JABALPUR ENGINEERING COLLEGE, JABALPUR (MP)
(An Autonomous Institute of Govt. of M.P.)
Affiliated to Rajiv Gandhi Technological University, Bhopal (MP)
Scheme of Study and Examination (w.e.f. July 2011)

BE (PTDC) First Sem. Branch : Electronics & Telecom. Engg

Course Code	Subject	Periods			EVALUATION SCHEME					Credits
		L	T	P	SESSIONAL EXAM			ESE	SUB TOTAL	
					TA	CT	TOT			
MA-01	Engineering Mathematics - I	3	1	-	10	20	30	70	100	4
CS-03	Basic Computer Programming	3	1	-	10	20	30	70	100	4
EC-01	Electronic Instrumentation	3	1	-	10	20	30	70	100	4
EC-03	Electronic Devices	3	1	-	10	20	30	70	100	4
(PRACTICAL/DRAWING/DESIGN)										
CS-04L	Computer Programming Lab	-	-	2	20	-	20	30	50	2
EC-02L	Electronic Instrumentation Lab	-	-	2	20	-	20	30	50	2
EC-04L	Electronic Devices & Circuits Lab	-	-	2	20	-	20	30	50	2
EC-59L	Self Study/ Professional Activity	-	-	2	50	-	50	-	50	2
	Total	**12**	**4**	**8**	**150**	**80**	**230**	**370**	**600**	**24**

T.A. Teachers Assessment, CT- Class Test, ESE - End Semester Examination, Total Marks 600 Total Periods : 24, Total Credits : 24

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
B.E. Common	**ENGINEERING MATHEMATICS - I**	MA01	Min "D"	Min "D"	5.0

ENGINEERING MATHEMATICS-I

UNIT-I Expension of function Maclaurin's and Taylor's theorem. Partial differentiation, total differential coefficients, homogeneous function, Euler's theorem, approximation and error. Differentiation under integral sign. Maxima and Minima of two variables. Curve tracing (Cartesian and polar curve), Curvature, Radius of Curvature.

UNIT-II Definite integral as limit of a sum, Application summation of series. Double interals, Change of order of integrals. Triple integral, Length of curves, Area Voulme of surfaces using double and triple integrals Beta and Gamma functions.

UNIT-III Ordinary differential equation of first order. Linear and higher degree. Linear higher order differential equation with constant coefficients. Homogeneneous linear differential equation. Simultaneous differentia equations.

UNIT-IV Rank of Matrix Solution of simultaneous equation by elementary transformation & consistency of equation Eigen values and Eigen vactors, Cayfey Hamilton theorem and its application to find the inverse Diagnolisation of matrices.

UNIT-V Boolean algebra Algebra of logic. Principle of Duality Basic theorems, Boolean Expressions and functions. Graph theory.Graph subgraphs, degree and distance Tree,cycles and nNetwork Elementry concept of fuzzy logic.

Reference Books:-

1. Higher Engineering Mathematics by B.V. Ramana TMH.
2. Higher Engineering Mathematics- By B.S. Grewal.
3. Engineering Mathematics.By K.A.Laxminarayan. Vikas pub. House Pvt.Ltd.
4. Advance Engineering Mathematics-Erwin Kreyszig.John Willy & sons.
5. Advance Engineering Mathematics-Wylie and Barrett.TMH.
6. Differential Calculus by Gorakh Prasad pothi shala publication.
7. Integral Calculus by Chandrika Prasad pothi shala publication.

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
B.E. Common	**BASIC COMPUTER PROGRAMMING**	CS03	Min "D"	Min "D"	5.0

BASIC COMPUTER PROGRAMMING

UNIT - I

Computer Hardware - Block diagram of computer Hardware, Software and Firmware Interaction of Hardware and Software, Understanding the Boot Process, General function of CPU, ALU, Control unit and memory. The Motherboard. BIOS, Multimedia Devices and Mass Storage

UNIT- II

History of C , Characteristics of C, C Program Structure , Constants, Data types, Variables, Keywords ,Console Input/Output Statements, Compilation and Execution Operators. Arithmetic, Unary Assignment, Relational & Logical Conditional Branching & Looping Statements - if Statement ,switch Statement ,Looping Concepts , for ,while , do-while loop Jump Statements. Arrays-Array Concepts, Rules & Restrictions, Single & Multi-Dimensional arrays

UNIT - III

Functions- Types of Functions, Functions and Arrays, Function Prototyping Scope of Variables Built-in Functions, Strings- String Functions, String Manipulation Structures-Defining New Data types, Unions ,Type Casting, Enumerated Data types ,Static Variables ,Type Definition.

UNIT – IV

Pointers-Pointer Concepts, Pointers and Functions, Pointers and Arrays, Array of Pointers Static Initialization, Pointers and Structures, Illegal indirection Dynamic Memory Allocation and Data Structures-malloc(),sizeof() and free() calloc() and realloc()

UNIT - V

C++ Characteristics Object-Oriented Terminology. Differences between Object-Oriented programming and Procedure oriented programming Object, Class, Encapsulation, Inheritance, Polymorphism, Object-Oriented Paradigm Abstract Data Types. Member Functions Class structure, Class scope, this pointer. Friend function.

