GONDWANA UNIVERSITY,GADCHIROLI

FACULTY OF SCIENCE & TECHNOLOGY

CONSOLIDATED STATEMENT OF VARIOUS PARAMETERS IN TEACHING & EXAMINATION SCHEME OF

B.E. (ELECTRONICS ENGINEERING) FINAL YEAR

SR. NO.	SEMESTER	NO. OF THEORY SUBJECTS	NO OF LABS/PRACT	TEACHING HOURS(TH) (L+T)	TEACHING HOURS (PRACT)	TOTAL CREDIT	MAX. THEORY MARKS	MAX.PRACT MARKS	MAX. MARKS TOTAL
1	I								
2	II								
3	III	5	3	21	9	24	500	150	650
4	IV	5	4	20	10	26	500	200	700
5	V	5	4	18	11	24	500	200	700
6	VI	5	3	20	9	25	500	150	650
7	VII	5	3	20	8	24	500	150	650
8	VIII	5	3	19	12	27	500	250	750
		30	**20**	**119**	**59**	**150**	**3000**	**1100**	**4100**

***Audit course. It is neither considered as passing head nor considered for earning some credit(s).**
However, this is mandatory to be taken up at the respective college level

Subject wise Board of Studies Affiliation

Board of Studies	**Subject Codes**
APPLIED SCIENCES & HUMANITIES	3BEEN 01,4BEEN 01,5BEEN05
ELECTRICAL ENGINEERING	3BEEN03,4BEEN 05,5BEEN 03,6BEEN 03
COMPUTER TECHNOLOGY/CSE	6BEEN04
ELECTRONICS ENGINEERING	Rest all ,except above enlisted
EN/ETC/ECE COMMOMN	7BEEN01/7BEET04,7BEEN05(iv)/7BEET05(ii),7BEEN06/7BEET07, 7BEEN08/7BEET09. 8BEEN01/8BEET01,8BEEN05/8BEET05,8BEEN07/8BEET06, 8BEEN08/8BEET07.

Gondwana University, Gadchiroli

Four Year Degree

Gondwana University, Gadchiroli

Four Year Degree Course in Engineering and Technology

Course and Examination Scheme with Choice Based Credit System

Seventh Semester B.E. (Electronics Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme									
		Hours Per Week			Number of Credits	THEORY						PRACTICAL			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks ESE	Max. Marks Sessional		Total	Min. Passing Marks	Max. Marks TW	Max. Marks POE	Total	Min. Passing Marks
								MSE	IE						
7BEEN01/ 7BEET04	UHF & Microwaves	3	1	0	3	3	80	10	10	100	40	--	--	--	--
7BEEN 02	Digital & Wireless Communication	3	1	0	3	3	80	10	10	100	40	--	--	--	--
7BEEN 03	Digital Signal Processing	3	1	0	3	3	80	10	10	100	40	--	--	--	--
7BEEN 04	VLSI Design	3	1	0	4	3	80	10	10	100	40	--	--	--	--
7BEEN 05	**Core Elective-I**	3	1	0	4	3	80	10	10	100	40	--	--	--	--
	i) Biomedical Engineering														
	ii) Nanotechnology														
	iii) Device Modeling														
7BEEN 05/ 7BEET05(ii)	iv) Wireless Sensor Network														
	v) Modern TV Engineering														
Laboratories															
7BEEN06/ 7BEET 07	UHF & Microwaves	0	0	3	2	--	--	--	--	--	--	25	25	50	25
7BEEN 07	Digital Signal Processing	0	0	3	2	--	--	--	--	--	--	25	25	50	25
7BEEN08 /7BEET09	Major Project Phase -I	0	0	3	2	--	--	--	--	--	--	50	--	50	25
Total		**15**	**5**	**8**											
Semester Total		**28**			**23**					**500**				**150**	**650**

Appendix A

Gondwana University, Gadchiroli

Four Year Degree Course in Engineering and Technology

Course and Examination Scheme with Choice Based Credit System

Eighth Semester B.E. (Electronics Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme									
		Hours Per Week			Number of Credits	THEORY						PRACTICAL			
		L	T	P		Duration of Paper (Hrs.)	Max. Marks ESE	Max. Marks Sessional		Total	Min. Passing Marks	Max. Marks TW	Max. Marks POE	Total	Min. Passing Marks
								MSE	IE						
8BEEN01 /8BEET01	Digital System Design	3	1	0	4	3	80	10	10	100	40	--	--	--	--
8BEEN02	Digital Image Processing	3	1	0	3	3	80	10	10	100	40	--	--	--	--
8BEEN 03	Embedded Systems	3	1	0	3	3	80	10	10	100	40	--	--	--	--
8BEEN 04	**CORE Elective – II** i) Neural Networks & Fuzzy logic ii) Micro Electro Mechanical Systems (MEMS) iii) Radio Frequency Circuit Design iv) Opto Electronics devices and Communication v) Antenna And Radar Systems	3	0	0	3	3	80	10	10	100	40	--	--	--	--
8BEEN05 /8BEET 05	**Open Elective** i)Computer Networks														
Laboratories															
8BEEN 06	Digital Image Processing	0	0	3	2	--	--	--	--	--	--	25	25	50	25
8BEEN07/ 8BEET06	Digital System Design	0	0	3	2	--	--	--	--	--	--	25	25	50	25
8BEEN08/ 8BEET07	Major Project Phase -II	0	0	6	6	--	--	--	--	--	--	75	75	150	75
Total		**15**	**4**	**12**	**23**										
Semester Total		**31**			**27**					**500**				**250**	**750**

SEVENTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 7BEEN701/7BEET704

Title of the Course: UHF and Microwave

Course Scheme					**Evaluation Scheme (Theory)**				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	1	3	4	5	3	10	10	80	100

