GOVERNMENT COLLEGE OF ENGINEERING, AMRAVTI.

Department of Computer Science & Engineering.

Proposed Scheme for B. Tech. (Computer Science & Engineering)

SEM III

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
						Theory				Practical			
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	TA	CT1	CT2	ESE	ICA	ESE	Total	
SHU304	Engineering Mathematics-III	3	--	---	3	10	15	15	60	---	---	100	3
ETU311	Electronic Devices and Circuits	3	---	---	3	10	15	15	60	---	---	100	3
CSU301	Programming Methodology	3	1	---	4	10	15	15	60	---	---	100	4
CSU302	Computer Organization and Architecture	3	1	---	4	10	15	15	60	---	---	100	4
CSU303	Discrete Mathematics and Graph Theory	3	---	---	3	10	15	15	60	---	---	100	3
SHU305	General Proficiency II	1	---	2	3	---	---	---	---	25	25	50	2
ETU312	Electronic Devices and Circuits Lab	---	---	2	2	---	---	---	---	50	---	50	1
CSU304	Programming Methodology Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU305	Computer Organization and Architecture Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU306	Linux administration-I Lab	---	---	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				Practical			
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	TA	CT1	CT2	ESE	ICA	ESE	Total	
CSU401	Numerical Method and 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
ETU411	Analog and Digital IC's	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
CSU405	Object Oriented Technology Lab	---	---	2	2	---	---	---	---	25	25	50	1
ETU412	Analog and Digital IC's Lab	---	---	2	2	---	---	---	---	25	25	50	1
ITU403	Data Communication Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU406	Linux administration-II Lab	---	---	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 Contineous Accessment**

GOVERNMENT COLLEGE OF ENGINEERING, AMRAVTI.

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SEM V

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							
						Theory				Practical			
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	TA	CT1	CT2	ESE	ICA	ESE	Total	Credits
CSU501	System Analysis and Design	3		---	3	10	15	15	60	---	---	100	3
CSU502	Database Management System	3	---	---	3	10	15	15	60	---	---	100	3
CSU503	System Software	3	---	---	3	10	15	15	60	---	---	100	3
CSU504	Theory of Computation	3	---	---	3	10	15	15	60	---	---	100	3
CSU505	Principle of Management	3	---	---	3	10	15	15	60	---	---	100	3
CSU506	System Analysis and Design laboratory	---	---	2	2	---	---	---	---	25	25	50	1
CSU507	Database Management System laboratory	---	---	2	2	---	---	---	---	25	---	25	1
CSU508	System Software Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU509	Hardware Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU510	Linux administration-III Lab	1	---	2	2	---	---	---	---	25	25	50	2
CSU511	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 CSU501,CSU502,CSU503,CSU504 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 considered as one hour per week.

SEM VI

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							
						Theory				Practical			
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	TA	CT1	CT2	ESE	ICA	ESE	Total	Credits
CSU601	Design and Analysis of Algorithms	3	--	---	3	10	15	15	60	---	---	100	3
CSU602	Switching Theory and Logic Design	3	---	---	3	10	15	15	60	---	---	100	3
CSU603	Operating System Design	3	---	---	3	10	15	15	60	---	---	100	3
CSU604	Computer Network	3	---	---	3	10	15	15	60	---	---	100	3
CSU605	Software Project Management	3	---	---	3	10	15	15	60	---	---	100	3
CSU606	Design & Analysis of Algorithms Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU607	Switching Theory &Logic Design Lab	---	---	2	2	---	---	---	---	25	---	25	1
CSU608	Operating System Design Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU609	Computer Network Lab	---	---	2	2					25	25	50	1
CSU610	Minor Project	----	----	2	2	---	----	---	----	25	25	50	2
CSU611	Self Study II	---	---	----	---	---	---	---	---	25	---	25	2
CSU612	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 CSU601,CSU602,CSU603,CSU604 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 considered as one hour per week.

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

GOVERNMENT COLLEGE OF ENGINEERING, AMRAVTI.

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Proposed Scheme for B. Tech. (Computer Science & Engineering)

SEM VII

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							
						Theory				Practical			
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	TA	CT1	CT2	ESE	ICA	ESE	Total	Credits
CSU701	Computer Graphics	3	---		3	10	15	15	60	---	---	100	3
CSU702	Microprocessor and Interfacing	3	---		3	10	15	15	60	---	---	100	3
CSU703	Elective –I	3	---		3	10	15	15	60	---	---	100	3
CSU704	Interdisciplinary Elective	3	---		3	10	15	15	60	---	---	100	3
CSU705	Computer Graphics Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU706	Microprocessor & Interfacing Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU707	Elective –I laboratory	---	---	2	2	---	---	---	---	25	25	50	1
CSU708	Project Phase I	---	---	4	4	---	---	---	---	50	--	50	2
CSU709	Seminar	---	---	2	2	---	---	---	---	25	25	50	2
CSU710	Industrial Visit	---	---	---	---	---	---	---	---	50	---	50	1
CSU711	Industrial Lecture II*	1	---		1	---	---	---	---	25	---	25	1
CSU712	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 CSU701,CSU702, CSU703 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 considered as one hour per week.

