VEER NARMAD SOUTH GUJARAT UNIVERSITY

B.E.-III (Electronics Engg.)

Semester - V

SCHEME FOR TEACHING & EXAMINATION

B.E.III (Electronics) 5th Semester		Teaching Scheme			Examination Scheme						
					Theory Exam University Exam.		Practical/Quiz/Viva/T.W. etc.				
							University Exam.		Tutorial	Cont. Evaluation	Total Marks
Course	Course No.	L Hrs.	T Hrs.	P Hrs.	Duration Hrs.	Marks	Duration Hrs.	Marks			
Economics and Business Management	HU 501 EC	3	0	0	3	100	-	-	-	-	-
Control System Engineering	ELE 502 EC	3	0	2	3	100	3	30	-	20	50
Pulse and Switching Circuits	EC 503 EC	3	1	2	3	100	,	30	25	20	75
Microprocessor Programming and Interfacing	EC 504 EC	3	1	2	3	100	3	30	25	20	75
Digital Microelectronics and Circuits	EC 505 EC	3	1	2	3	100	3	30	25	20	75
Antenna and Wave Propagation	EC 506 EC	3	1	0	3	100	3	-	25	-	25
TOTAL :		18	4	8	-	600	-	120	100	80	300
Total Contact Hours : 30 Total Marks : 900											

VEER NARMAD SOUTH GUJARAT UNIVERSITY

B.E.-III (Electronics Engg.)

Semester - V

ENGINEERING MANAGEMENT : EC 501 EC

B.E.III (EC) 5th Semester

	Lecture	Tutorial	Practical
Teaching Hours	3	0	0
Examination Scheme Marks	100	0	Cont. Evaluation : 00 Examination : 00

Operations Research:

1. Introduction: Evolution of OR, team approach, quantitative approach, application.
2. Linear Programming: Basic concepts, formulation of models, limitations of LP, LP Methods, Graphical & Simple Method, Degeneracy, multiple optimal solution, unbounded problem, infeasible problem, Transportation problem and transportation models, Assignment problem & assignment method.
3. Decision Theory: Decision making under different situation (certainty, uncertainty, under risk), Decision tree model.
4. Queuing System: Queuing problem, assumptions, *M/M/1 Model.
5. Simulation: Analytical and simulation models, Monte Carlo simulation model and Computer simulation.

   (* denotes Poisson arrival, Poisson departure, single server, infinite capacity and FIFO service discipline).

Business Management:

1. Introduction: Engineering Management and Organization, Evolution process.
2. Business Organization: Types, individual, proprietorship, partnership, joint stock company, Co-operative and State owned organization.
3. Management: Definitions, concepts and principles, Management process, Functional (Production, Finance, Marketing, and Personnel) Management, Co,ordination and its importance.
4. Trade Unions and Industrial Relations: Collective bargaining, industrial dispute act and social security measures in India.

References:

1. O. P. Khanna: Industrial Engg. & Management, Dhanpatrai & Sons, New Delhi, 1990
2. S. D. Sarma: Operations Research, Kedarnath Ramnath & Co., Meerut, 1992
3. K. V. Rao: Management Science, McGraw Hill Co., New Delhi, 1990
4. R. D. Agrawal: Organization & Management, Tata McGraw Hill, New Delhi, 1993

VEER NARMAD SOUTH GUJARAT UNIVERSITY

B.E.-III (Electronics Engg.)

Semester - V

CONTROL SYSTEM ENGINEERING: ELE 502 EC

	Lecture	Tutorial	Practical
Teaching Hours	3	1	2
Examination Scheme Marks	100	25	Cont. Evaluation : 20 Examination : 30

1. Introduction to Control Systems: Open loop and closed loop control, Examples of control systems.
2. Mathematical Background: Laplace transformation, Laplace transform theorems, Inverse Laplace transformation, Solution of linear differential equations using Laplace transformation.
3. Mathematical Models of Physical Systems: Linear and non,linear systems, transfer functions for mechanical, electrical systems, Block,diagram representation of control,system, Block,diagram reduction, potentiometers and synchros as error sensing devices, transfer function of armature control and field control DC servomotors and 2,phase AC servomotors, Block diagram representation of DC and AC position control system, Signal flow graphs and Mason's gain formula.
4. Time Domain Analysis of Control Systems: Typical test signals, response of first order systems, transient response of second order system due to step input, time domain specification, impulse and ramp response of a second order system, Routh's stability criteria, steady state errors, static errors constants, error series and dynamic error coefficients.
5. Frequency Domain Analysis of Control Systems: Steady state response of a system due to sinusoidal input, Frequency response, Logarithmic plots or Bode Diagrams, Log,magnitude v/s phase plots, Resonance peak and resonance frequency of a second order system, Polar plots, Nyquist stability criteria, stability analysis, Relative stability, Gain margin and Phase margin, closed loop frequency response, M,circles and N,circles, Nichol's chart.
6. Control System Components: Detailed studies of construction, operation and transfer function of 2,phase AC servomotors, DC servomotors, Synchros and their applications in various systems, Magnetic Amplifiers, its operating principle, series and parallel connections.

