

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., – AERONAUTICAL 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		PRINCIPLES OF FLIGHT	AERONAUTICAL	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		FLIGHT LAB	AERONAUTICAL	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", 18 th 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										
		a	b	c	d	e	f	g	h	i	j	k
1	Student Outcomes	√				√						
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", 1 st Edition, O'Reilly Media, 2014.					
REFERENCES:					
1. Mark Lutz, “Learning Python”, 5 th Edition, O'Reilly Media, 2013.					
2. David Beazley, Brian K. Jones, "Python Cookbook", 3 rd Edition, O'Reilly Media, 2013.					
3. Mark Lutz, “Python Pocket Reference”, 5 th 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 : PRINCIPLES OF FLIGHT	L	T	P	C
	TOTAL HOURS : 45	3	0	0	3
	PREREQUISITE : NIL				
PURPOSE:					
To introduce basics of flying objects and vehicles.					
INSTRUCTIONAL OBJECTIVES:					
1.	General information of Aircraft and its systems.				
2.	Identify the components of Flight.				
3.	Identify suitable materials for Aircraft structure.				
4.	Perform basic calculation on Mechanics using Newton law for lift, drag and moment.				
5.	To form a platform for advanced knowledge.				
UNIT – I HISTORY OF FLIGHT 8					
Early airplanes by Wright Brothers, biplanes and monoplanes, Developments in aerodynamics, materials, structures and propulsion over the years – Balloon Flight - Ornithopters.					
UNIT – II BASICS OF FLIGHT MECHANICS 9					
Physical properties and structure of the atmosphere, Temperature, pressure and altitude relationships, Newton's Laws of Motions applied to Aeronautics -Evolution of lift, drag and moment -Aerofoils, Mach number, Maneuvers.					
UNIT – III AIRCRAFT CONFIGURATIONS 9					
Different types of flight vehicles - classifications -Components of an airplane and their functions - Conventional control – Powered Control - Basic instruments for flying, Typical systems for control actuation.					
UNIT – IV AIRPLANE STRUCTURES AND MATERIALS 10					
General types of construction, Monocoque, Semi-Monocoque and geodesic construction, Typical wing and fuselage structure. Metallic and non-metallic materials, Use of aluminium alloy, titanium, stainless steel and composite materials – Stresses and Strains – Hooke's law – Stress-Strain Diagrams – Elastic Constants.					
UNIT – V POWER PLANTS 9					
Basic ideas about piston, turboprop and jet engines, Use of propeller and jets for thrust production. Comparative merits, Principles of operation of rocket, types of rockets and typical applications, Exploration into space.					
TEXT BOOKS:					
1. Anderson, J.D., "Introduction to Flight", McGraw-Hill, 1995.					
2. Stephen. A. Brandt, "Introduction to Aeronautics: A design perspective", American Institute of Aeronautics & Astronautics, 1997.					
REFERENCE:					
1. Kermode, A.C., "Mechanics of Flight", Himalayan Book, 1997.					

COURSE CODE :												
NAME OF THE COURSE : PRINCIPLES OF FLIGHT												
COURSE DESIGNED BY		DEPARTMENT OF AERONAUTICAL 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	3			4			2
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				L	T	P	C
	PART A - BASIC ELECTRICAL ENGINEERING							
	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			L	T	P	C
	PART B - BASIC ELECTRONICS ENGINEERING						
	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:

- Write a Program to sum the series of N numbers.
- Write a Program to calculate Simple Interest.
- Write a Program to generate Fibonacci Series using for loop.
- Write a program to calculate factorial using while loop.
- Write a Program to
 - Find the greatest of three numbers using if condition.
 - Find the greatest of three numbers using conditional operator.
- Write a program for finding the roots of a given quadratic equation using conditional control statements.
- Write a program to compute matrix multiplication using the concept of arrays.
- Write a program to compute matrix multiplication using the concept of arrays.
- Write a program to implement recursive function.
- Write a program to read and write data using file concepts.

REFERENCE:

- 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, 46 th 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

		a	b	c	d	e	f	g	h	i	j	k
1	Student Outcomes	√		√								√
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 : FLIGHT LAB					L	T	P	C
	TOTAL HOURS : 60					0	0	4	2
	PREREQUISITE : NIL								
PURPOSE:									
The aim of this course is to impart fundamental knowledge of components and operations of various systems of aircraft.									
INSTRUCTIONAL OBJECTIVES:									
1.	To familiarize with the flying vehicles.								
2.	To identify various components of aircraft.								
3.	To understand various aircraft systems.								
4.	To calculate weight of an aircraft and fuel quantity required for a sortie.								
5.	To understand occupation and health safety in aviation.								
LIST OF EXPERIMENTS:									
<ol style="list-style-type: none"> 1. Description of an aircraft. 2. Identification and types of aircraft. 3. Locating major components of an aircraft. 4. Operation of various systems of an aircraft. 5. Difference in systems of light and heavy aircrafts. 6. Determination of span of an aircraft. 7. Calculation of Weight of and aircraft. 8. Calculation of fuel quantity for total endurance of flight. 9. Understanding practical effect of operation of propeller. 10. Understanding operation of aircraft controls. 									
REFERENCE:									
Flight Lab Manual									

COURSE CODE :												
NAME OF THE COURSE : FLIGHT LAB												
COURSE DESIGNED BY		DEPARTMENT OF AERONAUTICAL ENGINEERING										
1	Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
			√	√		√			√			√
2	Mapping of instructional objectives with student outcome		1,2,3,6	4,5		7,8			9			10
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										
		a	b	c	d	e	f	g	h	i	j	k
1	Student Outcomes	√	√		√							
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, Manufacturability and Sustainability.
d.	An ability to function on Multi Disciplinary Teams.
e.	An ability to identify, formulate and solve Engineering Problems.
f.	An understanding of professional and Ethical Responsibility.
g.	An ability to Communicate Effectively.
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.