

GOVERNMENT COLLEGE OF ENGINEERING, AMRAVTI.

Department of Information Technology.

Proposed Scheme for B. Tech. (Information Technology)

SEM III

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	Theory				Practical		Total	
						TA	CT1	CT2	ESE	ICA	ESE		
SHU304	Engineering Mathematics- III	3	--	---	3	10	15	15	60	---	---	100	3
ETU311	Electronics Devices & Circuits	3	---	---	3	10	15	15	60	---	---	100	3
CSU301	Programming Methodology	3	1	---	4	10	15	15	60	---	---	100	4
ITU301	Communication Engineering	3	1	---	4	10	15	15	60	---	---	100	4
CSU303	Discrete Mathematics & Graph Theory	3	---	---	3	10	15	15	60	---	---	100	3
SHU305	General Proficiency II	1	---	2	3	---	---	---	---	25	25	50	2
ETU312	Electronics Devices & Circuits Lab	---	---	2	2	---	---	---	---	50	---	50	1
CSU304	Programming Methodology Lab	---	---	2	2	---	---	---	---	25	25	50	1
ITU302	Communication Engineering Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU306	Linux administration Lab-I	---	---	2	2	---	---	---	---	25	25	50	1
Total		16	2	10	28	---	75	75	300	150	100	750	23

SEM IV

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	Theory				Practical		Total	
						TA	CT1	CT2	ESE	ICA	ESE		
CSU401	Numerical Methods & Computer Programming	3	--	---	3	10	15	15	60	---	---	100	3
CSU402	Data Structure	3	1	---	4	10	15	15	60	---	---	100	4
CSU403	Object Oriented Technology	3	1	---	4	10	15	15	60	---	---	100	4
ITU401	Digital Integrated Circuits	3	---	---	3	10	15	15	60	---	---	100	3
ITU402	Data Communication	3	---	---	3	10	15	15	60	---	---	100	3
CSU404	Data Structure Lab	1	---	2	3					50	-	50	2
ITU403	Data Communication Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU405	Object Oriented Technology Lab	---	---	2	2	---	---	---	---	25	25	50	1
ITU404	Digital Integrated Circuits Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU406	Linux administration Lab-II	---	---	2	2	---	---	---	---	25	25	50	1
Total		16	2	10	28	50	75	75	300	150	100	750	23

TA :Teacher Assessment

CT: Class Tests

ESE: End Semester Examination

ICA : Internal Continuous Assessment

SEM V

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	Theory				Practical		Total	
						TA	CT1	CT2	ESE	ICA	ESE		
ITU501	System Analysis and Design	3		---	3	10	15	15	60	---	---	100	3
ITU502	Data Base Management System	3	---	---	3	10	15	15	60	---	---	100	3
ITU503	System Software	3	---	---	3	10	15	15	60	---	---	100	3
ITU504	Theory of Computation	3	---	---	3	10	15	15	60	---	---	100	3
ITU505	Principles of Management	3	---	---	3	10	15	15	60	---	---	100	3
ITU506	System Analysis and Design Lab	---	---	2	2	---	---	---	---	25	25	50	1
ITU507	Data Base Management System Lab	---	---	2	2	---	---	---	---	25	---	25	1
ITU508	System Software Lab	---	---	2	2	---	---	---	---	25	25	50	1
ITU509	Hardware Lab	---	---	2	2	---	---	---	---	25	25	50	1
ITU510	Linux administration-III Lab	1	---	2	3	---	---	---	---	25	25	50	2
ITU511	Self Study I	---	---	---	---	---	---	---	---	25	---	25	2
Total		16		10	26	50	75	75	300	150	100	750	23

Note1: Self study I is based on one class test each on the basis of 20% curriculum of the courses ITU501, ITU502, ITU503, ITU504 declared by respective course coordinator at the beginning of semester. One faculty member shall be appointed as course coordinator for self study I and his/her teaching work load shall be consider as one hour per week.

SEM VI

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	Theory				Practical		Total	
						TA	CT1	CT2	ESE	ICA	ESE		
ITU601	Design and Analysis of Algorithms	3	--	---	3	10	15	15	60	---	---	100	3
ITU602	Web Technology	3	---	---	3	10	15	15	60	---	---	100	3
ITU603	Operating System Design	3	---	---	3	10	15	15	60	---	---	100	3
ITU604	Computer Network	3	---	---	3	10	15	15	60	---	---	100	3
ITU605	E-Commerce	3	---	---	3	10	15	15	60	---	---	100	3
ITU606	Design and Analysis of Algorithms Lab	---	---	2	2	---	---	---	---	25	25	50	1
ITU607	Web Technology Lab	---	---	2	2	---	---	---	---	25	---	25	1
ITU608	Operating System Design Lab	---	---	2	2	---	---	---	---	25	25	50	1
ITU609	Computer Network Lab	---	---	2	2					25	25	50	1
ITU610	Minor Project	----	----	2	2	---	----	---	----	25	25	50	2
ITU611	Self Study II	---	---	----	---	---	---	---	---	25	---	25	2
ITU612	Industrial Lecture I*	1	---	----	1	---	---	---	---	---	---	---	---
Total		16	---	10	26	50	75	75	300	150	100	750	23

Note2: Self study II is based on one class test each on the basis of 20% curriculum of the courses ITU601, ITU602, ITU603, ITU604 declared by respective course coordinator at the beginning of semester. One faculty member shall be appointed as

course coordinator for self study II and his/her teaching work load shall be consider as one hour per week.