Reference Books:

1. C Programming Language by Karnighan & Ritchie, TMH Pub.
2. Complete Reference in C, by Herbert Schield TMH Pub.
3. Mastering Turbo C by Kelly & Bootle – BPB Pub.
4. Practical C Programming by Steve Oualline, O'Reilly. Shroff Pub. & Distributors Pvt. Ltd.
5. Let us 'C' by Yashwant Kanetkar, BPB Publication
6. C Language Programming by Byron Gottfried – TMH Pub.
7. Programming in ANSI C by Balaguruswamy, TMH Pub.
8. Pointers in C by Yashwant Kanetkar
9. The Complete PC Upgrade &Maintenance Guide by Mark Minasi - BPB Pub

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	ELECTRONIC INSTRUMENTATION	EC01	Min "D"	Min "D"	5.0

ELECTRONIC INSTRUMENTATION

Unit-I Qualities of measurement – Performance characteristics, Static characteristics, Error in measurement, Types of static error, Sources of error, Dynamic Characteristics, Statistical Analysis, Standard.

Measurements of Current, Voltage, Power and Impedance - DC and AC Ammeter, DC Voltmeter-Chopper type and solid-state, AC voltmeter using Rectifier, Average, RMS, Peak Responding voltmeters, Ohm-meter, Shunt type Ohm-meter, Power meter, Bolometer and Calorimeter.

Unit-II Cathode Ray Oscilloscope (CRO): Different parts of CRO, Block diagram, Electrostatic focusing, Electrostatic deflection, Post deflection acceleration, Screen for CRTs, Graticules, Vertical and Horizontal deflection system, Time base circuit, Oscilloscope Probes, Applications of CRO, Special purpose CROs-Multi input, Dual trace, Dual beam, Sampling, Storage (Analog and Digital) Oscilloscope.

Unit-III AC Bridges: Maxwell's bridge (Inductance and Inductance-Capacitance), Hay's bridge, Schering bridge (High voltage and Relative permittivity), Wein bridge, Wagner earth detector, Impedance measurement by Q-meter.

Non-Electrical Quantities (Transducer): Classification of Transducers, Strain gauge, Displacement Transducer- Linear Variable Differential Transformer (LVDT) and Rotary Variable Differential Transformer (RVDT), Temperature Transducer-Resistance Temperature Detector (RTD), Thermistor, Thermocouple, Piezo-electric transducer, Optical Transducer- Photo emissive, Photo conductive, Photo voltaic, Photo-diode, Photo Transistor, Nuclear Radiation Detector.

Unit-IV Wave Analyzer (Frequency selective and Heterodyne), Harmonic Distortion Analyzer, Spectrum Analyzer, Signal and Function Generators, Sweep Frequency Generator, Pulse and Square Wave Generator, Beat Frequency Oscillator.

Unit-V Digital Measurement and Instruments: Advantages of Digital Instrument over Analog Instrument, Digital-to-analog conversion (DAC) - Variable resistive type, R-2R ladder Type, Binary ladder, Weighted converter using Op-amp and transistor, Practical DAC. Analog-to-digital Conversion (ADC) -Ramp Technique, Dual Slope Integrating Type, Integrating Type (voltage to frequency), Successive Approximations, digital voltmeters and multi-meters, Resolution and sensitivity of digital meter, PLC structure, principal of operation, response time and application.

Textbooks:

1. Instrumentation and Measurements: A. K. Sawhney
2. Modern Electronic Instrumentation and Measurement Techniques: Helfric and Cooper
3 Electronic Instrumentation: H. S. Kalsi

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	ELECTRONIC DEVICES	EC03	Min "D"	Min "D"	5.0

ELECTRONIC DEVICES

UNIT-I JUNCTION DIODE

Fabrication techniques of P-N Junctions, unsymmetrical junctions, open circuit P-N Junction, energy band diagram of an open circuit P-N junction, voltage current relationship of P-N junction diode, Diode resistance, The current components in an P-N junction diode, diode characteristic and its temperature dependence, Junction capacitances, junction diode switching times

UNIT-II DIODE CIRCUITS

Diode as a circuit element, Piece-wise linear model, Load line concept, P-N junction diode as a Rectifier, Half wave rectifier ,Full-wave rectifier-Center-tapped and Bridge rectifier, Analysis of filters with Rectifiers-L,C,LC & Pi Filters, Voltage Multipliers, Clipper circuits - series and parallel clipper circuits , Clamper circuits - positive and negative clamper circuits , Comparators.

