ACADEMIC REGULATIONS
PROGRAM STRUCTURE
and
DETAILED SYLLABUS

Bachelor of Technology
(Computer Science and Engineering)

(Effective for the students admitted from the Academic Year 2014-15)

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Autonomous)

Gokaraju Rangaraju
Institute of Engineering and Technology, Hyderabad
Department of Computer Science and Engineering (B.Tech)
GR14 Regulations

Gokaraju Rangaraju Institute of Engineering and Technology, 2014 Regulations (GR14 Regulations) are given hereunder. These regulations govern the programmes offered by the Department of Computer Science and Engineering with effect from the students admitted to the programmes in 2014-15 academic year.

1. **Programme Offered:** The programme offered by the Department is B.Tech in Computer Science and Engineering, a four-year regular programme.

2. **Medium of Instruction:** The medium of instruction (including examinations and reports) is English.

3. **Admissions:** Admission to the B.Tech in Computer Science and Engineering Programme shall be made subject to the eligibility, qualifications and specialization prescribed by the State Government/University from time to time. Admissions shall be made either on the basis of the merit rank obtained by the student in the common entrance examination conducted by the Government/University or on the basis of any other order of merit approved by the Government/University, subject to reservations as prescribed by the Government/University from time to time.

4. **Programme Pattern:**
   a) Each Academic year of study is divided into two semesters.
   b) Minimum number of instruction days in each semester is 90.
   c) The total credits for the Programme is 200.
   d) All the registered credits will be considered for the calculation of the final percentage of marks.

5. **Award of B.Tech Degree:** A student will be declared eligible for the award of B.Tech Degree if he/she fulfills the following academic requirements:
   A) A student shall be declared eligible for the award of B.Tech degree, if he/she pursues the course of study and completes it successfully in not less than four academic years and not more than eight academic years.
   b) A student has to register for all 200 credits and secure all credits.

c) A student, who fails to fulfill all the academic requirements for the award of the degree within eight academic years from the date of admission, shall forfeit his/her seat in B.Tech course.
d) The degree of B.Tech in Computer Science and Engineering shall be conferred by Jawaharlal Nehru Technological University Hyderabad (JNTUH), Hyderabad, on the students who are admitted to the programme and fulfill all the requirements for the award of the degree.

6. Attendance Requirements:

a) A student shall be eligible to appear for the semester-end examinations if he/she puts in a minimum of 75% of attendance in aggregate in all the courses concerned in the semester.
b) Condonation of shortage of attendance in aggregate up to 10% (65% and above but less than 75%) in a semester may be granted. A committee headed by Dean, Academic Affairs shall be the deciding authority for granting the condonation.
c) Students who have been granted condonation shall pay a fee as decided by the Academic Council.
d) Shortage of Attendance more than 10% (attendance less than 65% in aggregate) shall in no case be condoned.
e) Students whose shortage of attendance is not condoned in any semester are detained and are not eligible to take their end examinations of that semester. They may seek re-registration for that semester when offered next with the academic regulations of the batch into which he/she gets re-registered.

7. Paper Setting, Evaluation of Answer Scripts, Marks and Assessment:

a) Paper setting and evaluation of the answer scripts shall be done as per the procedures laid down by the Academic Council from time to time.
b) Distribution and Weightage of Marks

S.No.		External	Internal	Total
1	Theory	70	30	100
2	Practical	50	25	75
3	Engineering Graphics	70	30	100
4	Industry Oriented Mini Project	50	25	75
5	Comprehensive Viva	100	-	100
6	Seminar	-	50	50
7	Project	150	50	200

c) Continuous Internal Evaluation and Semester End Examinations
The assessment of the student's performance in each course will be based on continuous internal evaluation and semester-end examinations. The marks for each of the component of assessment are fixed as shown in the following Table.