Note3:Assessment of Industrial Lecture I is scheduled in VIIth semester with the subject Industrial Lecture II

TA :Teacher Assessment CT: Class Tests ESE: End Semester Examination ICA : Internal Contineous Accessment

SEM VII

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	Theory				Practical		Total	
						TA	CT1	CT2	ESE	ICA	ESE		
ITU701	Multimedia Technology	3	---	---	3	10	15	15	60	---	---	100	3
ITU702	Microprocessor and Interfacing	3	---	---	3	10	15	15	60	---	---	100	3
ITU703	Elective –I	3	---	---	3	10	15	15	60	---	---	100	3
ITU704	Interdisciplinary elective	3	---	---	3	10	15	15	60	---	---	100	3
ITU705	Multimedia Technology Laboratory	---	---	2	2	---	---	---	---	25	25	50	1
ITU706	Microprocessor and Interfacing Laboratory	---	---	2	2	---	---	---	---	25	25	50	1
ITU707	Elective –I Laboratory	---	---	2	2	---	---	---	---	25	25	50	1
ITU708	Project Phase I	---	---	4	4	---	---	---	---	50	--	50	2
ITU709	Seminar	---	---	2	2	---	---	---	---	25	25	50	2
ITU710	Industrial Visit	---	---	---	---	---	---	---	---	50	---	50	1
ITU711	Industrial Lecture II*	1	---	---	1	---	---	---	---	25	---	25	1
ITU712	Self Study III	---	---	---	---	---	---	---	---	25	---	25	2
Total		13	---	12	25	40	60	60	240	250	100	750	23

***Note4:** Credit shall be awarded on the basis of combined assessment of Industrial Lecture I & Industrial Lecture II

Note5: Self study III is based on one class test each on the basis of 20% curriculum of the courses ITU701, ITU702,ITU703 declared by respective course coordinator at the beginning of semester. One faculty member shall be appointed as course coordinator for self study III and his/her teaching work load shall be consider as one hour per week.

SEM VIII

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits	
		Theory	Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	Theory			Practical		Total		
							T A	CT 1	CT 2	ES E	IC A			ES E
ITU801	Data Warehousing and Data Mining		3			3	10	15	15	60			100	3
ITU802	Network Administration & security		3	---	---	3	10	15	15	60	---	---	100	3
ITU803	Elective – II**		3	---	---	3	10	15	15	60	---	---	100	3
ITU804	Elective – III***		3	---	---	3	10	15	15	60	---	---	100	3
ITU805	Data Warehousing and Data Mining laboratory		---	---	2	2	---	---	---	---	25	25	50	1
ITU806	Network Administration & security laboratory		---	---	2	2	---	---	---	---	25	25	50	1
ITU807	Elective – II ** laboratory		---	---	2	2	---	---	---	---	25	25	50	1
ITU808	Project		---	---	6	6	---	---	---	---	75	100	175	6
ITU809	Self Study IV		---	---	---	---	---	---	---	---	25	---	25	2
Total			12		12	24	40	60	60	240	175	175	750	23

Note6: Self study IV is based on one class test each on the basis of 20% curriculum of the courses ITU801, ITU802, ITU803, ITU804 declared by respective course coordinator at the beginning of semester. One faculty member shall be appointed as course coordinator for self study IV and his/her teaching work load shall be considered as one hour per week.

Note7: Students of this department shall select any one Interdisciplinary Elective offered by other department. Interdisciplinary Elective shown below will be offered to students of other department.

TA :Teacher Assessment CT: Class Tests ESE: End Semester Examination ICA : Internal Continuous Assessment

Interdisciplinary Elective ITU704		Elective I ITU703	Elective II ITU803	Elective III ITU804
A Computer Oriented Operation Research		A Distributed Computing	A Artificial Neural Network	A Artificial Intelligence
B Nanotechnology		B Optical satellite and Communication	B Advanced Web Technology	B Natural Language Processing
C Software Engineering			C Software Planning & Management with Object oriented approach	C Functional and Logic Programming
		C Digital Signal Processing	D Computer Graphics	D Parallel Computing
		D Embedded Systems	E Digital Image Processing	E High Performance Network
		E Bio-Informatics		

SHU304 ENGINEERING MATHEMATICS-III

Teaching Scheme: 03 L

TOTAL 03

Credit : 03

Marking scheme: 15CT1 + 15CT2 + 10TA + 60 ESE

Total Marks :100

Duration of ESE : 2Hrs.30min

Linear Differential Equations with constant coefficients:

General solution to L.D.E. of n^{th} order with constant coefficients, rules for finding Complementary function., General method for finding Particular integral, P.I. of some standard functions, Method of Variation of Parameters, Cauchy's and Legendre's L.D.E., simultaneous linear differential equations .

Applications of L.D.E. to Electrical Circuits: Kirchoff's Law, LCR Circuits.

Partial Diff. Equations:

Definition, formation of P.D.E., complete solution of PDE, Linear and non-linear PDE of types (i) $f(p, q) = 0$, (ii) $f(p, q, z) = 0$, (iii) $f(p, q, x, y) = 0$, (iv) $f(p, q, x, y, z) = 0$ ie Lagrange's form $Pp+Qq=R$ and Clairaut's form $z = px + qy + f(p, q)$, (v) Equations reducible to above forms. Complete solution of PDE of first and second order by method of separation of variables.

