

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 : ELECTRONICS AND COMMUNICATION ENGINEERING
REGULATION : 2017
PROGRAM : B.Tech – ELECTRONICS AND COMMUNICATION ENGINEERING (FULL TIME - REGULAR)

CURRICULUM AND SYLLABUS

SEMESTER – II									
S.NO	COURSE CODE	COURSE TITLE	OFFERING DEPARTMENT	CATEGORY	L	T	P	C	
THEORY									
1		DIFFERENTIAL EQUATIONS AND TRANSFORMS	MATHEMATICS	FC(BS)	2	2	0	3	
2		PROGRAMMING IN PYTHON	CSE	FC(ES)	3	0	0	3	
3		SEMICONDUCTOR DEVICES	ECE	CC	3	0	0	3	
4		SMART MATERIALS	PHYSICS	FC(BS)	3	0	0	3	
5		BASICS OF CIVIL AND MECHANICAL ENGINEERING	CIVIL & MECHANICAL	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		SEMICONDUCTOR DEVICES LAB	ECE	CC	0	0	4	2	
9		ENGINEERING SKILLS PRACTICE LAB A. BASIC CIVIL ENGINEERING B. BASIC MECHANICAL ENGINEERING	CIVIL & MECHANICAL	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		

TEXT BOOKS:

1. “Engineering mathematics I & II”, Department of Mathematics, VMKVEC (Salem) & AVIT (Chennai), (2017).
2. Dr.A.Singaravelu, “Engineering Mathematics I & II”, 23rd Edition, Meenakshi Agency, Chennai (2016).

REFERENCES:

1. Veerarajan, T., “Engineering Mathematics”, Tata McGraw Hill Publishing Co., New Delhi (2011).
2. Grewal, B.S., “Higher Engineering Mathematics”, 42nd Edition, Khanna Publishers, Delhi (2012).
3. Kreyszig, E., “Advanced Engineering Mathematics”, 8th Edition, John Wiley and Sons (Asia) Pvt Ltd., Singapore (2012).
4. Kandasamy .P., Thilagavathy. K., and Gunavathy. K., “Engineering Mathematics”, Volumes I & II (10th edition), S. Chand & Co., New Delhi (2014).

COURSE CODE :**NAME OF THE COURSE : DIFFERENTIAL EQUATIONS AND TRANSFORMS**

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										
		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 : SEMICONDUCTOR DEVICES	L	T	P	C
	TOTAL CONTACT HOURS: 45	3	0	0	3
	PREREQUISITE : NIL				
PURPOSE:					
This is an introduction course to Semiconductor Devices. The course begins with a discussion on how electron energy bands are formed in semiconductors; followed by discussions on equilibrium statistics of electrons and holes, drift, diffusion currents, generation and recombination processes. It then examines the principles and operations of essential semiconductor devices used in today's electronics: diodes, light detectors and emitters, bipolar junction transistors and MOSFETs.					
INSTRUCTIONAL OBJECTIVES:					
1.	Introduce students to the physics of semiconductors and the inner working of semiconductor devices.				
2.	Provide students the insight useful for understanding new semiconductor devices and technologies.				
3.	Understand their capabilities and limitations and make decisions regarding their best utilization in a specific situation.				
4.	Understand the nature and scope of modern electronics.				
5.	Understand their capabilities and limitations and make decisions regarding their best utilization in special devices.				
UNIT – I	SEMICONDUCTOR DIODES AND APPLICATIONS				9
Introduction, Semiconductor Materials - Ge, Si, and GaAs, Covalent Bonding and Intrinsic Materials, Energy Levels, n-Type and p-Type Materials, Semiconductor Diode, Resistance Levels, Diode Equivalent Circuits, Transition and Diffusion Capacitance, Reverse Recovery Time, Diode Specification Sheets, Semiconductor Diode Notation, Diode Testing, Zener Diodes, Light-Emitting Diodes, Sinusoidal Inputs; Half-Wave Rectifier, Full-Wave Rectifier, Clipper, Clamper, Zener Diode, Voltage-Multiplier Circuits, Practical Applications					
UNIT – II	BIPOLAR JUNCTION TRANSISTORS				9
Introduction, Transistor Construction, Transistor Operation, Common-Base Configuration, Common-Emitter Configuration, Common-Collector Configuration, Limits of Operation, Transistor Specification Sheet, Transistor Testing, Transistor Casing and Terminal Identification.					
UNIT – III	FIELD-EFFECT TRANSISTORS				9
Introduction, Construction and Characteristics of JFETs, Transfer Characteristics, Important Relationships, Depletion-Type MOSFET, Enhancement-Type MOSFET, MOSFET Handling.					
UNIT – IV	VOLTAGE REGULATORS				9
Introduction, General Filter Considerations, Capacitor Filter, RC Filter, Discrete Transistor Voltage Regulation, IC Voltage Regulators.					
UNIT – V	SPECIAL PURPOSE DEVICES				9
Introduction, Silicon-Controlled Rectifier, Basic Silicon-Controlled Rectifier Operation, SCR Characteristics and Applications, Shockley Diode, Diac, Triac, Unijunction Transistor, Phototransistors, MISFETs, MESFETs, TFETs, HEMTs, Silicon Nano Wire Transistor.					