Assessment Procedure

S.No	Component of Assessment	Marks Allotted	Type of Assessment	Scheme of Examinations
1	Theory	30	Internal Exams & Continuous Evaluation	1) Two mid semester examinations shall be conducted for 20 marks each for duration of 2 hours. Average of the two mid exams shall be considered i) Subjective - 15 marks ii) Objective - 5 marks 2) Tutorials - 5 marks 3) Attendance - 5 marks
		70	Semester-end examination	The semester-end examination is for a duration of 3 hours
2	Practical	25	Internal Exams & Continuous Evaluation	1) Lab Internal :10 marks 2) Record : 5 marks 3) Continuous Assessment : 5 marks 4) Attendance : 5 marks
		50	Semester-end examination	The semester-end examination is for a duration of 3 hours.

d) Industry Oriented Mini Project: The Mini Project is to be taken up with relevance to Industry and is evaluated for 75 marks. Out of 75, 25 marks are for internal evaluation and 50 marks are for external evaluation. The supervisor continuously assesses the student for 15 marks (Attendance – 5 marks, Continuous Assessment – 5 marks, Report – 5 marks). At the

end of the semester, Mini Projects shall be displayed in the road show at the department level for the benefit of all students and staff and the same is to be evaluated by the Mini Project Review Committee for 10 marks. The Mini Project report shall be presented before Project Review Committee in the presence of External Examiner and the same is evaluated for 50 marks.
Mini Project Review Committee consists of HOD, Mini Project Coordinator and Supervisor.

e) Comprehensive Viva: The Comprehensive Viva shall be conducted by a Committee consisting of HOD and two senior faculty members of the department. The student shall be assessed for his/her understanding of various courses studied during the programme of study. The Viva-Voce shall be evaluated for 100 marks.

f) Seminar: For the seminar, the student shall collect information on a specialized topic and prepare a technical report and present the same to a Committee consisting of HOD, two senior faculty and the seminar coordinator of the department. The student shall be assessed for his/her understanding of the topic, its application and its relation with various courses studied during the programme of study for 50 marks.

g) Major Project: The project work is evaluated for 200 marks. Out of 200, 50 marks shall be for internal evaluation and 150 marks for the external evaluation. The supervisor assesses the student for 25 marks (Attendance – 5 marks, Continuous Assessment – 15 marks, Report – 5 marks). At the end of the semester, Projects shall be displayed in the road show at the department level for the benefit of all the students and staff and the same is to be evaluated by the Project Review Committee for 25 marks. The external evaluation for Project Work is a Viva-Voce examination which is conducted by the Project Review Committee in the presence of external examiner and is evaluated for 150 marks. Project Review Committee consists of HOD, Project Coordinator and Supervisor.

h) Engineering Graphics

- Two internal examinations, each is of 10 marks .The average of the two internal tests shall be considered for the award of marks.
- Submission of day to day work - 15 marks.
- Attendance - 5 marks.

8. Recounting of Marks in the End Examination Answer Books: A student can request for re-counting of his/her answer book on payment of a prescribed fee.

9. **Re-evaluation of the End Examination Answer Books:** A student can request for re-evaluation of his/her answer book on payment of a prescribed fee.

10. **Supplementary Examinations:** A student who has failed in an end semester examination can appear for a supplementary examination, as per the schedule announced by the College/Institute.

11. **Malpractices in Examinations:** Disciplinary action shall be taken in case of malpractices during Mid/ End-examinations as per the rules framed by the Academic Council.

12. **Academic Requirements:**
    a) A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory or laboratories if he/she secures not less than 35% of marks in the Semester-end Examination and a minimum of 40% of the sum total of the Internal Evaluation and Semester-end examination taken together.
    b) A student shall be promoted from II year to III year; or from III year to IV year only if he/she fulfills the academic requirements of minimum credits from the following examinations whether the candidate takes the examination or not.