Laplace Transform: Definition, standard formulae and properties of LT., Laplace transform of unit step and periodic functions. Laplace Transform of unit impulse function., Inverse Laplace Transform, Convolution Property, Application of LT to solve LDE with constant coefficients.

Vector Calculus:

Scalar and vector point functions, Differentiation of a vector function, Tangent and normal components of velocity and acceleration, orthogonal curves, Operator delta, Gradient of scalar point function & their physical meaning . Divergence and Curl of vector point function & their physical meaning. vector identities, solenoidal and conservative fields. Line integral, work done by force.

Text Books :

- 1) Text book of applied Mathematics ,P.N.Wartikar and J.N.Wartikar, Pune vidyarthi griha,Pune 2001.
- 2) Higher Engineering Mathematics, B.S.Grewal, Khanna publication,6th edition, New Delhi,1976.

Reference Books:

- 1) Advanced Engineering Mathematics, Kreyzig, John Wiley & sons 9th edition 1995.
- 2) Advanced Engineering Mathematics, John bird 5th edition Elsevier publication 2007.
- 3) Higher Engineering mathematics, C.R.Wiley, 8th edition John Wiley and sons 1999.

ETU311 ELECTRONIC DEVICES AND CIRCUITS

Teaching Scheme: 03T

Total: 03

Credits: 03

Evaluation Scheme: 15 CT1 + 15 CT2 + 10 TA + 60 ESE

Total Marks: 100

ESE Duration: 2Hrs. 30 min.

Diodes and applications: Diode as rectifiers (analysis of single phase rectifiers),

analysis of C, L, LC and π - filter, clipping and clamping circuits. Zener diode as a

voltage regulator, opto-coupler.

BJT biasing: Types, overview of construction, working and V-I characteristics of BJT, methods of biasing- analysis and synthesis of voltage divider biasing, d. c. load line, a. c. load line stability and stability factor.

BJT amplifiers: Transistor hybrid model for CE, CB and CC configuration, determination of h-parameters from the characteristics, analysis of CE amplifier circuit using h-parameter.

Concept of darlington emitter follower, bootstrap emitter follower, RC coupled amplifier, transformer coupled amplifier, direct coupled amplifier

FET amplifiers: Advantages and disadvantages of FET, types, overview of construction, working and V-I characteristics of JFET & MOSFET, parameters, method of biasing, common source AC amplifier.

Power & feedback amplifiers: Classification, analysis of class A, B, AB power amplifier – calculation of power gain, efficiency, power dissipation and distortion.

Tuned amplifiers - single tuned, double tuned amplifiers.

The feedback concept, transfer gain with feedback, general characteristics of negative feedback amplifiers. Types and characteristics of voltage series feedback, current series feedback, current shunt feedback, voltage shunt feedback.

Oscillators & Multivibrators: Barkhausen criteria, RC oscillators - Wein bridge and phase shift, LC oscillators- Hartley, colpitt's, clapp and crystal oscillators.

Self bias bistable multivibrator, commutating capacitor, Schmitt trigger, self bias monostable multivibrator (MMV) - collector coupled. General features of a time base signal, UJT relaxation oscillator, transistor constant current sweep generator, miller and bootstrap sweep generator.

Text Books:

1. Electronic Devices and Circuits (2nd edition, 2008), , J. Millman, C. Halkias and Satyabrata jit, Tata McGraw Hill.
2. Electronic Devices and Circuits (2nd edition, 2008), , D. R. Cheruku and B. T. Krushna, Pearson.

Reference Books:

1. Integrated Electronics, (3rd edition, 2006), , Jacob Millman, Christos C. Halkias, Tata McGraw Hill.
2. Pulse Digital and Switching Waveforms, (2nd edition, 2007), , Jacob Millman, Herbert Taub, Mothiki S Prakash Rao, Tata McGraw Hill.

CSU301 PROGRAMMING METHODOLOGY

Teaching Scheme : 03 L +01T Total 04 Credits : 04
Evaluation Scheme: 15 CT1 + 15 CT2 +10 TA+ 60 ESE Total Marks: 100
Duration of ESE: 2Hrs.30 min.

Introduction to Java: Object Oriented Programming Concepts, Procedural Vs Object oriented language. Java Basics: Program component, Compilation cycle, class fundamentals, Introduction to Application and Applet, Data types and Variables.

Operators and Control Statements: Arithmetic operators, relational operators, assignment operators. Selection statement: if, nested if, switch statement. Repetition statements: while,do-while, for, nested loops. Arrays: Basics, one dimensional, Multidimensional, array of Objects, Passing array to methods.

Introducing Classes: Class fundamentals, declaring objects, methods, class data and instance Data, constructor, 'this' keyword, access control. Inheritance, Polymorphism, Abstract classes and Interface. Introduction to Math class. Introduction to String and String buffer class.

Applet: Applet class and its methods, Introduction to AWT and classes of AWT: Button, Text field, Label. Working with Graphics, Working with Colors. AWT control fundamentals: adding and removing of controls, responding to controls. Frame class, menus and other GUI objects.

Event handling mechanism: Delegation event model, Event, Event Listeners: ActionListener, MouseListener, MouseMotionListener, WindowListener. Handling mouse event. Adapter classes. Packages.

Java File I/O: File,File Dialog Object, Byte Stream: InputStream, Output Stream, FileInputStream,FileOutputStream,DataInputStream/OutputStream.PrintWriter class. Exception Handling: Exception types, uncaught exception using try catch, throw, throws, finally.