Units	**Contents**	**Hours**
1	**Microwave tubes**: Causes of Failure of Conventional Tubes at Microwave Frequencies, Velocity Modulation and Electronic Efficiency In Single Cavity and Two Cavity Klystron.	10
2	**Microwave tubes:** Slow Wave Structure, Traveling Wave Tube and Backward Wave oscillator, Electron Motion In Parallel Plane Magnetron and Cylindrical Magnetron.	09
3	**Introduction to S –Matrix:** Scattering Matrices and their Properties, Scattering Matrices of E plane Tee, H Plane Tee, Magic Tee, Directional Coupler and Transmission Lines.	09
4	**Microwave Passive Device**: Phase Shifter, Attenuator, Tees, Directional Coupler, Circulator, Isolators, Gyrators, Transmission Line Resonant Circuits.	09
5	**Microwave Measurement And Solid State Devices:** Low, Medium and High Power Measurement, Measurement of VSWR, Measurement of Impedance, Attenuation Measurement, Q Factor Measurement. GaAs Oscillator, PIN Diode, Parametric Amplifier, Maser, Microstrip Lines.	08
	Total	45

Text Books:

1. Foundations of microwave engineering : R.E. Collins McGrawHill
2. Microwave Device and Circuits: Samuel Y. Lio Prentice Hall ofIndia

Reference books:

1. Radio Engg-TermanMcGrawhill
2. Microwave Principles-Reich WileyEastern
3. Microwave engineering: R. Chatterjee. Prentice Hall ofIndia
4. Microwave Engineering, Kulkarni, New AgeInternational

SEVENTH SEMESTER B.E. (ELECTRONICS ENGINEERING)

Course Code: 7BEEN02

Title of the Course: Digital & Wireless Communication

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	1	0	4	4	3	10	10	80	100

Units	Contents	Hours
1	**The cellular concept:** History of wireless communication, Evolution of mobile radio communication. Cellular telephone system, frequency reuse, channel assignment and handoff strategies, interference and system capacity, trunking and grade of service, improving capacity in cellular system.	9
2	**Modulation techniques:** ASK, FSK, BPSK, DPSK, QPSK, π/4 QPSK, QAM, MSK, and GMSK Transmission and detection techniques.	9
3	**Equalization, diversity and channel coding:** Fundamentals of equalization, frequency and time diversity techniques, space diversity, polarization diversity, frequency and time diversity, fundamentals of channel coding.	9
4	**Multiple access techniques for wireless communication:** Introduction to multiple access, FDMA, TDMA, Spread spectrum multiple access - frequency hopped multiple access (FHMA), code division multiple access (CDMA), space division multiple access.	9
5	**GSM- Global System for Mobile:** Services and features, GSM system architecture, GSM radio subsystem, GSM channel types, GSM frame structure, signal processing in GSM.	9
	Total	45

Text Books:

1. Wireless Communication – Principles and practice by T S. Rappaport. (Prentice Hall PTR, upper saddle river, NewJersey.)
2. Mobile Communications – Design fundamentals by William C. Y. Lee, (JohnWilley)

Reference Books:

1. Wireless digital communication by KamiloFeher(PHI)
2. Mobile Cellular Communication by W. C. Y. Lee (McGrawHill)
3. The Mobile Radio Propagation channel by J.D.Parson.

SEVENTH SEMESTER B.E. (ELECTRONICS ENGINEERING)

Course Code: 7BEEN03

Title of the Course: Digital Signal Processing

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	1	3	4	3+2	3	10	10	80	100

Units	Contents	Hours
1	**FFT and IFFT:** Introduction to FFT and IFFT, radix 2 decimation in time, radix 2 decimation in frequency FFT & IFFT.	9
2	**Structure of FIR and IIR Systems:** Structures for realization of discrete time systems, Basic structures for FIR systems: direct form, cascade form, frequency sampling structure. Basic structure for IIR systems: Direct forms I, II, cascade, parallel forms, transposed forms.	9
3	**FIR Filters :** Introduction to FIR filters, linear phase filters, symmetric and anti symmetric filters, Window method, Design of FIR filters using Rectangular, Hanning, Hamming, Bartlet, Blackman Window, Study of Kaiser Window, frequency sampling method. Comparison of design methods for linear phase FIR filters.	9
4	**IIR Filters :** Introduction to IIR filters, Butterworth approximation, Chebyshev approximation, Design of IIR filter: impulse invariance method, bilinear transformation, approximation derivative method, Frequency transformations: low pass to high pass, band pass, band reject. Comparison between FIR and IIR filters.	9
5	**Multirate Digital Signal Processing :** Introduction, Decimation by a factor D, Interpolation by a factor I, Sampling rate conversion by a rational factor I/D, Implementation of sampling rate conversion, Applications of multi rate signal processing, Introduction to digital filter banks.	9
	Total	**45**

Text Books:

1. Proakis J. G and D. G. Manolakis, “Digital Signal Processing, Principles, Algorithms and Applications”, Pearson Education,PHI.
2. Johnson J. R, “Introduction to Digital Signal Processing”,PHI
3. P. Ramesh Babu, “Digital Signal Processing”, SciTechPublications.
4. Digital Signal Processing by S Salivahanan, C Gnanapriya,TMH,2e

Reference Books:

1. S. K. Mitra, “Digital Signal Processing: A Computer based Approach”, TMH,2001.
2. Oppenheim A. V and R. W. Schafer, “Discrete Time Signal Processing”, Person Education,India
3. Rabnier, Gold, “Theory and Applications of Digital Signal Processing”,TMH.