SEM VIII

Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							
						Theory				Practical			
		Theory Hrs /week	Tutorial Hrs/week	Practical Hrs/week	Total	TA	CT1	CT2	ESE	ICA	ESE	Total	Credits
CSU801	Operation Research and Planning Management	3			3	10	15	15	60			100	3
CSU802	Digital Signal Processing	3	---	---	3	10	15	15	60	---	---	100	3
CSU803	Elective -II	3	---	---	3	10	15	15	60	---	---	100	3
CSU804	Elective-III	3	---	---	3	10	15	15	60	---	---	100	3
CSU805	Operation Research and Planning Management Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU806	Digital Signal Processing laboratory	---	---	2	2	---	---	---	---	25	25	50	1
CSU807	Elective –II Lab	---	---	2	2	---	---	---	---	25	25	50	1
CSU808	Project	---	---	6	6	---	---	---	---	75	100	175	6

CSU809	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 CSU801,CSU802 ,CSU803,CSU804 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 Contineous Accessment

Interdisciplinary Elective CSU704	**Elective I CSU703**	**Elective II CSU803**	**Elective III CSU804**
A Nanotechnology	A Advanced Computer Architecture	A Modeling and Simulation	A) Distributed Operating Systems
B Computer Oriented Operation Research	B Embedded System	B Parallel Computing	B) Natural Language Processing
C Software Engineering	C Multimedia Technology	C Advanced Database Management System	C) Robotics
	D Internet Technology	D Artificial Neural Network	D) Advanced Web Technology
	E Artificial Intelligence	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 C.F., General method for finding P.I., P.I. of some standard functions, Method of Variation of Parameters, Cauchy's and Legendre's L.D.E.

Applications of L.D.E. to deflection of beam, vibrations of Springs,

Partial Diff. Equations:

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 L.T. to solve Linear Differential Equations 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 by P.N.Wartikar and J.N.Wartikar, Pune vidyarthi griha,Pune 2001.
2) Higher Engineering Mathematics by B.S.Grewal, Khanna publication,6^{th} edition, New Delhi,1976.

Reference Books:

1) Advanced Engineering Mathematics by Kreyzig, John Wiley & sons 9^{th} edition 1995.
2) Advanced Engineering Mathematics by John bird 5^{th} edition Elsevier publication 2007.
3) Higher Engineering mathematics by C.R.Wiley, 8^{th} 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), by J. Millman, C. Halkias and Satyabrata jit, Tata McGraw Hill.
2. Electronic Devices and Circuits (2nd edition, 2008), by D. R. Cheruku and B. T. Krushna, Pearson.

Reference Books:

1. Integrated Electronics, (3rd edition, 2006), by Jacob Millman, Christos C. Halkias, Tata McGraw Hill.
2. Pulse Digital and Switching Waveforms, (2nd edition, 2007), by 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.30min

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 by Herbert Schildt, 5th edition, Tata Mc Graw-Hill,2005-06

Reference Book:

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

CSU302 COMPUTER ORGANIZATION & ARCHITECTURE

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.30min

Computer components & functions:. Interconnection structures, Bus Interconnection, PCI, Computer memory system overview, semiconductor main memory, chip logic, error correction, cache memory, elements of cache design, Associative mapping, Advanced DRAM organization, magnetic disk, RAID, CD-ROM.

External devices: I/O modules, Programmed I/O, DMA, Interrupt I/O, I/O channels & IOPs, SCSI & firewire interfaces. Operating system overview, Integer representation and arithmetic, Booths's algorithm, Floating point representation and arithmetic, Precision considerations, guard bits, rounding, quiet and signaling NaNs, denormalised numbers, Little, Big and Bi-Endian

ALU: Machine instruction characteristics, operand types, operation types, Addressing modes, Instruction formats, CPU structure, processor organization, register organization, instruction cycle, instruction pipelining, Branch prediction.