Textbook:

1) Java Complete References , Herbert Schildt, 5th edition, Tata Mc Graw-Hill,2005-06

Reference Book:

1) Java Programming , Liag, 7th edition, Prentice Hall India, 2002.
2) An Introduction to OOP with Java , C.Thomas Wu, Indian Adapted Edition, Tata Mc Graw-Hill, 2006

ITU301 COMMUNICATION ENGINEERING

Teaching Scheme: 03 L+01 T Total 04 Credit: 04
Evaluation Scheme: 15 CT1 + 15 CT2 +10 TA+ 60 ESE Total Marks: 100
Duration of ESE: 2Hrs.30 min.

Basic Communication: Definition Of A Signal, Electronic Communication, Electromagnetic Frequency Spectrum, Bandwidth, Speech Signal, Voice Signal, Types Of Electronics Communication, Communication System: Basic Block Diagram Of Communication System, Requirement Of Bandwidth, Channel, Types Of Channel,

Noise: External And Internal Noise, Noise Figure, Signal To Noise Ratio, Noise Figure Measurement.

Modulation: What Is Modulation, Need Of Modulation, Types Of Modulation, Amplitude Modulation And Frequency Modulation. Amplitude Modulation Theory, Frequency Spectrum Representation Of Am, Modulation Index Side Bands, Power Relations, Current Relations And Voltage Relation In The Am Wave. Frequency Modulation And Phase Modulation, Frequency Deviation, Modulation Index, Frequency Spectrum.

Am Transmitters: Principles Of Dsb-Fc, Dsb-Sc, Ssb-Sc Modulation And Their Comparison, Details Of Dsb-Fc Transmitter, Generation Of Dsb-Sc By Using Balanced Modulators (Fet & Diodes), Dsb-Sc Transmitter. Generation Of Ssb-Sc By Phase-Shift Method.

Am Receivers :Trf Receiver, Superhetrodyne Receiver, Details Of Each Block Such AsRf Amplifier, Oscillator, If Amplifier, Diode Detector, Audio Amplifier,Mixer, Principle,Need And Type Of Agc, Practical Radio Receiver Circuit With Agc, Characteristics Such As Selectivity, Sensitivity, And Fidelity Communication Receiver

Fm Transmitter :Circuits For Direct Fm Generation Using Fet And Varactor Diode. Circuit & AnalysisOf Indirect Fm Generation, Narrow Band And Wide Band Fm, Their Comparison, De- Emphasis And Pre-Emphasis. Fm Transmitter & Stereo FmTransmitter.

Fm Receivers : Details Of Fm Receiver, Blocks Such As Rf Amplifier, Local Oscillator, If Amplifier, Mixer, Audio Ampl. Agc, Limiter, Fm Discriminator, Single Slope And Balanced Slope Detector, Analysis Of Foster Seeley And Ratio Detectors, Stereo FmReceiver.

Text Book :-

1.Electronics Communication System , Kennedy G.,3rd Edition ,Tata Mcgraw Hill,1985

Reference Book:

1. Electronic Communication , Shrader 6th Edition,1991.
2. Electronic Communication , Lloid Temes, Mitchel Schultz Shaum's Outlines,2nd Edition,1997.
3. Electronic Communications , Dennis Roddy And John Coolen 4th Edition,1992.
4. Electronic Communications Systems , Wayne Tomasi 6th Edition,1998.
5. Communication Electronics , Frenzel.3rd Edition,1994.

CSU303 DISCRETE MATHEMATICS AND GRAPH THEORY

Teaching Scheme: 03 L

Total 03

Credit: 03

Evaluation Scheme: 15 CT1 + 15 CT2 +10 TA+ 60 ESE

Total Marks: 100

Duration of ESE: 2Hrs.30 min.

Mathematical Logic: statements& Notations, Connectives, Normal Forms, Theory of inference for the statement calculus, predicate calculus. The inference theory of the Predicate Calculus

Set theory: Basic Concepts, Operation on sets, Algebra of sets. Relation and Ordering, Functions, Natural Numbers, Recursion.

Algebraic structure: Concepts and properties Semi groups and Monoids, Grammar and Languages, Polish expression and their compilation, Groups,

Lattices and Boolean algebra: Lattices as partially ordered sets, Boolean algebra, Boolean functions, Representation and Minimization of Boolean functions.

Graph theory: Basic concepts, Matrix representation of graphs.

Trees: Basic concepts, tree searching, undirected trees, Minimal spanning tree.

Computability theory: Finite state machines, Finite state acceptors and regular grammars. Turing machines and partial recursive functions.

Text Book:

- 1) Discrete Mathematical Structures with application to Computer science ,
J.P.Trembley, R.Manohar: 2nd Edition, Tata Mc-Graw Hill Publication, 2004 .

Reference Books:

- 1) Element of Discrete Mathematics , C.L.Lill second edition Mc-Graw Hill,2002.

SHU305 GENERAL PROFICIENCY – II

Teaching Scheme: 01L+02 P

Total : 03

Credit : 02

Evaluation Scheme: ICA 25+ ESE 25

Total Marks: 50

Duration of ESE : 3Hrs.

Presentation Skill :

Communication boosters – aura words, pronunciation, body language – voice, posture and gesture, eye contact, dress codes. Function of culture code in presentation – planning, preparing and delivering a presentation, etiquettes, clarity and aliveness of delivery. General communication skill for presentation – content matching and language matching for specific audience, tone, humor poise- listener/speaker sensitivity. Specific communication skill for presentation – ice breaker, small talk dialogue, debate, turn taking, effective and defensive handling of question. Models of presentation – Public speaking, academic and professional presentation, group discussion, personal interview, technical report writing (IEEE standards).