SEVENTH SEMESTER B.E ELECTRONICS ENGINEERING

Course Code: 7BEEN04

Title of the Course: VLSI Design

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ Week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	1	3	4	3+2	3	10	10	80	100

Unit	Contents	Hours
1	**Introduction To CMOS Technology:** History of CMOS Technology, MOS transistors, MOS transistor switches, CMOS logic, Inverter, Combinational logic, NAND gate, NOR gate, Compound gates, Multiplexers, Memory-Latches and registers.	9
2	**MOS Transistor Theory:** NMOS enhancement Transistor, PMOS enhancement Transistor, Threshold Voltage and Body Effect, MOS Device Equations, Second order Effects, MOS Models, Small Signal AC Characteristics, CMOS Inverter DC Characteristics, Bn&Bp ratios, Noise margin, Static Load MOS Inverters, Transmission Gate, BICMOS Inverters.	9
3	**CMOS Processing Technology:** Silicon Semiconductor Technology, Wafer Processing, Oxidation, Epitaxy, Deposition, Ion Implantation, and Diffusion, Silicon Gate Process, Basic CMOS technology ,n-well process, p-well Process, Twin tub Process, SOI technology, Layout Design Rules, Latch up.	9
4	**Circuit Characterization And Performance Estimation:** Resistance Estimation, Capacitance estimation, Inductance, Switching Characteristics, Analytical delay models, Fall time, Rise time, Delay time, CMOS Gate Transistor sizing, Power dissipation, Charge sharing, Yield.	9
5	**CMOS Circuit And Logic Design:** CMOS Logic Gate Design, Basic Physical Design of Simple logic gates, inverter, NAND, NOR gates, Euler Graphs, CMOS Logic Structures, Clocking Strategies.	9
	Total	45

Text Books:

1. Principles of CMOSVLSI DESIGN-Neil Weste, Kamran Eshraghian- Pearson Education.

Reference Books:

1. Introduction to VLSI Systems -Carver Mead, Lynn Conway -BS Publications.
2. Modern VLSI Design- Wayne Wolf- PearsonEducation.
3. Basic VLSI Design- Douglas Pucknell, Kamran Eshraghian - Prentice HallPublications.
4. Introduction to VLSI circuits and Systems- John Uyemura- John Wiley andsons.
5. CMOS Digital Integrated Circuits - SungMo Kang, Yusuf Leblebici - Tata McGraw Hill Publications.

SEVENTH SEMESTER B.E ELECTRONICS ENGINEERING

Course Code: 7BEEN05 Elective-I (i)

Title of the Course: Elective-I**:** Biomedical Engineering

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	1	0	4	4	3	10	10	80	100

Units	Contents	Hours
1	**Physiological Systems and signals:** Physiological Systems of the Body - Cardiovascular System, The Respiratory System, The Nervous System, Basic Medical Instrumentation System, Origin of Biomedical Signals, Basics and Waveforms of Bioelectric Signals like ECG, EEG and EMG.	9
2	**Physiological Transducer:** Displacement, Position and Motion Transducers, Pressure Transducers, Transducers for body temperature measurement, photoelectric.	9
3	**Biomedical Recorders:** Basic working and block diagram of biomedical recorders - Electrocardiograph, Phonocardiograph, Electroencephalograph and Electromyography.	9
4	**Patient Monitoring Systems:** System Concept, Cardiac Monitor, Bedside Patient Monitoring Systems, Central Monitors, Measurement of heart rate, Measurement of pulse rate, Blood pressure measurement, Measurement of respiration rate. **Patient Safety:** Electric Shock Hazards, Leakage Currents, Safety code for Electrical Equipment, Electrical Safety Analyzers, Testing of Biomedical Equipments.	9
5	**Imaging Techniques:** **X Ray**: Production of X Ray, X-Ray Machines. **CT-Scanning**: Basic principle of X-Ray Computed Tomography, System Components of CT Scan, **MRI**: Nuclear Magnetic Resonance (NMR) basic components. **Ultra Sound**: Ultrasonic basic pulse-echo apparatus.	9
	Total	45

Text Books:

1. Khandpur R. S., “Handbook of Biomedical Instrumentation”, Tata McGraw Hill, second edition, 2003.
2. Carr and Brown, “Introduction to biomedical equipment technology”, 4th edition, Pearsonpress, 2003.
3. W. R. Hendee& E. R. Ritenour, “Medical Imaging Physics”, 3rd edition, Mosbey Year-Book, inc. 1992.

Reference Books:

1. John G. Webster, Bioinstrumentation John Wiley and sons, 2004 2. Joseph Bronzino (Editor-in-Chief), Handbook of Biomedical Engineering, CRC Press,1995.
2. NeelinaMalsch, Biomedical nanotechnology by CRC press release, MalschechnoValuation, Utrecht, TheNetherlands.
3. Khandpur R S, Handbook of Analytical Instrumentation, Tata McGrawHill
4. Harold E. Smalley, “Hospital Management Engineering – A guide to the improvement of hospital management system”, PHI. C. A. Caceras ,”Clinical Engineering” Inc.,1992
5. Sujata V. Bhat, “Biomaterials”, Narosa Publishing House,2002.

SEVENTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 7BEEN05 Elective –I (ii)

Title of the Course: Elective –I: Nanotechnology

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	1	0	4	4	3	10	10	80	100

Units	Contents	Hours
1	**Introduction:** Introduction to Nanotechnology: Fundamental science behind nanotechnology, tools for measuring nanostructures, tools to make nanostructures and imagine nano-behaviours.	9
2	**Nano-CMOS Devices:** Silicon Nanocrystalnon volatile memories, Novel dielectric materials for future transistors, Nano-CMOS devices and applications. Scanning probe instrument, nanoscale lithography.	9
3	**Nano particles and Nanotubes:** Properties of Nano particles: Metal nanostructures and semiconducting nanoparticles, Carbon nanostructures: carbon molecules, clusters, nanotubes, properties of nanotubes-strength and elasticity, applications of carbon nanotubes.	9
4	**Nanomachines and Nanodevices:** Nanomachines and Nanodevices, NEMS and MEMS and their fabrication, molecular and super molecular switches. Lithography.	9
5	**Nanoelectronics:** Introduction, the tools of manufacturing of micro and nano fabrication optical lithography, electron beam lithography, atomic lithography. Nano-Electronics for advanced computation and communication. **Use of Nanotechnology in Electronics:** Application of nano structures in electronics, sensors, optics, energy capture, transformation and storage. Application of nanotechnology in biomedical electronics.	9
	Total	45

Text Books:

1. AnatoliKorkin, Jan Labanowski, EvgeniGusev, Serge Luryi, “Nanotechnology for Electronic Materialsand Devices”;Springer.
2. Mark Ratner, Daniel Ratner, “Nanotechnology: A Gentle introduction to a next big Idea”; Pearson Education.
3. Gregory Timp, “Nanotechnology”; Springer-VerlagNY.
4. Introduction to Nanotechnology –by Charles P. Poole Jr., Frank J. Owens – John Wiley &Sons.

SEVENTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 7BEEN05 Elective –I (iii)

Title of the Course: Elective –I: Device Modeling

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	1	0	4	4	3	10	10	80	100

Units	Contents	Hours
1	**Introduction to SPICE Simulation**: Circuit Descriptions, DC circuit analysis, modeling of dc sources, AC circuit analysis, modeling of ac sources, transient analysis, modeling of transient sources.	9
2	**p-n junction- concepts and models**: The p-n junction, contact potential, Depletion width, carrier injection, Diode I-V characteristic, junction capacitance, SPICE model for diode.	9
3	**Bipolar transistors and models:** Amplification with BJT, Minority carrier distributions and terminal currents, Switching cycle, Ebers-Moll equations, The coupled diode model, Basic SPICE Models, Small-signal model.	9
4	**MOS transistors:** Threshold voltage, Current-voltage characteristics, Subthreshold conduction, Hot electron effects, Drain induced barrier lowering Short channel effect and narrow width effect.	9
5	**MOS modeling:** MOS model in SPICE, Level 1 device model, BSIM3 model, mobility model, MOS inverter circuits, voltage transfer characteristics, Noise margin.	9
	Total	45

Reference Books:

1. “Solid State Electronic Devices”, “B. G. Streetman and S. Banerjee”, Prentice HallIndia
2. “Analysis and Design of Digital Integrated circuits”, “D. A. Hodges, and H. G.Jackson”, McGraw-Hill International.
3. “SPICE for circuits and electronics using PSPICE’’, “ Muhammad H. Rashid”, Prentice Hall India
4. “Introduction to VLSI circuit and systems”, “J. P. Uyemura”, John Wiley andSons

SEVENTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 7BEEN 05/ Elective-I (iv) /7BEET 05/Elective-I (ii).

Title of the Course: Elective –I: Wireless Sensor Network

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	1	0	4	4	3	10	10	80	100

Units	Contents	Hours
1	Introduction and Overview of Wireless Sensor Networks, Commercial and Scientific Applications of Wireless Sensor Networks, Basic Wireless Sensor Technology, Sensor Taxonomy, wireless network environment, wireless network trends.	09
2	Sensors Network Protocols, Data dissemination and gathering, Routing Challenges and design issues in wireless sensor network, Routing strategies in WSN.	09
3	Radio technology primer, Available wireless technologies, Wireless Sensors Networks Protocols, Physical Layer, Fundamentals of Medium Access Control Protocols for Wireless Sensor Networks, MAC protocols for WSN, Case Study, IEEE 802.15 4LR WPAN, Standard case study.	09
4	Protocols, Transport Control Protocols for Wireless Sensors Networks, Traditional transport control protocol, transport protocol design issues, examples of existing transport control protocol, performance of TCP.	09
5	Middleware for Sensor Networks, WSN middleware principles, Middleware architecture, existing middleware.	09
	Total	**45**

Text Books:

1. Morgan Kaufmann F. Zhao and L. Guibas, ‘Wireless Sensor Networks’, a Francisco,2004.
2. C. S. Raghavendra, Krishna M. Sivalingam, Taieb F. Znati, ‘Wireless sensor networks’, Edition: 2,
   Published by Springer, 2004 ISBN 1402078838, 9781402078835

Reference Books:

1. “WirelessSensorNetworks:Technology,Protocols,andApplications”,KazemSohraby,Daniel Minoli, TaiebZnati, WIeyInterscience Publication,2007
2. “Computer Networks” ,Andrew Tanenbaum, 4th ed., PearsonEducation,2007

SEVENTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code:7BEEN 05 Elective-I (v)

Title of the Course: Elective –I: Modern TV Engineering

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	1	0	4	4	3	10	10	80	100

Unit	Contents	Hours
1	**Fundamentals of television**	
	Television basics: Factors of TV systems, Composite video signal, Signal transmission and channel bandwidth, Colour TV systems, Colour fundamentals, Mixing of colours, Colour Perception, Chromaticity diagram.	9
2	**TV standards**	
	NTSC, PAL, SECAM systems, colour TV transmitter, high level, low level transmitters, colour TV receivers, remote control, antennas for transmission, TV alignment and TV pattern generation.	9
3	**Digital TV**	
	Introduction to Digital TV, Principle of Digital TV, Digital TV signals and parameters, Digital TV Transmitters, MAC signals, advanced MAC signal transmission, Digital TV receivers, Basic principles of Digital Video compression techniques, MPEG1, MPEG2, MPEG4, Video compressionITU-Standards(H.). Digital TV recording techniques.	9
4	**Satellite and cable television**	
	Geostationary satellites, Satellite communication systems, Cable signal sources, Cable signal processing and distribution, Cable signal converters.	9
5	**Advanced TV technologies**	
	HDTV standards and systems, HDTV transmitter and receiver/encoder, Digital TV satellite Systems, video on demand, CCTV, CATV, direct to home TV, set top box with recording facility, conditional access system (CAS),LCD TV System, Plasma TV Systems &LEDtechnologies.	9
	Total	**45**

Text Books:

1. Television and video Engineering, A. M. Dhake, TMHPublication.
2. Video Simplified, Kelth jack, PenramInternationalPublication.
3. Audio Video Systems, R.G. Gupta, TechnicalEducation.