TEXT BOOK:
1. Robert L. Boylestad and Louis Nashelsky, "Electronic Devices and Circuit Theory", Pearson Education, 11 th Edition, 2013.
REFERENCES:
1. Jacob Millman, Christos C Halkias, Satyabrata Jit, "Electron Devices and Circuits", Tata McGraw Hill, 2010. 2. David A Bell, "Fundamentals of Electronic Devices and Circuits", Oxford Press, 2009. 3. B L Theraja, R S Sedha, "Principles of Electronic Devices and Circuits", S.Chand, 2004.

COURSE CODE :												
NAME OF THE COURSE : SEMICONDUCTOR DEVICES												
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	1,5	4	2,3								
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 CIVIL AND MECHANICAL ENGINEERING			L	T	P	C
	PART A – BASIC CIVIL ENGINEERING						
	TOTAL HOURS : 30			2	0	0	2
PREREQUISITE : NIL							
PURPOSE:							
The aim of the subject is to provide a fundamental knowledge of basic Civil Engineering.							
INSTRUCTIONAL OBJECTIVES:							
1.	To understand the basic concepts of surveying and construction materials.						
2.	To impart basic knowledge about building components.						
UNIT – I SURVEYING AND CIVIL ENGINEERING MATERIALS 15							
Surveying: Objects – types – classification – principles – measurements of distances – angles – levelling – determination of areas – illustrative examples. Civil Engineering Materials: Bricks – stones – sand – cement – concrete – steel sections.							
UNIT – II BUILDING COMPONENTS AND STRUCTURES						15	
Foundations: Types, Bearing capacity – Requirement of good foundations. Superstructure: Brick masonry – stone masonry – beams – columns – lintels – roofing – flooring – plastering – Mechanics – Internal and external forces – stress – strain – elasticity – Types of Bridges and Dams – Basics of Interior Design and Landscaping.							
TEXT BOOK:							
1. “Basic Civil and Mechanical Engineering”, VMU, (2017).							
REFERENCES:							
1. Ramamrutham S., “Basic Civil Engineering”, Dhanpatrai Publishing Co. (P) Ltd., 2009.							
2. Seetharaman S., “Basic Civil Engineering”, Anuradha Agencies.							