Managerial skill :

Time management - advantages, time wasters – procrastination, time management tips and strategies. Stress management- stress and its disadvantages, stress coping ability and stress inoculation training, management of various types of fear, depression and anger.

Conflict management -types of conflict, conflict stimulation and conflict resolution technique for conflict for effective conflict management, effective ways of dealing with people, significance of body language in communication and assertiveness training.

Interpersonal skills -concept of team, advantages of team work, promotion of team spirit, team building techniques, nurturing leadership qualities, negotiation skills.

Topics for assignments/practicals :

Minimum eight assignments/practicals based on above topics. The representative list is given below

1. Collection of new words concerning various technical and professional subjects
2. Listening of audio cassette or lecture or watching video cassette (based on the topics of managerial skill) followed by speech/seminar by students.
3. Listening of audio cassette or lecture or watching video cassette (based on the topics of managerial skill) followed by group discussion of students.

4. Collecting the information related to the topics of managerial skill using internet, books, magazines etc. and its power point presentation or seminar/lecture.
5. Power point presentation on topic related to any subject of programme.
6. Preparing a technical paper in IEEE format.
7. Management games.
8. Personal interview.
9. Extempore elocution, debate.

Text Books:

1. Professional Communication Skills, Alok Jain, Pravin S. ,R. Bhatia, A. M. Sheikh, 3rd edition, S. Chand and Company, New Delhi, 2005
2. Personality Development, E. B. Hurlock, 5th edition, Tata MacGraw Hill, New Delhi, 2006

Reference Books :

1. Power of Positive Thinking, D. J. Mile, 1st edition, 28th reprint , Rohan Book Company, Delhi, 2004
2. All About Self motivation, Pravesh Kumar, 3rd edition, Goodwill Publishing House, New Delhi, 2005
3. Body Language: How to Read Others Thoughts by their Gestures, Pease, Allan, 3rd edition, Sudha Publications. New Delhi, 1998.
4. Multiple Intelligences: The Theory in Practice: A Reader, Gardner, Howard, 1^s edition, Basic Books. New York, 1993.
5. Six Thinking Hats, De Bono, Edward, 2nd Edition, Penguin Books, Newyork, 2000.
2. All About Self motivation, Pravesh Kumar, 3rd edition, Goodwill Publishing House, New Delhi, 2005
3. Body Language: How to Read Others Thoughts by their Gestures, Pease, Allan, 3rd edition, Sudha Publications. New Delhi, 1998.
4. Multiple Intelligences: The Theory in Practice: A Reader, Gardner, Howard, 1^s edition, Basic Books. New York, 1993.
5. Six Thinking Hats, De Bono, Edward, 2nd Edition, Penguin Books, Newyork, 2000.

ETU312 ELECTRONIC DEVICES AND CIRCUITS LAB

Teaching Scheme: 02P

Total: 02

Credit: 01

Evaluation Scheme: 50ICA

Total Marks: 50

Duration of ESE : 3Hrs.

Minimum eight experiments shall be performed to cover entire curriculum of ETU311 and the list given is just a guideline.

List:

1. To study V-I characteristics of PN- junction diode and Zener diode. Also compare their characteristics.
2. To Study of diode as clipper and clamper.
3. To study half wave & full wave rectifier without filter and to calculate its ripple factor

4. To study bridge full wave rectifier without filter and to calculate its ripple factor.
5. To study half wave & full wave rectifier with filter and to calculate its ripple factor
6. To study bridge full wave rectifier with filter and to calculate its ripple factor.
7. To study the input and output characteristics of a given transistor in common emitter configuration
8. To Study of CE amplifier- current & power gains and input, output impedances.
9. To study biasing of transistor by following method:
 - a. Fixed bias.
 - b. Voltage divider bias.
10. To study the frequency response of RC coupled amplifier.
11. Measurement and study of output characteristics of JFET.
12. Measurement and study of output characteristics of MOSFET.
13. To study Hartley oscillator.
14. To study the different types of negative feedback in two stage amplifier and to observe its effects upon the amplifier parameters.
15. To study biasing of transistor by following method:
 - a. Fixed bias.
 - b. Voltage divider bias.

Note :

ICA – The Internal Continuous Assessment shall be based on practical record and knowledge/skills acquired. The performance shall be assessed experiment wise by using continuous assessment format, A & B.

CSU304 PROGRAMMING METHODOLOGY LAB

Teaching Scheme : 02 P

Total 02

Credit : 01

Evaluation Scheme: 25 ICA + 25 ESE

Total Marks :50

Duration of ESE : 3Hrs.

Minimum eight experiments shall be performed to cover entire curriculum of CSU301 and the list given is just a guideline.

1. Simple Java applications using any Selection statement.
2. Simple Java applications using any Repetition statement.
3. Java application to Using Math class
4. Applet program using concept working with Graphics and Colors
5. Applet program using GUI components Button, TextField, Label.
6. Applet program for BMI calculation.
7. Java application based on String and String buffer class
8. Java application to implement Frame and Dialog window.

9. Write an application in Java to design “Calculator”
10. Java application program based on Mouse events.
11. Java Application program based on reading and writing of files.
12. Access modifiers(public ,private& protected)

Note:

ICA – The Internal Continuous Assessment shall be based on practical record and knowledge or skills acquired. The performance shall be assessed experiment wise by using continuous assessment format, A & B.