Reference Books:

1. S. P. Bali, “Color TV Theory andPractice”.
2. Bernard Grobb, Charles E, “Basic TV and VideoSystems”
3. R.R. Gulathi, “Modern television practice ”.New ageinternational

SEVENTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 7BEEN06/7BEET07

Title of the Course: UHF & Microwave (Practical)

Course Scheme					Evaluation Scheme(Laboratory)		
Lecture	Tutorial	Practical	Periods/ week	Credits	TW	POE	Total
0	**0**	**3**	**3**	**3**	**25**	**25**	**50**

List of suggested practicals
1. To study propagation ofmicrowaves. 2. Study of primaryantennas. 3. Measurement of microwaves power 4. Measurement of frequency andwavelength 5. Measurement ofVSWR. 6. Measurement of Impedance. 7. To study characteristics of E-plane and H-planetee. 8. To study the characteristics of magictee. 9. Study of DirectionalCouplers. 10. Study of ferritedevices 11. Find the Reflection loss within a waveguide. 12. To study the characteristics of ReflexKlystron.

Note: Minimum 8 experiments from above list or experiment based on syllabus.

SEVENTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 7BEEN07

Title of the Course: Digital Signal Processing (Practical)

Course Scheme					**Evaluation Scheme(Laboratory)**		
Lecture	Tutorial	Practical	Periods/ week	Credits	TW	POE	Total
0	**0**	**3**	**3**	**3**	**25**	**25**	**50**

Note: Minimum 8 experiments based on the prescribed syllabus.

SEVENTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 7BEEN08/7BEET09

Title of the Course: Major Project Phase –I (Practical)

Course Scheme					**Evaluation Scheme(Laboratory)**		
Lecture	Tutorial	Practical	Periods/ week	Credits	TW	POE	Total
0	**0**	**4**	**3**	**4**	**100**	**00**	**100**

- The Major Project Phase–I - It includes seminar work, literature survey and minimal implementation of the project including software and Hardware, which is to be carried out in the institution/industry/researchlaboratory.
- The duration of project work should be a minimum of two semesters: Major Project Phase –I &II.
- Each student has to present a seminar, on any technical topic related to any subject not covered in the syllabus or preferably based on theproject.
- The presentation time is of minimum 10 minutes followed by a 5 minutes session for discussion/question andanswers.
- The seminar topic selected by the student must be approved by the project committee of the department at the beginning of the semester; the duplicity of the topics must beavoided.
- Each student/project group has to demonstrate the minimal implementation of the project work and should submit individual seminar report on the day of seminar to the department along with the project progressreport.
- The seminar presentation & submission of the report will carry 50% weightage and demonstration and submission of project progress report will carry 50% weightage for final evaluation. The evaluation is to be carried out by department project committee including guide.

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN01/8BEET01
Title of the Course: Digital System Design

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	**1**	**3**	**4**	**4**	**3**	**10**	**10**	**80**	**100**

Unit	Contents	Hours
1	**Introduction to VHDL** Design Concepts, Digital Hardware, Design Process, Introduction to CAD tools, Design Entry, Synthesis, Functional Simulation, introduction to VHDL, Representation of Digital Signals in VHDL, Introduction to VHDL code.	9
2	**VHDL for Combinational circuits** Assignment Statements, Selected Signal Assignment, Conditional Signal Assignment, Generate Statements, Concurrent and Sequential Assignment Statements, Process Statements, Case Statements, Design of Full adder, four bit adder Multiplexers, decoders, encoders, Code converters, Flip-flops, Registers, Counters.	9
3	**Synchronous Sequential circuits** Basic Design Steps, State diagram, flops, Design of Moore and Mealy	9
4	**Asynchronous Sequential circuits** Primitive flow table, Transition table, State reduction, Concept of Races, Critical races, Hazards, Design of Asynchronous circuits	9
5	**Programmable Logic Devices** Programmable logic array, Programmable array logic, Architecture of Complex Programmable logic devices (CPLD), Field programmable gate array (FPGA).	9
	Total	**45**

Text Books

1. Fundamentals of Digital logic with VHDL design-Stephen Brown, ZvoncoVranesic TMH

Reference Books

1. Circuit Design with VHDL-Volnei A. Pedroni-Prentice Hall Publications.
2. Principles of Digital Systems Design using VHDL- Charles Roth Lizzy John-Cengage Learning
3. Digital System Design with VHDL-Mark Zwolinski_Pearson Education.
4. Introductory VHDL from Simulation to Synthesis -SudhakarYalamanchilli -Pearson Education
5. An Engineering Approach to Digital Design-William Fletcher-Prentice Hall Publications.
6. VHDL Programming by Example Douglas Perry TMH
7. VHDL Primer - J. Bhasker -B. S. Publications.

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN02
Title of the Course: Digital Image Processing

Course Scheme					**Evaluation Scheme (Theory)**				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	**1**	**3**	**4**	**4**	**3**	**10**	**10**	**80**	**100**

Units	**Contents**	**Hours**
1	**Fundamentals of Digital Image:** Light and electromagnetic spectrum, Image sensing and acquisition, simple image formation model, image sampling and quantization, representing digital images, spatial resolution, Intensity resolution, basic relationships between pixels.	09
2	**Image Transformation And Spatial Filtering**: Image negatives, Log transformations, Gamma transformation, histogram equalization, the mechanism of spatial filtering, generating special filter marks, smoothing spatial filters, sharpening spatial filters. 3	09
3	**Filtering In Frequency Domain:** Basics of the fourier series and transforms, DFT of one variable, The 2-D DFT and its inverse, properties of the 2-D DFT, Basics of filtering in the frequency domain, image smoothing and image sharpening using frequency domain filters, wavelet transform as filtering tool.	09
4	**Image Compression:** Coding redundancy, Spatial and temporal redundancy, Irrevelant information, Measuring image information, general image compression system, Huffman coding, Golomb coding, Arithmetic coding, Digital watermarking and its applications.	09
5	**Image Restoration:** Spatial and frequency properties of noise , noise probability, density functions, Gaussian noise ,Rayleigh noise, Erlang noise, exponential noise, uniform noise, impulse ,noise, restoration in the presence of noise using spatial filters, periodic noise reduction by frequency domain filtering, Image segmentation, point detection, line detection, edge detection, operators thresholding.	09
	Total	**45**

Text Books

1. Digital Image Processing, Rafel C. Gonzalez and Richard E. Woods, 3rd edition Pearson Edition,
2. Fundamentals of digital image processing, A.K. Jain (PHI) Eastern economy edition.