Phase	Minimum Credits	No. of Examinations				
		I-I	I-II	II-I	II-II	III-I
II to III Year	37	2 Regular 1 Supply	1 Regular 1 Supply	1 Regular —	--- ---	--- —
III to IV Year	62	3 Regular 2 Supply	2 Regular 2 Supply	2 Regular 1 Supply	1 Regular 1 Supply	1 Regular

13. **Award of Class:** After a student satisfies all the requirements prescribed for the completion of the Degree and becomes eligible for the award of B.Tech Degree by Jawaharlal Nehru Technological University Hyderabad, he/she shall be placed in one of the following four classes (the marks awarded are from the aggregate marks secured for the 200 credits):

Class Awarded	% of Marks Secured
First Class with Distinction	Marks ≥ 70%
First Class	60% ≤ Marks < 70%
Second Class	50% ≤ Marks < 60%
Pass Class	40% ≤ Marks < 50%

14. **Withholding of Results:** If the student has not paid dues to the Institute/ University, or if any case of indiscipline is pending against him, the result of the student (for that Semester) may be withheld and he will not be allowed to go into the next Semester. The award or issue of the Degree may also be withheld in such cases.

15. **Transfer of Students from the Constituent Colleges of JNTUH or from other Colleges/ Universities:** Transfer of students from the Constituent Colleges of JNTUH or from other Colleges/ Universities shall be considered only on case-to-case basis by the Academic Council of the Institute.

16. **Transitory Regulations:** Students who have discontinued or have been detained for want of attendance, or who have failed after having undergone the Degree Programme, may be considered eligible for re-admission/re-registration to the same or equivalent subjects as and when they are offered.

17. **General Rules**
    a) The academic regulations should be read as a whole for the purpose of any interpretation.
    b) In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Academic Council is final.
    c) In case of any error in the above rules and regulations, the decision of the Academic Council is final.
    d) The college may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the college.

Academic Regulations GR14 for B.Tech (Lateral Entry)

(Effective for the students admitted into II year from the Academic Year 2015-16)

1. All regulations as applicable for B.Tech Four year degree programme (Regular) will hold good for B.Tech. (Lateral Entry Scheme) except for the following rules:

a) Pursued a programme of study for not less than three academic years and not more than six academic years(para2(a))

b) Registered for 150 credits and secured 150 credits. The marks obtained in all 150 credits shall be considered for the calculation of the final percentage of marks (para2(b))

c) Students, who fail to fulfill all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in B.Tech programme (para2(c))

2. Academic Requirements

A student shall be promoted from III year to IV year only if he/she fulfills the academic requirement of minimum credits from the following examinations whether the candidate takes the examination or not (para 12(b)).

Phase	Minimum Credits	No. of Examinations		
		II-I	II-II	III-I
III to IV Year	37	2 Regular 1 Supply	1 Regular 1 Supply	1 Regular —

3. Award of Degree or Class

After a student satisfies all the requirements prescribed for the completion of the Degree and becomes eligible for the award of B. Tech Degree by Jawaharlal Nehru Technological University Hyderabad, he/she shall be placed in one of the following four classes (the marks awarded are from the aggregate marks secured for the 150 credits):

Class Awarded	% of Marks Secured
First class with Distinction	Marks ≥ 70%
First class	60% ≤ Marks < 70%
Second class	50% ≤ Marks < 60%
Pass class	40% ≤ Marks < 50%

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
B.Tech (CSE) PROGRAMME STRUCTURE

I B.Tech (CSE) **I Semester**

Group	Sub-Code	Subject	L	T	P	Credits	Hours	Marks
BS	GR14A1001	Linear Algebra and Single Variable Calculus	2	1	-	3	4	100
BS	GR14A1002	Advanced Calculus	2	1	-	3	4	100
BS	GR14A1007	Engineering Physics	2	1	-	3	4	100
ES	GR14A1009	Computer Programming	2	1	-	3	4	100
HS	GR14A1005	English	2	1	-	3	4	100
ES	GR14A1019	Fundamentals of Electronics Engineering	3	1	-	4	5	100
ES	GR14A1025	Engineering Workshop			2	2	4	75
ES	GR14A1027	Computer Programming lab			2	2	4	75
BS	GR14A1029	Engineering Physics lab			2	2	4	75
		Total	**13**	**6**	**6**	**25**	**37**	**825**

