. Study of Frequency Modulation.

REFERENCE:

Laboratory Reference Manual

COURSE CODE:
NAME OF THE COURSE: ENGINEERING SKILLS PRACTICE LAB
PART B - BASIC ELECTRONICS ENGINEERING LAB

COURSE DESIGNED BY		**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
			√		√							
2	Mapping of instructional objectives with student outcome		2,3, 4,5		1							
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
				√								

CATEGORY :			
HSS	HUMANITIES AND SOCIAL SCIENCES	CC	CORE COURSES
BS	BASIC SCIENCES	EC	ELECTIVE COURSES
ES	ENGINEERING SCIENCES	EEC	EMPLOYABILITY ENHANCEMENT COURSES + EXTRA CURRICULAR COURSES + CO - CURRICULAR COURSES
PII	PROJECT + INTERNSHIP + INDUSTRY ELECTIVES		

STUDENT OUTCOMES :	
a.	An ability to apply knowledge of Mathematics, Science and Engineering.
b.	An ability to design and conduct experiments, as well as to analyze and interpret data.
c.	An ability to design a system, component, or process to meet desired needs within realistic constraints such as Economic, Environmental, Social, Political, Ethical, Health and Safety, Manaufaturability and Sustainability.
d.	An ability to function on Multi Disciplinary Teams.
e.	An ability to identify, formulate and solve Engineering Probems.
f.	An understanding of professional and Ethical Responsibility.
g.	An ability to Communicate Effectiely.
h.	The broad education necessary to understand the impact of Engineering Solutions in Global, Economic, Environmental and Social Context.
i.	A recognition of the need for, and an ability to engage in Life-Long Learning.
j.	A knowledge of contemporary issues.
k.	An ability to use the Techniques, Skills and Modern Engineering Tools necessary for Engineering Practice.