COURSE CODE :												
NAME OF THE COURSE : BASICS OF CIVIL AND MECHANICAL ENGINEERING												
PART A – BASIC CIVIL ENGINEERING												
COURSE DESIGNED BY				DEPARTMENT OF CIVIL 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			1,2							
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										
		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: 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										
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 : SEMICONDUCTOR DEVICES LAB						L	T	P	C
	TOTAL HOURS: 60						0	0	4	2
	PREREQUISITE: NIL									

PURPOSE:

To reinforce learning in the accompanying semiconductor devices course through hands-on experience by examining the electrical characteristics of various semiconductor devices, such as diodes, BJTs and FETs. To provide the student with the capability for performing various analysis of semiconductor devices.

INSTRUCTIONAL OBJECTIVES :

1.	Emphasizes the practical, hands-on component of this course.
2.	It complements the theoretical material presented in lecture, and as such, is integral and indispensable to the mastery of the subject.
3.	To study experimentally the characteristics of diodes, BJT's and FET's.
4.	To verify practically the response of various special purpose electron devices.
5.	To provide students engineering skills by way of breadboard circuit design with electronic devices and components.

LIST OF EXPERIMENTS:

1. Half Wave Rectifier
2. Full Wave Rectifier
3. Clipper
4. Clamper
5. Input/output Characteristics of CE Amplifier
6. Input/output Characteristics of CC Amplifier
7. Transfer Characteristics of JFET
8. Voltage Regulator
9. TRIAC, DIAC
10. SCR

COURSE CODE :

NAME OF THE COURSE : SEMICONDUCTOR DEVICES 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		1,2,3	4,5								
3	Category	HSS	BS	ES	CC	EC	EEC	PII				
					√							

COURSE CODE	SEMESTER – II				
	NAME OF THE COURSE : ENGINEERING SKILLS PRACTICE LAB PART A - BASIC CIVIL ENGINEERING	L	T	P	C
	TOTAL HOURS : 30	0	0	2	1
	PREREQUISITE : NIL				
PURPOSE:					
The aim of the subject is to provide a fundamental knowledge of basic Civil Engineering.					
INSTRUCTIONAL OBJECTIVES:					
1.	Ability to fabricate carpentry components and pipe connections including plumbing works.				
LIST OF EXPERIMENTS:					
Buildings:					
1. Study of plumbing and carpentry components of residential and industrial buildings, Safety aspects.					
Plumbing Works:					
2. Study of pipeline joints, its location and functions: valves, taps, couplings, unions, reducers, elbows in household fittings.					
3. Study of pipe connections requirements for pumps and turbines.					
4. Preparation of plumbing line sketches for water supply and sewage works.					
5. Hands-on-exercise: Mixed pipe material connection – Pipe connections with different joining components.					
6. Demonstration of plumbing requirements of high-rise buildings.					
Carpentry using Power Tools only:					
7. Study of the joints in roofs, doors, windows and furniture.					
8. Hands-on-exercise: Wood work, joints by sawing, planning and cutting.					
REFERENCE:					
1. Laboratory Reference Manual.					

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

COURSE CODE	SEMESTER – II							
	NAME OF THE COURSE: ENGINEERING SKILLS PRACTICE LAB PART B - BASIC MECHANICAL ENGINEERING				L	T	P	C
	TOTAL HOURS: 30				0	0	2	1
	PREREQUISITE: NIL							
PURPOSE:								
The aim of the subject is to make students understand the basic manufacturing operations.								
INSTRUCTIONAL OBJECTIVES:								
1.	To create ability to make fittings, casting moulds, wooden joints and welding joints.							
LIST OF EXPERIMENTS:								
1. Tee – Fitting 2. Vee – Fitting 3. Preparation of a mould for a single piece pattern 4. Preparation of a mould for a split piece pattern 5. Half- Lap Joint in Carpentry 6. Dove Tail Joint in Carpentry 7. Lap Joint – Welding 8. Butt Joint – Welding								
REFERENCES:								
“Engineering Skill Practices Lab Manual”, School of Mechanical Sciences, VMU.								

COURSE CODE :												
NAME OF THE COURSE : ENGINEERING SKILLS PRACTICE LAB PART B - BASIC MECHANICAL ENGINEERING												
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	1	1	1	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.