I B.Tech (CSE) **II Semester**

Group	Sub-Code	Subject	L	T	P	Credits	Hours	Marks
BS	GR14A1003	Transform Calculus and Fourier Series	2	1	-	3	4	100
BS	GR14A1004	Numerical Methods	2	1	-	3	4	100
BS	GR14A1008	Engineering Chemistry	2	1	-	3	4	100
ES	GR14A1010	Data Structures	2	1	-	3	4	100
ES	GR14A1023	Engineering Graphics	1	-	2	3	5	100
ES	GR14A1018	Basic Electrical Engineering	3	1	-	4	5	100
HS	GR14A1024	Business Communication and Soft Skills			2	2	4	75
ES	GR14A1026	IT Workshop			2	2	4	75
BS	GR14A1030	Engineering Chemistry lab			2	2	4	75
		Total	**12**	**5**	**8**	**25**	**38**	**825**

II B.Tech (CSE) — I Semester

Group	Sub-Code	Subject	L	T	P	Credits	Hours	Marks
BS	GR14A2011	Probability and Statistics	2	1	-	3	4	100
PC	GR14A2062	Mathematical Foundation of Computer Science	3	1	-	4	5	100
PC	GR14A2063	Database Management Systems	3	1	-	4	5	100
PC	GR14A2064	Advanced Data structures through C++	3	1	-	4	5	100
PC	GR14A2065	Digital Logic Design	3	1	-	4	5	100
PC	GR14A2066	Advanced Data structures through C++ Lab	-	-	2	2	4	75
PC	GR14A2067	Databases Lab	-	-	2	2	4	75
PC	GR14A2068	Digital Logic Design Lab	-	-	2	2	4	75
		Total	**-**	**-**	**-**	**25**	**36**	**725**
MC	GR14A2001	Environmental Science	-	-	-	0	2	100
		Total	**14**	**5**	**6**	**25**	**38**	**825**

II B.Tech (CSE) — II Semester

Group	Sub-Code	Subject	L	T	P	Credits	Hours	Marks
HS	GR14A2104	Managerial Economics and Financial Analysis	2	1	-	3	4	100
PC	GR14A2069	Operating Systems	3	1	-	4	5	100
PC	GR14A2070	Object Oriented Programming through Java	3	1	-	4	5	100
PC	GR14A2071	Formal Languages and Automata Theory	3	1	-	4	5	100
PC	GR14A2076	Computer Organization	3	1	-	4	5	100
PC	GR14A2072	Object Oriented Programming through Java Lab	-	-	2	2	4	75
PC	GR14A2073	Operating Systems Lab	-	-	2	2	4	75
	GR14A2074	Advanced Databases Lab	-	-	2	2	4	75
		Total	**-**	**-**	**-**	**25**	**36**	**725**
MC	GR14A2002	Value Education and Ethics			-	0	2	100
		Total	**14**	**5**	**6**	**25**	**38**	**825**

III B.Tech (CSE) — I Semester

Group	Sub-Code	Subject	L	T	P	C	H	Marks
ES	GR14A3050	Unix and Shell Programming	3	1		4	5	100
ES	GR14A3051	Compiler Design	3	1		4	5	100
ES	GR14A2055	Microcontrollers	3	1		4	5	100
ES	GR14A3052	Computer Networks	3	1		4	5	100
ES	GR14A3053	Principles of Programming Languages	3	1		4	5	100
ES	GR14A2059	Microcontrollers Lab			2	2	4	75
ES	GR14A3054	Advanced Java Programming Lab			2	2	4	75
ES	GR14A3055	Unix Programming & Compiler Design Lab			2	2	4	75
		Total	**15**	**5**	**6**	**26**	**37**	**725**