ESE- The End Semester Exam for Practical shall be based on performance in one of the experiments and may be followed by sample questions.

ITU302 COMMUNICATION ENGINEERING LAB

Teaching Scheme: 02 P

Total 02

Credits: 01

Evaluation Scheme: 25 ICA + 25 ESE

Total Marks: 50

Duration of ESE : 3Hrs.

Minimum eight experiments shall be performed to cover entire curriculum of ITU301 and the list given is just a guideline.

- 1) Measurement of signal to noise ratio
- 2) AM generation using DSB-SC
- 3) Measurement of modulation index of AM wave
- 4) Measurement of carrier amplitude of AM wave
- 5) Single side band generation
- 6) FM Modulation index
- 7) AM transmitter using cable/antenna
- 8) Voice transmission over AM
- 9) FM transmitter using Cable/Antenna
- 10) AM Modulation

Note :

ICA – The Internal Continuous Assessment shall be based on practical record and knowledge or skills acquired. The performance shall be assessed experiment wise by using continuous assessment format, A & B.

ESE- The End Semester Exam for Practical shall be based on performance in one of the experiments and may be followed by sample questions.

CSU306 LINUX ADMINISTRATION LAB-I

Teaching Scheme: 02 P

Total 02

Credits: 01

Minimum eight experiments shall be performed .The sample list of program is given below. This list can be used as guideline for problem statements but the scope of the laboratory should not be limited to the same .Aim of the list is to inform about minimum expected outcomes

1. Introduction & Installation of Linux
2. File and shell Basics
3. Introduction to different editor like vi , vim etc
4. User and Group & File access permissions
5. Standard I/O and Pipes
6. Linux File System
7. X/GNOME/KDE
8. Writing a simple Shell Scripts in Linux
9. Use “cron” to run a program on schedule
10. Printing and mailing

Note :

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ESE- The End Semester Exam for Practical shall be based on performance in one of the experiments and may be followed by sample questions.

CSU401 NUMERICAL METHODS & COMPUTER ROGRAMMING

Teaching Scheme : 03 L

Total 03

Credits : 03

Evaluation Scheme: 15 CT1 + 15 CT2 +10 ICA+ 60 ESE

Total Marks: 100

Duration of ESE : 2 Hrs.30 min.

Problem solving & computers: Numerical methods for roots of equations, polynomial, transcendental, quadratic equations. Bisection, False Position, Newton-Raphson & Direct substitution methods.

Solution of Simultaneous Equations: Gauss Elimination, Gauss Seidel, Gauss-Jordan Methods. Matrix methods & Inversion Interpolation : Linear & polynomial.

Numerical differentiation by polynomial fit: Numerical integration by Trapezoidal Rule, Simpson Rule, Gaussion Quadrate.

Sampling frequency distribution: measures of central tendency, dispersion moments. Discrete probability distributions. Probability, Various types of distributions.

Regression : Linear LS fit, Nonlinear fit. Polynomial function. Correlation : Coefficient, Properties of correlation coefficient. Multiple, Partial and Rank correlation.

Test of significance: Introduction, The χ^2 -test. The t-test, the F-test .

Text Books:

- 1) Computer Oriented Numerical Methods , V Rajaraman,2nd edition, Prentice Hall India,1986.
- 2) Mathematical Statistics , J.N. Kapur,4th edition,Tata McGrawHill,1989.

Reference Book:

- 1) Numerical Computation Methods , Sastry, Prentice Hall India
- 2) Statistics , M.R. Spiegel,Tata McGraw Hill

CSU402 DATA STRUCTURE

Teaching Scheme : 03L+01T	Total 04	Credit : 04
Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE		Total Marks :100
Duration of ESE : 2 Hrs.30 min.		

Introduction, Data structures, algorithms: complexity, Time-Space, Tradeoff, Algorithmic notation, complexity of algorithm, sub algorithm, String processing: Basic terminology, storing Strings, character data type, String operations, word processing, pattern matching algorithms.

Arrays, Records and Pointers: Introduction, Linear arrays, , inserting and deleting, sorting; Bubble sort, searching; linear search, Binary search, multidimensional arrays, Pointers; Pointer arrays, Matrices, Sparse matrices.

Linked List: Linked lists, representation of linked lists in memory, traversing a linked list, searching a linked list, memory allocation; garbage collection, insertion into a linked list, Deletion into a linked list, Header Linked list, Two- Way Lists.

Stacks, Queues, Recursion: Introduction, Stacks, Array representation of stacks, Arithmetic expressions; Polish notation, Quick sort, an application of stacks, Recursion, Towers of Hanoi, Implementation of Recursive Procedures by Stacks, Queues, Dequeues, Priority Queues.

Trees: Introduction, Binary Trees, Representing Binary Trees in Memory, Traversing Binary Trees, Traversal Algorithms Using Stacks, Header Nodes; Threads, Binary Search Trees, Deleting in a Binary Search Tree, Heap; Heapsort, Path Lengths; Huffman's Algorithm, General Trees.

Graphs and their applications: Introduction, Graph Theory Terminology, Sequential Representation of Graphs; Adjacency Matrix; Path Matrix, Shortest Paths, Linked Representation of a Graph, Operation on Graphs, Traversing a Graph, Posets; Topological Sorting, Sorting and Searching:Merging, Merge-Sort, Redix- Sort, Hashing.

Text Book :

- 1.Data structures , Trembley and Sorenson 3rdEdition, Tata McGraw Hill,1986.