RISC machine, Instruction Execution characteristics, Register file concept, Compiler based register optimization, RICS architecture, RISC pipelining, RISC v/s CISC, Case study SPARC, superscalar overview, Design issues in instruction level parallelism and machine parallelism, Case study of PowerPC

Control unit operation: Micro-operations, control of the processor, Hardwired implementation. Micro-programmed control: Concepts, microinstruction sequencing and execution, Applications of microprogramming.

Multiple processor organizations, Symmetric processors, Mainframe SMP, Cache coherence and MESI protocol, clusters, Non-uniform Memory access, vector computation. Computer architecture, Von Neumman, Harward, Modified Hardwired Architecture

Text Books:

1)Computer Organization & Architecture by Stalling W ,6th Edition, Pearson Education,2003

Reference Books:

1) Computer Organization, by C. Hamacher, R Zaky,2nd Edition, Tata Mc Graw Hill ISE,1984.
2) Computer Architecture & Organization, by J.P.Hayes 4/e, Tata Mc Graw Hill,ISE, 1986.
3) Logic & Computer design fundamentals, by M.Mano & C. Kime (2/e), Prentice Hall,1997.
4) Structured Computer Organization, by A. S. Tanenbaum 4/e, Tata Mc Graw Hill ISE,2004.

CSU303 DISCRETE MATHEMATICS AND GRAPH THEORY

Teaching Scheme : 03 L + 00 T Total 03 Credits : 03
Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE Total Marks :100
Duration of ESE : 2Hrs.30min

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 by J.P.Trembley, R.Manohar: 2nd Edition, Tata Mc-Graw Hill Publication, 2004 .

Reference Books:

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

SHU305 GENERAL PROFICENCY – II

Teaching Scheme: 01L+02 P Total : 03 Credit : 02
Evaluation Scheme: ICA 25+ ESE 25 Total Marks: 50

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, hummer 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,1s 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,1s 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: 50 ICA **Total Marks: 50**

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.

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)

Textbook:

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.

CSU305 COMPUTER ORGANIZATION & ARCHITECTURE 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 CSU302 and the list given is just a guideline.

1. Intel multicore architecture and processor basics
2. Hyper threading, multithreading, multiprocessing.
3. Multilevel parallel algorithm.
4. Multithreaded application design.
5. Programming for multicore architecture.
6. Application tuning and optimization based on multicore architecture.
7. Program based on Multithreaded and multicore architecture.
8. Operating system support for multithreaded and multicore processor.
9. Simulation of 8080/8086

Reference:
www.Inteleducation.com

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
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. 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

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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 METHOD & COMPUTER PROGRAMMING

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

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 by V Rajaraman,2nd edition, Prentice Hall India,1986.
2) Mathematical Statistics by J.N. Kapur,4th edition,Tata McGrawHill,1989.

Reference Book:
1) Numerical Computation Methods by Sastry, Prentice Hall India
2) Statistics by M.R. Spiegal,Tata McGraw Hill

CSU402 DATA STRUCTURE

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.30min

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 by Trembley and Sorenson 3rd Edition, Tata McGraw Hill,1986.

Reference Book:
1. Theory and Problems of Data Structures by S. Lipschutz, SCHAUM'S OUTLINE SERIES, 2nd Edition , Tata McGraw Hill,1986.
2. Data Structures by Horowitz and Sahni 2nd Edition,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 : 2Hrs.30min

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++ by Robert Lafore , 4th Edition, Pearson Education 2002.

References Book:

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

ETU411 ANALOG AND DIGITAL IC'S

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

Introduction to ICs: Operational amplifier- block schematic, internal circuits**.** Study of op-amp IC 741, measurement of op-amp parameters, balancing networks of op-amp, frequency compensation techniques for op-amp.

Linear and non-linear application op-amp: Inverting amplifier, non-inverting amplifier and voltage follower, differential amplifier, integrator, differentiator, sinusoidal RC phase shift and Wein bridge oscillator, comparator, astable, bistable and monostable multivibrators, Schmitt trigger, clippers, clampers using op-amp.

Other linear ICs: Block schematic of regulator IC 723 and its applications, SMPS, block schematic of timer IC 555 and its applications as a timer, astable, monostable, bistable multivibrator.

Boolean algebra, logic circuits and families: Logic gates – basic, derived and universal gates, theorems and properties of Boolean algebra, DeMorgan's theorem, canonical and standard SOP and POS forms, simplification and synthesis of Boolean functions up to 4 variables using Boolean theorems and K-Map. Characteristics of digital ICs, study of TTL, ECL, I^2L, CMOS logic families, tristate logic.