III B.Tech (CSE) — II Semester

Group	Sub-Code	Subject	L	T	P	C	H	Marks
ES	GR14A3056	Design and Anaysis of Algorithms	3	1		4	5	100
ES	GR14A3057	Software Engineering	3	1		4	5	100
ES	GR14A3058	Information Security	2	1		3	4	100
ES	GR14A3059	Web Technologies	3	1		4	5	100
	Open Elective		3	1		4	5	100
ES	GR14A3060	Scripting Languages						
ES	GR14A3061	Artificial Intelligence and Neural Networks						
ES	GR14A3062	Multicore Computing and Architecture						
HS	GR14A3100	Advanced English Communication Skills Lab			2	2	4	75
SPW	GR14A3101	Industry Oriented Mini Project			2	2	4	75
ES	GR14A3063	Web Technologies Lab			2	2	4	75
		Total	**14**	**5**	**6**	**25**	**36**	**725**

IV B.Tech (CSE) — I Semester

Group	Sub-Code	Subject	L	T	P	C	H	Marks
ES	GR14A3065	Object Oriented Analysis and Design	3	1		4	5	100
ES	GR14A4077	Software Testing Methodologies	3	1		4	5	100
HS	GR14A3102	Management Science	3	1		4	5	100
		Elective -I	**3**	**1**		**4**	**5**	**100**
ES	GR14A4078	Mobile Computing and Applications						
ES	GR14A4079	Cloud Computing						
ES	GR14A4080	Natural Language Processing						
		Elective -II	**3**	**1**		**4**	**5**	**100**
ES	GR14A4087	Business Intelligence						
ES	GR14A4088	Fundamentals of Image Processing						
ES	GR14A3068	Distributed Databases and Systems						
ES	GR14A4083	Advanced Network Programming Lab			2	2	4	75
ES	GR14A4084	Scripting Languages Lab			2	2	4	75
ES	GR14A4085	Object Oriented Analysis and Design Lab			2	2	4	75
		TOTAL	**15**	**5**	**6**	**26**	**37**	**725**

IV B.Tech (CSE) — II Semester

Group	Sub-Code	Subject	L	T	P	C	H	Marks
ES	GR14A3067	Datawarehousing and Datamining	2	1		3	4	100
		Elective -III	**2**	**1**		**3**	**4**	**100**
ES	GR14A4086	Real Time Operating Systems						
ES	GR14A4091	E-Commerce						
ES	GR14A4082	Mobile Application Development						
		Elective -IV	**2**	**1**		**3**	**4**	**100**
ES	GR14A4089	Cyber Security						
ES	GR14A4090	Design Patterns						
ES	GR14A4097	Essentials of Big Data Analytics						
ES	GR14A4092	Datawarehousing and Datamining Lab			2	2	4	75
SPW	GR14A4142	Comprehensive Viva			2	2	4	50
SPW	GR14A4143	Seminar			2	2	4	100
SPW	GR14A4144	Major Project			10	10	12	200
		TOTAL	**6**	**3**	**16**	**25**	**36**	**725**

I-Year

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

LINEAR ALGEBRA AND SINGLE VARIABLE CALCULUS

Course Code: GR14A1001 L:2 T:1 P:0 C:3
I Year I Semester

Unit-I

Linear Algebra and Matrix eigen value problem: Rank of a matrix,Consistency of a system of linear equations-Pseudo inverse of a matrix-Condition number of a matrix-Approximate solution of an over determined system of linear equations using the pseudo inverse-Solution of a system of homogeneous linear equations.

Vector norms, Linear dependence of vectors, Gram-Schmidt orthogonalization of vectors, Matrix norms.Determination of eigen values and eigen vectors of a square matrix-Properties of eigen values and eigen vectors of real and complex matrices.