UNIT-III JUNCTION TRANSISTORS - BJT

Transistor fabrication techniques, Basic transistor operation, Transistor biasing, Current components in a transistor, Current amplification factors, Relationship between α and β, Base spreading resistance, Ebers -moll model, Transistor circuit configuration, Common Base Configuration ,Early effect and Base width Modulation ,Common Emitter Configuration, Common Collector Configurations, Comparison of Characteristics of transistors in different Configurations, Transistor as an amplifier ,Transistor load lines, Transistor Maximum Ratings.

UNIT - IV JUNCTION FIELD -EFFECT TRANSISTOR - FET

Junction Field - Effect transistor (JFET), Static Characteristics curves of FET, The pinch-off voltage(Vp),Volt-ampere characteristics of JFET, FET as a Voltage dependent resistor, Metal-Oxide Semiconductor FET (MOSFET), Enhancement MOSFET(n-Channel, p-Channel), Depletion type MOSFET (n-Channel, p-Channel),Gate Protection in MOSFET, Symbols & Small Signal Models of JFET & MOSFET, Comparison of JFETs & MOSFETs,

UNIT- V SPECIAL SEMICONDUCTOR DEVICES

Thermistors, Sensistors, & Barretters, Gunn- Effect, Breakdown Diode, IMPATT & TRAPATT Devices, PIN Diode, Backward Diode, Schottky Diode, Tunnel Diode, Light Absorption Photoconduction ,Photoconductive Devices- Photoconductive cells & Photodiodes, Photovoltaic effect and Solar cells, Light emitting diode(LED), Thyristors- SCR,TRAIC,DIAC,SCS, Unijunction Transistor, Principle of Operation, Characteristic & Applications.

Text Books:

1.Integrated Electronics: Milman J. and Halkias
2. Microeletronics Circuits: Sedra A.S . and Smith K.C.
3. Electronic Devices & cicuit Theory: Boylestad R. and Nashelsky L.
4. Pulse Digital and Switching Waveforms: Milliman J. and Taub H.
5.Electronic Circuits – Analysis and Design: Neamen
6.Electronic Circuits: Schilling D. L. and Belove C.

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
B.E.	**COMPUTER PROGRAMMING LAB**	CS04L			

COMPUTER PROGRAMMING LAB
(Suggested Exercise)

1. Write a program in C to CALCULATE Cos(X)=1-X^2/2!+X^4/4!-……..
2. Write a program in C to convert sentence lower case to upper case
3. Write a program in C for COUNTING THE NUMBER OF OCCURRENCE OF CHARACTER IN A STRING.
4. Write a program in C to SUM OF POSITIVE AND NEGATIVE ELEMENTS IN AN ARRAY
5. Write a program in C to reverse a string.
6. Write a program in C to calculate the string length
7. Write a program in C to count vowels
8. Write a program in C to calculate x power n
9. Write a program in C fir swapping 2 numbers (using2 variables)
10. Write a program in C to SWAP FIRST AND SECOND WORDS in a sentence.
11. Write a program in C to CHANGE THE CASE OF FIRST LETTER
12. Write a program in C for GENERATION OF ARMSTRONG NUMBERS.
13. Write a program in C for GENERATION OF FIBONACCI SERIES
14. Write a program in C to SUM OF DIGITS OF NUMBER
15. Write a program in C to FIND THE OF NCR A NUMBER.

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	ELECTRONIC INSTRUMENTATION LAB	EC02L	Min "D"	Min "D"	5.0

ELECTRONIC INSTRUMENTATION LAB

List of Experiments (Expandable):

1. Study of CRO and Function Generator.
2. Displacement measurement by LVDT.
3. Force measurement by strain gauge.
4. Measurement of Capacitor, Self-induction using Q-meter.
5. Temperature measurement by thermister, RTD and thermocouple.
6. Optical Transducer- Photo conductive, Photo voltaic, Photo-diode, Photo-Transistor
7. Design of digital to analog converter.
8. PLC operation and applications (for example: relay, timer, level, traffic light etc.)

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	ELECTRONIC DEVICES & CIRCUITS LAB	EC04L	Min "D"	Min "D"	5.0

ELECTRONIC DEVICES & CIRCUITS LAB

(Suggested Exercise)

1. Study of V-I Characteristics of P.N. Junction diode (Zener Diodes.)
2. To study & plot the drain current vs drain voltage : Characteristics of F.E.T.
3. To study & plot the Characteristics of MOSFET
4. To study & plot the finding characteristics of a Silicon Controlled rectifier.
5. To study and plot V-I characteristics of U.I.T.
6. Experiment on Various clipper & clamper circuit
7. To study & plot the input output characteristics of Transistor CB, CC,CE, mode

COURSE CONTENT & GRADE (w.e.f. July 2010)

Branch	Subject Title	Subject Code	Grade for End Sem		CGPA at the end of every even semester
			T	P	
	SELF STUDY/ PROFESSIONAL ACTIVITY	EC59L	Min "D"	Min "D"	5.0

Objective of Self Study : is to induce the student to explore and read technical aspects of his area of interest/ hobby or new topics suggested by faculty.

Evaluation will be done by assigned faculty based on report/seminar presentation and viva.