Reference Book:

1. Theory and Problems of Data Structures , S. Lipschutz, SCHAUM'S OUTLINE SERIES, 2ndEdition , Tata McGraw Hill,1986.
2. Data Structures , Horowitz and Sahni 2ndEdition,Galgotia Publication,1992.

CSU403 OBJECT ORIENTED TECHNOLOGY

Teaching Scheme : 03 L + 01T	Total 04	Credits : 04
Evaluation Scheme: 15 CT1 + 15 CT2 +10 TA+ 60 ESE		Total Marks: 100

Duration of ESE : 2 Hrs.30 min.

Objects & Classes in C++: Declaring & using classes, Constructors, Objects as functions arguments, Copy Constructor, Static class data. Arrays of objects, C++ String class.

Operator overloading : Overloading unary & binary operators. Data conversion. Pitfalls of operator overloading. Pointers & arrays. Pointers & functions. new & delete operators. Pointers for objects.

Inheritance in C++ : Derived class & base class, Derived class constructors, Function overloading, class hierarchies, Public and private inheritance, Multiple inheritance. Containership : classes within classes.

Virtual functions concepts, Abstracts classes & pure virtual functions. Virtual base classes, Friend functions, Static functions, Assignment and copy initialization, the this pointer. Dynamic type information.

Streams & Files in C++ : Stream classes, stream errors, disk file I/O with streams, File pointers, Error handling in file I/O. File I/O with members functions, overloading the extractions & insertion operators, Memory as a stream object, command-line arguments. Multifile programs.

Function Template: Class templates, Exception syntax, Multiple exceptions, exception with arguments. Introduction to the Standard Template Library. Algorithms, Sequential Containers, Iterates, Specialized iterates, Associative containers. Function objects.

Text-Book :

1.Object-Oriented Programming in C++ , Robert Lafore ,4th Edition,Pearson Education 2002.

References Book:

1. C++ Programming Language , Bjarne Stroustrup,3rd Edition, Addison-Wesley, 2002.
2. Mastering C++ , Venugopal K.R., Ist Edition, Tata McGrawHill, 1997
3. Complete Reference C++ , Herbert Schildt ,4th Edition,Tata McGrawHill,2004.

ITU401 DIGITAL INTEGRATED CIRCUITS

Teaching Scheme : 03 L

Total 03

Credit : 03

Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE

Total Marks :100

Duration of ESE : 2 Hrs.30 min.

Review of Boolean Algebra & Boolean Functions. Canonical & standard forms. Digital Logic Gates.

Digital Integrated Circuits:Special characteristics like fan-out, power dissipation, propagation delay & noise margin. Bipolar transistor characteristics. TTL,ECL, MOS and CMOS families : Basic circuits, operation and typical characteristics.

Simplification of Boolean functions:The K-Map method, two- & three-Variable maps,four-variable map, five-variable map. POS simplification. NAND & NOR implementations. Other two-level implementations. Don't-care conditions. Tabulation method. Determination of prime implicants. Selection of Prime implicants.

VHDL Modeling Concepts: VHDL Fundamentals, Constants, Variables, Scalar types, Type Classification, Expressions, Operators, Sequential Statements, If, Case, Null, Loop, Assertion, Reports statements.

Array & VHDL: Unconstrained array types, Array operations & referencing, Records
Basic Modeling constructs: Entity declarations, Architecture bodies, Behavioral descriptions, Structural descriptions, Design processing.

Combinational Logic: introduction. design procedure. adders. subtractors. Code conversion. analysis procedure. Multilevel NAND circuits : universal gate, Boolean function implementation. Multilevel NOR circuits: universal gate , Boolean-function implementation. Exclusive-OR functions. Odd function. Parity generation & checking. Combination Circuits implementation using VHDL

Synchronous Sequential circuits: introduction, Flip-Flops: basic circuits, RS-,D-,JK- & T- Flip-Flops. Triggering of flip-flops. Analysis of clocked sequential circuits. State reduction & assignment. Flip-flop excitation table. Design procedure.

Design of counters: ripple counters, synchronous counters. Asynchronous sequential circuit implementation using VHDL.

Text Book:

1. Digital Design , M.Morris Mano ,2nd Edition,PHI,2001.
- 2.The Designer's Guide to VHDL, , Peter J.Ashenden, 2nd Edition Harcourt Asia,1996.

Reference Book:

1. Digital Integrated Electronics , Taub & Schilling 3rd Edition ,TMH,1977.
- 2.Modern Digital Electronics , Jain R.P.2nd Edition ,TMH,2003.
- 3.An Engineering Approach to Digital Design, , FletcherW.I.2nd Edition,PHI,1997

ITU402 DATA COMMUNICATION

Teaching Scheme: 03 L

Total - 03

Credits: 03

Evaluation Scheme: 15 CT1 + 15 CT2 +10 ICA+ 60 ESE

Total Marks: 100

Duration of ESE : 2 Hrs.30 min.

Introduction: Components, networks, protocols & standards, line configuration, topology transmission mode, categories of networks, internetworks, The OSI model: Architecture, Layers and its functions, TCP/IP protocol suite, analog & digital signals, periodic & aperiodic signals, and time & frequency domains.

Encoding & decoding: Digital-to-Digital conversion, Digital- to- Analog conversion, Analog- to- Digital conversion, Analog -to- Analog conversion, digital data transmission,

DTE-DCE interface, modems, 56 K cable modems.