Unit-II

Matrix factorizations and Quadratic Forms: Diagonalization of a matrix-Orthogonal diagonalization of symmetric matrices-Computation of matrix powers- Computation of Singular value decomposition - QR factorization.

Quadratic forms-Definiteness of a quadratic form-Rank, index and signature of a quadratic form- Reduction of a quadratic form into a canonical form by Lagrange's method and by an orthogonal transformation.

Unit-III

Differential Calculus of functions of a single variable: Mean value theorems (Rolles', Lagrange's, Cauchy's, Taylor's and Maclaurin's theorems Geometrical Interpretation without proof) - Approximation of functions by Taylor's and Maclaurin's theorems-Series expansion of functions.

Unit-IV

Linear differential equations of the first order and their applications: Formation of ODE-Methods to solve first order LDE (exact, reducible to exact, linear and Bernoulli equations).

Applications - Growth and decay models - Newton's law of cooling - Applications to electrical circuits (LR and RC circuits) - Geometrical applications - Orthogonal trajectories.

Unit-V

Linear differential equations of the higher order and applications: Equations

with constant coefficients-Particular integrals for functions of the type e^{ax}, x^n, sinax, cos ax, e^{ax}.V(x) Exponential shift - Method of variation of parameters.

Applications - Deflection of beams, Simple harmonic motion (simple pendulum, spring-mass systems) and RLC circuits.

Teaching Methodologies

1. Tutorial sheets uploaded in website
2. NPTEL video lectures
3. MATLAB exercises for visualization

Text Books

1. Advanced Engineering Mathematics: R.K.Jain and S.R.K.Iyengar-Narosa Publishing House
2. Advanced Engineering Mathematics: Erwin Kreyszig, Wiley.
3. Higher Engineering Mathematics: B.S.Grewal-Khanna Publications.

References

1. Introduction to Linear Algebra-Gilbert Strang
2. Schaum's outline series on Linear Algebra
3. GRIET reference manual

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED CALCULUS

Course Code: GR14A1002 L:2 T:1 P:0 C:3
I Year I Semester

Unit-I

Differential Calculus of functions of several variables and Function Optimization: Partial differentiation - Hessian matrix-Total differentiation-Jacobians. Optimization of functions of several variables without constraints-Constrained optimization of functions of several variables with equality constraints-The Lagrange's multiplier method.

Unit-II

Curve tracing principles and Applications of integration: Basic principles of tracing Cartesian, polar and parametric curves -Applications of the definite integral to evaluate arc lengths, surface areas of revolution and volumes of revolution.

Unit-III

Multiple integrals and applications: Evaluation of Double integrals in Cartesian and polar coordinates-Changing the order of integration- Change of variables - Evaluation of triple integrals in Cartesian, cylindrical and spherical polar coordinates. Application of multiple integrals to evaluate plane areas and volumes of solids.

Unit-IV

Vector Calculus: Vector differentiation in Cartesian coordinates-Gradient, Divergence and Curl and their physical interpretation-Directional derivatives-Angle between surfaces, Vector Identities, Irrotational fields and scalar potentials. Vector integration-Evaluation of line integrals-Work done by conservative fields-Surface integrals.

Unit-V

Vector Field theorems: Green's theorem in the plane-Divergence theorem of Gauss-Stoke's theorem (Without Proofs).