Practical work shall be based upon the theory course.

References**:**

1. I.J. Nagarath and M. Gopal: Control system engineering, Wiley Eastern Limited, 1992
2. B.C. Kuo : Automatic Control Systems, Prentice,Hall of India, 1990
3. K. Ogata : Modern control engineering, Prentice,Hall of India, 1990
4. K.K. Agarwal: Control system Analysis and Design, Khanna Publishers, 1994

VEER NARMAD SOUTH GUJARAT UNIVERSITY

B.E.-III (Electronics Engg.)

Semester - V

Pulse & Switching Circuit: EC 503 EC

	Lecture	Tutorial	Practical
Teaching Hours	3	1	2
Examination Scheme Marks	100	25	Cont. Evaluation : 20 Examination : 30

1. Linear Wave Shaping: High pass RC circuit and its response to sinusoidal, step, pulse, square wave, exponential and ramp inputs, High pass RC circuit as a differentiator, Double differentiation, Low pass RC circuit and its response to sinusoidal, step, pulse, square wave, exponential and ramp inputs, Low pass RC circuit as an integrator Attenuators.
2. Clipping and Comparator Circuit: Diode clippers, Transistor clipper, Clipping at two independent level, Emitter-coupled clipper, Compensation for temperature changes in diode, Comparators, Applications of voltage comparators.
3. Clamping & Switching Circuits: Clamping operation, Clamping circuit, Clamping circuit theorem, Practical clamping circuits, Effect of diode characteristics, Clamping in base, Synchronous clamping circuit, Transistor as a switch, Two stage overdriven amplifier, Damper diodes, Switch with inductive and capacitive load, Collector catching diode, Nonsaturating switches, Emitter follower with capacitive load.
4. Bistable Multivibrators: Fixed biased transistor binary, Self biased transistor binary, Commutating capacitors, Methods of improving resolution, Methods of triggering, Schmitt trigger.
5. Monostable & Astable Multivibrators, Collector-coupled monostable multivibrator, Emitter-coupled monostable multivibrator, Gate width calculation & waveforms, Influence of VB on waveforms in Emitter-coupled monostable, Triggering of monoshot, Astable collector coupled & emitter-coupled multivibrator.
6. Synchronization and frequency division: General features of a Time, Base signal, Exponential sweep circuit, Pulse synchronization of relaxation devices, Frequency division in sweep circuit, Astable & Monostable multivibrators as frequency dividers.

Practical work shall be based upon the theory course.

References:

1. Millman & Taub: Pulse, Digital and Switching waveforms, McGraw Hill, IS Edition, 1994.
2. Mitchell B.B.: Semiconductor pulse circuits with experiments, Holt, Rhinehart & Winston,1990.
3. Bell David A : Solid State Pulse Crcuits, Reston Publishing Company, 4th Edition , PHI EEE 1993.
4. Strauss L : Waveform generation and shaping, McGraw Hill,2/e.1990.

VEER NARMAD SOUTH GUJARAT UNIVERSITY

B.E.-III (Electronics Engg.)

Semester - V

Microprocessor Programming & Interfacing : EC 504 EC

	Lecture	Tutorial	Practical
Teaching Hours	3	1	2
Examination Scheme Marks	100	25	Cont. Evaluation : 20 Examination : 30

1. Microprocessor Architecture: Introduction, operation, memory, input/output and Interfacing Devices

2 Instructions and Timings: Instruction classification, timings and operation status, overview of 8085 instruction set.

3 Programming Methods and Techniques: Assembly language programming using different programming techniques like looping, counting and indexing, subroutines parameter passing, time delay programs.

4 Interrupts:8085 Interrupts, restart as software instruction, Additional I/O concepts

5 Parallel Input /Output and Interfacing Applications: Basic interfacing concepts, 8255 Programmable Peripheral Interface, Interfacing displays, keyboards, 8279 Programmable Keyboard/Display Interface, Interfacing memory, Memory, mapped I/O.