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN03
Title of the Course: Embedded System

Course Scheme					**Evaluation Scheme (Theory)**				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	**1**	**3**	**4**	**4**	**3**	**10**	**10**	**80**	**100**

Units	**Contents**	**Hours**
1	**Embedded system Introduction:** Introduction to Embedded System, History, Design challenges, optimizing design metrics, time to market, applications of embedded systems and recent trends in embedded systems, embedded design concepts and definitions, memory management, hardware and software design and testing.	08
2	**System Architecture:** Introduction to AVR Microcontroller: History and Features, Detailed AVR architecture and Assembly language Programming.	09
3	**Study of on Chip Peripherals:** Study of on-chip peripherals like I / O ports, timers, interrupts, on-chip ADC, DAC, Watch-Dog Timer, Power down Modes.	09
4	**Interfacing and Programming:** (Simple Programs) Programming on-chip peripherals: Timer, Interrupts, Serial Port, PWM, SPI.	09
5	**Real Time Operating System :** Introduction to Real – Time Operating Systems: OS services, Process Management, Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management, Interrupt Routines in an RTOS Environment.	10
	Total	45

Text Books

1. Rajkamal - Embedded Systems, TMH.
2. The AVR Microcontroller and Embedded Systems, Muhammad Ali Mazidi, Pearson Publication.

Reference Books

1. DR.K.V.K.K. Prasad - Embedded / real time system, Dreamtech.
2. Steve Heath - Embedded System Design, Neuwans.
3. David Simon - Embedded systems software primer, Pearson

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Core Elective: II

Course Code: 8BEEN04Elective –II (i)

Title of the Course: Elective –II**:** Neural Networks And Fuzzy System

Course Scheme					**Evaluation Scheme (Theory)**				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	**1**	**3**	**4**	**4**	**3**	**10**	**10**	**80**	**100**

UNITS	CONTENTS	HOURS
1	**Fundamental Concepts and Models of Artificial Neural Systems:** Biological Neurons and Their Artificial Models, Models of Artificial Neural Networks, Learning and Adaptation, Neural Network Learning Rules, Overview of Neural Networks.	**9**
2	**Single-Layer Perceptron Classifiers:** Discriminant Functions, Linear Machine and Minimum Distance Classification, Training and Classification using the Discrete Perceptron: Algorithm and Example, Single Layer Continuous Perceptron Networks for Linearly Separable Classifications	**9**
3	**From Classical (CRISP) Sets to Fuzzy sets:** Introduction, Crisp Sets: An overview, Fuzzy sets: Basic Types, Fuzzy sets: Basic Concepts, characteristics and significant of the Paradigm shift. Fuzzy sets versus Crisp sets: Additional properties of α-cuts, Representation of Fuzzy sets, Extension Principles for Fuzzy sets.	**9**
4	**Operations of Fuzzy sets:** Types of Operations, Fuzzy complements, Fuzzy Intersections: t-norms, Fuzzy Unions: t-Conorms, Combinations of operations, Aggregation Operations.	**9**
5	**Fuzzy Arithmetic:** Fuzzy Numbers, Linguistic Variables, Arithmetic, Operations on Intervals and Arithmetic Operations on Fuzzy Numbers, Lattice Fuzzy Numbers and Fuzzy Equations.	**9**
	Total	**45**

Text Books

Text Books:

1. Introduction to Artificial Neural System s by J.M. Zurada, Jaico Publishing House, India
2. Fuzzy Sets and Fuzzy Logic, Theory and application by George J. Klir and Bo Yuan , PHI

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN04Elective –II (ii)
Title of the Course: Elective –II: Micro Electro Mechanical Systems

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	**1**	**3**	**4**	**4**	**3**	**10**	**10**	**80**	**100**

UNITS	CONTENTS	HOURS
1	**Sensors And Actuators-I:** Electrostatic sensors – Parallel plate capacitors – Applications – Interdigitated Finger capacitor – Comb drive devices – Thermal Sensing and Actuation – Thermal expansion – Thermal couples – Thermal resistors – Applications – Magnetic Actuators – Micro magnetic components.	09
2	**Micromachining:** Silicon Anisotropic Etching – Anisotrophic Wet Etching – Dry Etching of Silicon – Plasma Etching –Deep Reaction Ion Etching (DRIE) – Isotropic Wet Etching – Gas Phase Etchants – Case studies –Basic surface micromachining processes – Structural and Sacrificial Materials – Acceleration of sacrificial Etch – Striction and Antistriction methods – Assembly of 3D MEMS – Foundry process.	09
3	**Polymer And Optical MEMS:** Polymers in MEMS– Polimide - SU-8 - Liquid Crystal Polymer (LCP) – PDMS – PMMA – Parylene –Fluorocarbon - Application to Acceleration, Pressure, Flow and Tactile sensors- Optical MEMS –Lenses and Mirrors – Actuators for Active Optical MEMS.	09
4	**Micromachining:** Silicon Anisotropic Etching – Anisotrophic Wet Etching – Dry Etching of Silicon – Plasma Etching –Deep Reaction Ion Etching (DRIE) – Isotropic Wet Etching – Gas Phase Etchants – Case studies –Basic surface micromachining processes – Structural and Sacrificial Materials – Acceleration of sacrificial Etch – Striction and Antistriction methods – Assembly of 3D MEMS – Foundry process.	09
5	**Polymer And Optical MEMS:** Polymers in MEMS– Polimide - SU-8 - Liquid Crystal Polymer (LCP) – PDMS – PMMA – Parylene –Fluorocarbon - Application to Acceleration, Pressure, Flow and Tactile sensors- Optical MEMS –Lenses and Mirrors – Actuators for Active Optical MEMS.	09
	Total	**45**