Teaching Methodologies

1. Tutorial sheets uploaded in website
2. NPTEL video lectures
3. MATLAB exercises for visualization

Text Books

1. Advanced Engineering Mathematics: R.K.Jain and S.R.K.Iyengar Narosa Publishing House
2. Schaum's outline series on Vector Analysis
3. Higher Engineering Mathematics: B.S.Grewal-Khanna Publications

Reference Books

1. Advanced Engineering Mathematics: Erwin Kreyszig-Wiley
2. Calculus and Analytical Geometry-Thomas & Finney-Narosa
3. Higher Engineering Mathematics: B.S.Grewal-Khanna Publications

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENGINEERING PHYSICS

Course Code: GR14A1007 L:2 T:1 P:0 C:3
I Year I Semester

Unit-I

Crystal Structures: Lattice points, Space lattice, Basis, Bravias lattice, unit cell and lattice parameters, Seven Crystal Systems with 14 Bravias lattices , Atomic Radius, Co-ordination Number and Packing Factor of SC, BCC, FCC, Miller Indices, Inter planer spacing of Cubic crystal system.

Defects in Crystals: Classification of defects, Point Defects: Vacancies, Substitution, Interstitial, Concentration of Vacancies, Frenkel and Schottky Defects, Edge and Screw Dislocations (Qualitative treatment), Burger's Vector.

Principles of Quantum Mechanics: Waves and Particles, de Broglie Hypothesis, Matter Waves, Davisson and Germer's Experiment, Heisenberg's Uncertainty Principle, Schrodinger's Time Independent Wave Equation-Physical Significance of the wave Function-Particle in One Dimensional Potential Box.

Unit-II

Electron Theory of Metals: Classical free electron theory, Derivation of Ohm's law, Mean free path, Relaxation time and Drift velocity, Failures of Classical free electron theory, Quantum free electron theory, Fermi-Dirac distribution, Fermi energy, Failures of Quantum free electron theory.

Band Theory of Solids: Electron in a periodic potential, Bloch Theorem, Kronig-Penny Model(Qualitative Treatment), origin of Energy Band Formation in Solids, Classification of Materials into Conductors, Semi Conductors & Insulators, Effective mass of an Electron.

Semiconductor Physics: Intrinsic Semiconductors and Carrier Concentration, Extrinsic Semiconductors and Carrier Concentration, Fermi Level in Intrinsic and Extrinsic Semiconductors, Hall Effect and Applications.

Unit-III

Dielectric Properties: Electric Dipole, Dipole Moment, Dielectric Constant, Polarizability, Electric Susceptibility, Displacement Vector, Types of polarization: Electronic, Ionic and Orientation Polarizations and Calculation of Polarizabilities (Electronic & Ionic) -Internal Fields in Solids, Clausius -Mossotti Equation, Piezo-electricity and Ferro- electricity.

Magnetic Properties: Magnetic Permeability, Magnetic Field Intensity, Magnetic Field Induction, Intensity of Magnetization, Magnetic Susceptibility, Origin of Magnetic Moment, Bohr Magnetron, Classification of Dia, Para and Ferro Magnetic Materials on the basis of Magnetic Moment, Hysteresis Curve on the basis of Domain Theory of Ferro Magnetism, Soft and Hard Magnetic Materials, Ferrites and their Applications.

Unit-IV

Lasers: Characteristics of Lasers, Spontaneous and Stimulated Emission of Radiation, Meta-stable State, Population Inversion, Einstein's Coefficients and Relation between them, Ruby Laser, Helium-Neon Laser, Semiconductor Diode Laser, Applications of Lasers.

Fiber Optics: Structure and Principle of Optical Fiber, Acceptance Angle , Numerical Aperture, Types of Optical Fibers (SMSI,MMSI,MMGI), Attenuation in Optical Fibers, Application of Optical Fibers, Optical fiber Communication Link with block diagram.

Unit-V

Nanotechnology: Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Bottom-up Fabrication: Sol-gel Process; Top-down Fabrication: Chemical Vapor Deposition, Physical, Chemical and Optical properties of Nano materials, Characterization (SEM, EDAX), Applications.