6 General Purpose Programmable Peripheral Devices: 8253 Programmable Timer 8257 DMA controller, 8259 Interrupt controller.

Practical work shall be based upon the theory course.

References:

1. Gaonkar R S: Microprocessor Architecture, Programming and Applications with 8085 Wiley Eastern Limited, New Delhi, 1996
2. Leventhal Lance: Introduction to Microprocessor: Software,Hardware and Programming. pHI, 1992
3. Mathur A. P.: Introduction to Microprocessor. Tata McGrawHill 3/e, 1996
4. Short K. L.: Microprocessors and Programmed Logic, Phi (EEE), 1992

VEER NARMAD SOUTH GUJARAT UNIVERSITY

B.E.-III (Electronics Engg.)

Semester - V

Digital Microelectronics & Circuits : EC 505 EC

	Lecture	Tutorial	Practical
Teaching Hours	3	1	2
Examination Scheme Marks	100	25	Cont. Evaluation : 20 Examination : 30

1 RTL and IIL Circuits: RTL logic gates and DCTL gates, current hogging and Fan, out and Fan, in RTL and DCTL, RTL buffer, Manufacturer's specifications, concept and physical layout of IIL.

2 DTL and TTL Circuits: DTL and TTL gates, High threshold logic, input, output characteristics of DTL and TTL gates, wired AND connection, active pull, up, Schottky TTL and other logic with TTL gates.

3 Emitter, coupled logic and MOS gates :Transfer characteristics fan, out, speed of operation, logic versatility of ECL gates, ECL gates interconnection, MOS and CMOS inverters, Rise time and fall time in CMOS gates, Manufacturer's specification, interfacing BJT and CMOS Gates.

4 BiCMOS Logic Circuits: Introduction, BJT structure and operation, Dynamic behavior of BJT, Basic BiCMOS circuits, Static behavior, Switching delay in BiCMOS switching circuits, BiCMOS applications.

5 Circuit Design for LSI and VLSI:CMOS and Bipolar Transistor Gate Arrays and their limitations, Standard Cell, Programmable Logic Array, Circuit Design for VLSI

6 Semiconductor Memories: Types of memories, Implementation of ROM, MOS ROM cells, MOS EPROM and EEPROM, applications, Static and Dynamic Read, Write memories, Organization of RAM, Paralleling of Semiconductor Memory Integrated Circuit chips

Practical work shall be based upon the theory course.

References:

1. Taub and Schilling: Digital Integrated Electronic McGraw Hill, 1992
2. Horenstein: Microelectronic Circuits and Devices, Printice Hall of India,2nd edittion.1996.
3. Hodges & Jackson: Analysis and design of digital integrated circuits. 2nd edition.McGraw Hill, IS, 1992
4. Jaeger Microelectronic Circuit Design, McGraw Hill, IS,1997

VEER NARMAD SOUTH GUJARAT UNIVERSITY

B.E.-III (Electronics Engg.)

Semester - V

Antenna & Wave Propagation: EC 506 EC

	Lecture	Tutorial	Practical
Teaching Hours	3	1	0
Examination Scheme Marks	100	25	Cont. Evaluation : 00 Examination : 00

1. Radiation: Potential functions and the electromagnetic field, Alternating current element, Power radiated by current element, Applications to short antennas, Current distribution, Radiation from a monopole or dipole.
2. Antenna Fundamentals: Directional properties dipole antennas, Two element array, Linear arrays, Multiplication of patterns, Binomial array, Antenna gain, Effective area, Antenna terminal impedance, Transmission loss between antennas, Antenna temperature and S/N ratio, Space communications.

3. Antenna Arrays: Mathematics of linear arrays, Antenna synthesis, Tchebyscheff distribution, Super directive arrays.
4. Microwave Antennas: Loop antennas, Helical antennas, Reflutor antennas, Horn antennas, Lens antennas, TV transmitting and receiving antennas, Microstrip antennas, Broadband antennas.
5. Groundwave Propagation: Plane-earth reflection, Space wave, Surface wave, Spherical-earth propagation, Tropospheric waves.
6. Ionospheric Propagation: Ionosphere, Reflection and refraction waves by the Ionosphere, Regular and irregular variations of the ionosphere, Sky wave transmission calculations.

References :

1. Jordan E. C. & Balmain K.G. : Electromagnetic Waves and Radiating Systems, Prentice Hall (India), 1997

2. Kraus : Antennas, McGraw Hill,2/e, 1992

3. Kennedy George: Electronic Communication Systems. McGraw Hills, 3/e, 1993.

***