Text Books

1. Chang Liu, 'Foundations of MEMS', Pearson Education Inc., 2006.

Reference Books

1. NadimMaluf, "An introduction to Micro electro mechanical system design", Artech House, 2000.
2. Mohamed Gad-el-Hak, editor, "The MEMS Handbook", CRC pressBaco Raton, 2000.
3. Tai Ran Hsu, "MEMS & Micro systems Design and Manufacture" Tata McGraw Hill, New Delhi, 2002.
4. Julian w. Gardner, Vijay k. varadan, Osama O. Awadelkarim, micro sensors MEMS and smart devices, John Wiley & son LTD,2002

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN 04 Elective –II (iii)
Title of the Course: Elective –II: Radio Frequency Circuit Design

Course Scheme					**Evaluation Scheme (Theory)**				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	**1**	**3**	**4**	**4**	**3**	**10**	**10**	**80**	**100**

UNITS	**CONTENTS**	**HOURS**
1	**Characteristics of passive components for RF circuits:** Skin effect, Resistors, Capacitors, inductors, Passive RLC networks, Resonant RLC networks, RLC network as impedance transformers, equivalent circuit representation of Transmission lines, S-parameter model, Smith Chart and its applications.	9
2	**Active RF components:** Schottky diode, PIN diode, Tunnel diode, Varactor diode, IMPATT diode, Gunn diode, MESFET, HEMT, PHEMT.	9
3	**Low Noise Amplifier design:** Noise types and their characterization, LNA topologies, power constrained Noise optimization, Linearity and large-signal performance	9
4	**RF Power amplifiers:** General properties, Class A, AB and C Power amplifiers, Class D, E and F amplifiers, Modulation of power amplifiers	9
5	**Oscillators and Mixers:** High frequency oscillator configuration, Fixed frequency oscillators, Dielectric resonator oscillators, YIG- Tuned oscillators, Gunn Element oscillators, Mixer basic concepts, single ended mixer design, single balanced mixer, Integrated active mixers.	9
	Total	**45**

Text Books

1. The Design of CMOS Radio Frequency Integrated Circuits, Lee Thomas H, Cambridge University Press.
2. RF circuit design- Theory and applications, Reinhold Ludwig, Gene Bogdanov, Pearson
3. Design of Analog CMOS integrated circuits, RazaviBehzad, McGraw Hill
4. VLSI for wireless communication, Bosco Leung, Pearson Education

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN04 Elective-II (iv)
Title of the Course: Elective-II: Opto-Electronics Devices And Communication

Course Scheme					**Evaluation Scheme (Theory)**				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	**1**	**3**	**4**	**4**	**3**	**10**	**10**	**80**	**100**

UNITS	CONTENTS	HOURS
1	**Introduction to optical Fibers:** Introduction to Step Index and Graded Index Fibers. Multimode Fibers, Propagation in Fibers Ray Mode, Numerical Aperture and Multipath Dispersion, Electromagnetic Wave Equation in SI and GI Fibers.	**9**
2	**Signal Degradation**: Manufacture of Fibers, Fiber Joints, Splices and Connectors. Attenuation, Material Dispersion, Waveguide Dispersion, Pulse Broadening, Mode Coupling.	**9**
3	**Optical Sources and Coupling:** Direct and Indirect Band Gap Materials, LED Structures , Light Source Materials, Quantum Efficiency and LED Power, Laser Diodes, Modes and Threshold Conditions, Rate Equations, External Quantum Efficiency, Resonant Frequencies and Temperature effects, Introduction to Quantum Laser, Fiber Amplifiers, Power Launching and Coupling, Lencing Schemes.	**9**
4	**Optical Receivers:** Pin and APD Diodes, Photo-Detectors, Noise SNR Detector Response Time, Avalanche Multiplication Noise, Comparison of Photo Detectors , Fundamental Receiver operation, Preamplifiers, Receiver Configuration, Quantum Limit.	**9**
5	**Digital Transmission System,** Point to Point Links, WDM, Data Buses, Star and T-Coupler, NRZ, RZ and Block Codes. Measurement in Optical Fibers, Attenuation, Dispersion, Refractive Index Profile, Basic Concepts of SONET/SDH Network.	**9**
	Total	**45**

Text Books

1. Optical Fiber Communication –G. Keiser McGraw Hill Publication

Reference Books

1. Optical Communication Principles and Practice – J. senior, Prentice Hall of India.
2. Optical Communication System – J. Gower Prentice Hall of India.