Transmissions media: Guided media, unguided media, transmission impairment performance, wavelength, shannon capacity, Media comparison.

Multiplexing: Many to one/one to many, Frequency division multiplexing, TDM
multiplexing Application: Telephone system

Error detection & correction: types of errors, detection, VRC, longitudinal redundancy check, cyclic redundancy check, checksum.

Data link control: Line discipline, flow control, error control, and data link.

Protocol: Asynchronous protocol, synchronous protocol, character oriented protocol, bit Oriented protocols, link access procedures.

Local area networks: Ethernet, Other Ethernet networks, token bus, token ring, FDDI Comparison. MAN: IEEE 802.6(DQDB) SMDS.

Switching: Circuit switching, packet switching, message switching integrated services digital networks (ISDN): Services, history subscriber, access to ISDN, the ISDN layers, broadband ISDN, future of ISDN.

Frame relay: Introduction, frame relay operation, frame relay layers, congestion control, leaky bucket algorithm, traffic control, and other futures.

Networking & Internet networking devices: Repeaters, bridges, routers, gateway, routing algorithms, routers tables, other devices, distance vector routing, link state routing.

Text Books:

1.Data communication & networking - Behrouz A. Forouzan ,2nd Edition, Tata Mc. Graw Hill, 2000.

2.Data & computer communication - William Stalling ,6th Edition, Pearson Education, 2000

Reference Books:

1.Data Communication -William L. Schweber ,2nd Edition, McGraw Hill Publication, 1988.

2.Computer communication & networks - J. Frey,3rd Edition, AEW Press,2005

CSU404 DATA STRUCTURE LAB

Teaching Scheme : 01L+ 02 P

Total 03

Credit : 02

Evaluation Scheme : 50 ICA

Total Marks :50

Duration of ESE : 3Hrs.

Minimum eight experiments shall be performed to cover entire curriculum of CSU402 and the list given is just a guideline.

Syntax to implement the data structure in Java & C should be explained in theory.

List of Practical.

1. Store and print the nonzero elements of sparse matrix using given format.
2. Transpose the sparse representation using given algorithm.
3. Simulate any algorithm based on recursion
4. Define and Implement functions of Abstract data type
5. Evaluate Postfix/prefix type of expression.
6. Linked representation of data structure Queue
7. Perform the operations such as insert a node at first, insert a node at given location, delete on data structure Singly linked list
8. Perform the operations such as insert a node at first, insert a node at given location, delete data structure Doubly linked list
9. Traverse the binary tree using any one Preorder/ Postorder /Inorder traversal
10. Sort the given array using Selection Sort

- 4 Write a C++ program using friend operator function to overload plus binary operator
- 5 Write a C++ program to calculate the circumference of an earth (subclass) after getting distance of it measured from sun from planet (super class)
- 6 Write a C++ program for an inventory that stores the name of an item, the number on hand, and its cost. Include an inserter and an extractor for this class
- 7 Write a C++ program that creates an output file, writes information to it, closes the file and open it again as an input file and read the information from the file
- 8 Write a C++ program that counts number of words in a file
- 9 Write a C++ program to create an abstract class area having an abstract function get area, which will find an area of derived classes rectangle and triangle
- 10 Write a C++ program to create a generic function that swaps the values of the two Variables.

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ESE- The End Semester Exam for Practical shall be based on performance in one of the experiments and may be followed by sample questions.

ITU404 DIGITAL INTEGRATED CIRCUITS LAB

Teaching Scheme: 02 P

Total 02

Credits: 01

Evaluation Scheme: 25 ICA + 25 ESE

Total Marks:50

Duration of ESE : 3Hrs.

Minimum eight experiments shall be performed to cover entire curriculum of ITU401 and the list given is just a guideline.

Combinational Logic and Synchronous Sequential circuits design using structural, Behavioral and data flow architectures for the following:

Adders

Subtractors

Code converters

Parity generator & checker

Counters:

Ripple counters using VHDL and synthesize and simulate.

Synchronous counters using VHDL and synthesize and simulate.

Note :

ICA – The Internal Continuous Assessment shall be based on practical record and knowledge or skills acquired. The performance shall be assessed experiment wise by using continuous assessment format, A & B.

ESE- The End Semester Exam for Practical shall be based on performance in one of the experiments and may be followed by sample questions.

CSU406 LINUX ADMINISTRATION LAB-II

Teaching Scheme: 02 P

Total 02

Credits: 01

Evaluation Scheme: 25 ICA + 25 ESE

Total Marks:50

Duration of ESE : 3Hrs.

Minimum eight experiments shall be performed .The sample list of program is given below. This list can be used as guideline for problem statements but the scope of the laboratory should not be limited to the same .Aim of the list is to inform about minimum expected outcomes

1. Working of UNIX / Linux environment
2. Introduction to process
3. Writing a script with different flow control statement
4. System tool Installation
5. Introduction to different types of shells (sh, ksh, bash, sh, csh, tcsh) .
6. Linux user Quotas
7. Creating a new partition in Linux
8. Creating Logical volume manager in Linux (extend /reduce)
9. Basic networking in Linux
10. Loops Process fundamentals, Pipe (), Read (), Write () system calls, Fork () System call, lseek () System call.

Note :

ICA – The Internal Continuous Assessment shall be based on practical record and knowledge or skills acquired. The performance shall be assessed experiment wise by using continuous assessment format, A & B.

ESE- The End Semester Exam for Practical shall be based on performance in one of the experiments and may be followed by sample questions.