Combinational logic design: Arithmetic circuits as half and full adder and subtractor, 4-bit adder / subtractor, IC 7483, BCD adder, digital comparator, multiplexer, de-multiplexer, encoder, decoder.
Sequential logic design: One-bit memory cell, S-R, clocked S-R, J-K, master slave J-K, T-type, D-type flip-flops, shift registers, synchronous and asynchronous counters, up/down counters, ripple counters, MOD-n counters, RAM bipolar cell.

Text Books:

1. Op-Amps and Linear Integrated Circuits, (4^{th} edition, 2002), by Ramakant A. Gayakwad, Prentice Hall of India Learning.
2. Modern Digital Electronics, (3^{rd} edition, 2005), by R.P. Jain, Tata Mc-Graw Hill

Reference Books:

1. Microelectronics, (2^{nd} edition,1999), by Jocob Millman and Arvin Grabel, Tata Mc-Graw Hill.
2. Digital Principles and Application, (6^{th} edition, 2006), by A. P. Malvino, D. P. Leach, Tata Mc-Graw Hill.

ITU402 DATA COMMUNICATION

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

Introduction: components, networks, protocols & standards, organizations, line configuration, topology transmission mode, categories of networks, internetworks, the model, function of layers, analog & digital signals, periodic & aperiodic signals, time & frequency domains.
Encoding & modulating: 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, Freq. division multiplexing, TDM multiplexing
Application**:** Telephone system, error detection & correction: types of errors, detection, VRC, longitudinal redundancy check, cyclic redundancy check, checksum, error correction.
Data link control: Line discipline, flow control, error control, 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, 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 : 01T + 02 P Total 03 Credit : 02
Evaluation Scheme : 50 ICA Total Marks :50

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

In Theory Syntax to implement the data structure in java & c should be explain.

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

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.

CSU405 OBJECT ORIENTED TECHNOLOGY 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 CSU403 and the list given is just a guideline.

1 Write a C++ program to implement a stack with its constructor and two member functions PUSH and POP
2 Write a C++ program to find product of two same numbers from 0 to 9 stored in an object array of 10 objects and then free the memory space occupied by an object array
3 Write a C++ program to overload minus operator as an unary and binary operator
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.

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.

ETU412 ANALOG AND DIGITAL IC'S LAB

Teaching Scheme: 02P **Total: 02** **Credit: 01**
Evaluation Scheme: 25 ICA + 25 ESE **Total Marks: 50**
Duration of ESE : 3Hrs.

Minimum eight experiments (minimum four from both the groups) shall be performed to cover entire curriculum of course ETU411. The list given below is just a guideline.

List:

Group A:

1. Measurement of op-amp parameters (IC 741).
2. Design and implement non-inverting amplifier and voltage follower using op-amp.
3. Design and implement inverting amplifier and differential amplifier using op-amp.
4. Design and implement an integrator and differentiator using op-amp.
5. Design and implement MMV / AMV using IC 741
6. Implement Schmitt trigger using IC 741 and calculate LTP and UTP.
7. Design and implement BMV using timer IC 555and measure voltage and current levels at stable state of BMV
8. Design and implement MMV / AMV using timer IC555.
9. Design and implement voltage regulator using IC723

Group B:

10. Study and verification of truth tables of basic/ derived/ universal logic gates.
11. Design and implementation of adders and subtractors using logic gates.
12. Design and implementation of binary-to-gray / gray-to-binary decoder using logic gates.
13. Design and implementation of 4-bit binary adder/subtractor and BCD adder using IC 7483.
14. Design and implementation of 2-bit magnitude comparator using logic gates, 8-bit magnitude comparator using IC 7485.
15. Design and implementation of 16-bit odd/even parity checker/ generator using IC 74180.
16. Design and implementation of encoder and decoder using logic gates and study of IC 7445 and IC 74147.
17. Study and verification of truth tables of flip-flop ICs.
18. Construction and verification of 4-bit ripple counter and Mod-10/Mod-12 ripple counter.
19. Design and implementation of 3-bit synchronous up/down counter.
20. Implementation of SISO, SIPO, PISO and PIPO shift registers using flip-flops.

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.

ITU403 DATA COMMUNICATION 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 ITU402 and the list given is just a guideline.

1. Asynchronous protocol

2. Synchronous protocol
3. Character oriented protocol
4. Bit Oriented protocols
5. Link access procedures
6. Packet switching
7. Message switching
8. Integrated services digital networks (ISDN)
9. Routing algorithms

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 Credit : 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 fundaments, Pipe ( ), Read ( ), Write ( ) system calls, Fork ( ) System call, lseek ( ) System call.

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.