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN 04Elective – II (v)
Title of the Course: Elective – II: Antenna and Radar Systems

Course Scheme					**Evaluation Scheme (Theory)**				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	**1**	**3**	**4**	**4**	**3**	**10**	**10**	**80**	**100**

UNITS	CONTENTS	HOURS
1	**Antenna Basics** 9 The Radio Communication Link, Field From Oscillating Dipole, Antenna Field Zone, Shape-impedance Consideration, Linear, Elliptical and Circular Polarization, Pointing Vector for Elliptical and Circularly Polarized Waves.	9
2	Loops, Dipoles and Slots, Opened-Out Coaxial-Line Antennas, Opened-Out 2-conductor (Twin-Line) Antennas, Opened-Out Waveguide Antennas(Aperture Type), Flat-Sheet Reflector Antennas, Parabolic Dish and Dielectric Lens Antennas.	9
3	**Antenna Measurements** 9 Basic Concepts, Reciprocity in Antenna Measurements, Near-Field and Far-Field, Coordinate System, Typical Source of Error in Antenna Measurements, Phase Error and Amplitude Taper Due to Finite Measurement Distance, Reflections, Other source of Error ,Measurements Ranges, Elevated Ranges, Ground-Reflection Ranges, Anechoic Chambers and Absorbing Materials	9
4	**Radar System** 9 **Basic Principles**-Fundamentals, RADAR Performance Factors, P**ulsed System-** Basic Pulsed RADAR System, Antennas and Scanning, Display Method, Pulsed RADAR System, Moving target Indication(MIT).	9
5	**Other Radar System** 9 CW Doppler RADAR, Frequency Modulated CW RADAR, Phased Array RADAR, Planner Array RADAR.	9
	Total	45

Text Books

1. K. D. Prasad, Antenna and Wave Propagation, SatyaPrakashan

Reference Books

1. John D. Kraus, Electromagnetic, Tata McGraw Hill, Book Co. New York.
2. RajeshwariChatterjee, Antenna Theory and Practice, New Age International (P) Limited.
3. Electronic Communication System – Kennedy & Davis, Tata McGraw Hill Fourth Edition.

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN 05 /8BEET 05 Open Elective
Title of the Course: Computer Networks

Course Scheme					**Evaluation Scheme (Theory)**				
Lecture	Tutorial	Practical	Periods/ week	Credits	Duration of paper (in hrs)	MSE	IE	ESE	Total
3	**1**	**3**	**4**	**4**	**3**	**10**	**10**	**80**	**100**

UNITS	CONTENTS	HOURS
1	**Introduction:** Protocol hierarchies, connection oriented & connectionless services, service primitives, relationship of services to protocols, OSI reference model, TCP/IP model, connection oriented networks: X .25, frame relay & ATM.	**9**
2	**Physical Layer & Data Link Layer:** Guided transmission media, wireless transmission media, data link design issues: framing, flow control, error detection and correction, HDLC.	**9**
3	**Medium Access Control Sublayer:** Multiple access protocols such as aloha, CSMA, CSMA/CD, collision free protocols, limited contention protocol, wavelength division multiple access protocol, Ethernet, IEEE 802.11, IEEE 802.16, IEEE 802.18	**9**
4	**Network Layer And Transport Layer:** Virtual circuit and datagram network, network layer design issues, routing algorithms : hierarchical routing, flooding, least cost routing, distance vector routing, congestion control &QoS, IP protocol & IP addressing, ARP, RARP, elements of transport protocol, TCP & UDP.	**9**
5	**Application Layer & Network Security:** Domain name system, electronic mail, world wide web, multimedia, cryptography, symmetric key algorithm, public key algorithm, digital signature, communication security, mail security, web security, social issues.	**9**
	Total	**45**

Text Books

1. Computer Networks – Andrew Tanenbaum, Pearson Education.
2. Data & Computer Communication - William Stalling, Pearson Education.

Reference Books

1. TCP / IP Protocol Suite – Forouzan, Tata McGraw Hill.
2. Computer networking with internet protocols & Technology – William Stalling, Pearson Education.
3. Element of Network Protocol Design – M. G. Gouda, Wiley Interscience Publication.
4. Telecommunication Networks Protocols Modeling & Analysis – M. Schwartz, Pearson Education

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN 06
Title of the Course: Digital Image Processing (Practical)

Course Scheme					**Evaluation Scheme (Prtactical**		
Lecture	Tutorial	Practical	Periods/ week	Credits	TW	POE	Total
0	**0**	**3**	**2**	**4**	**25**	**25**	**50**

Note: Minimum 10 Practical based on the prescribed syllabus.

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN07/8BEET 06.
Title of the Course: Digital System Design (Practical)

Course Scheme					**Evaluation Scheme (Practical)**		
Lecture	Tutorial	Practical	Periods/ week	Credits	TW	POE	Total
3	**1**	**3**	**2**	**4**	**25**	**25**	**50**

It includes at least 8 programs based on the theory syllabus of Digital System Design where students will write VHDL programs,

Compile them, perform functional simulation and download onto CPLD or FPGA.

List of suggested programs

1. Implementation of full adder.
2. Implementation of four bit adder.
3. Implementation of 4 to 1 Multiplexer.
4. Implementation of 16 to 1 multiplexer.
5. Implementation of 2 to 4 Decoder.
6. Implementation of 4 to 16 Decoder.
7. Implementation of Encoder.
8. Implementation of Priority encoder.
9. Implementation of Flip-flop.
10. Implementation of Counters.
11. Implementation of Registers.
12. Implementation of Moore circuits.
13. Implementation of Mealy circuits.

EIGHTH SEMESTER BE ELECTRONICS ENGINEERING

Course Code: 8BEEN08/8BEET 07
Title of the Course: Major Project Phase -II (Practical)

Course Scheme					**Evaluation Scheme (Practical)**		
Lecture	Tutorial	Practical	Periods/ week	Credits	TW	POE	Total
0	**0**	**6**	**3**	**6**	**75**	**75**	**150**

- The Major Project work Phase-II is to be conducted in continuation of the project work Phase-I which is to be carried out in the institution/industry/research laboratory.
- The duration of project work should be a minimum of two semesters (Project Phase –I & II).
- There will be a mid-semester evaluation of the project work done after about two months. An interim project report is to be submitted to the department during the mid-semester evaluation. The mid-semester evaluation will be done by the department project committee/project guide; this will carry weightage in final evaluation.
- Each student / project group has to submit to the department a project report in the prescribed format after completion of the project work. The final evaluation and viva-voce will be conducted by the project committee/Guide on the stipulated date at the end of the semester.
- Each student / project group has to make a demonstration on the work carried out, before the project committee for project evaluation. The end semester evaluation will be done by the project committee including the guide.