Teaching Methodologies

1. Power Point Presentation.
2. Assignments uploaded in website.

Text Books

1. **Engineering Physics:** P.K.Palanisamy, Scitech Publishers.
2. **Engineering Physics:** S.O.Pillai, New age International.
3. **Applied Physics:** T.Bhima Sankaram,G Prasad,BS Publications

Reference Books

1. **Solid State Physics:** Charles Kittel, Wiley & Sons (Asia) Pte Ltd.
2. **Fundamentals of physics:** Halliday, Resnick, Walker.
3. **Optical Electronics:** A.J Ghatak and K.Thyagarajan, Cambridge University Press.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPUTER PROGRAMMING

Course Code: GR14A1009 L:2 T:1 P:0 C:3
I Year I Semester

Unit-I

Introduction to Computers: Computer Hardware and Software, System Software, Programming Languages, Program Development steps, Algorithms, Flowcharts.

Introduction to C: History of C, Structure of C-Program, Keywords, Identifiers, Data types, Constants, Variables, Operators, Expressions, Precedence and order of evaluation, Type Conversion and Type Casting .

Unit-II

Managing I/O: Input-Output statements, Formatted I/O.
Decision making statements: if, if-else, if-else-if, nested if, switch.
Iterative Statements: while, do- while, for**.**
Unconditional statements: break, continue, goto.

Unit-III

Arrays: Introduction, One-Dimensional arrays, Declaring and Initializing arrays, Multidimensional arrays

Strings: Introduction to Strings, String operations with and without using String Handling functions, Array of Strings.

Unit-IV

Functions: Introduction, Function definition, Function declaration, Function Calls, Return values and their types, Categories of Functions, Nested Functions, Recursion, Storage Classes, Passing arrays to Functions.

Pointers: Pointers and addresses, Pointer expressions and Pointer arithmetic, Pointers and Functions, void pointer, Pointers and Arrays, Pointers and Strings, Array of pointers, Pointers to Pointers.

Dynamic memory allocation: malloc, calloc, realloc, free.

Unit-V

Structures: Basics of Structures, Nested Structures, Arrays of Structures, Arrays

within Structures, Structures and Functions, Pointers and Structures, Self-referential Structures, Unions.

Files: Introduction, Types of Files, File Access Functions, I/O on Files, Random Access to Files, Error Handling, Command Line Arguments.

Teaching Methodologies

1. White board and marker
2. Power point presentations

Text Books

1. The C Programming Language, BRIANW. KERNIGHAN Dennis M.Ritchie, Second Edition, PHI.
2. Computer Programming and Data structures by E Balaguruswamy, published by Mc GrawHill.
3. Programming in C, Ashok N Kamthane, 2nd edition, Pearson Publication.

Reference Books

1. Programming in C, Pradip Dey, Manas Ghosh, Second Edition, Oxford University Press.
2. Let Us C, Yashwanth Kanetkar, 10th Edition, BPB Publications.
3. C& Data structures, P.Padmanabham, B.S. Publications.
4. Computer science, A structured programming approach using C, B.A. Forouzan and R.F. Gilberg, Third edition, Thomson.
5. Programming with problem solving, J.A.Jones & K.Harrow, Dreamtech Press.
6. Programming in C, Stephen G.Kochan, III Edition, Pearson Education.
7. Problem solving and program design in C, Jeri. R. Hanly, Elliot B.Koffman, Pearson Publication.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENGLISH

Course Code: GR14A1005 L:2 T:1 P:0 C:3
I Year I Semester

Unit-I

1. Chapter entitled Sir C.V. Raman: A Path breaker in the saga of Indian Science from "Enjoying Every day English", Published by Sangam Books, Hyderabad.
2. Chapter Entitled Mother Teresa from "Inspiring Speeches and Lives", Published by Maruthi Publications, Guntur

Tutorial-1: Present a small biographical sketch of an inspiring personality
Tutorial-2: Prepare an essay on "Charity begins at home."

Unit-II

Grammar & Vocabulary Development: Articles: Types of Articles and their usages; Tense and Aspect; Subject and Verb Agreement; Prepositions

Vocabulary Development: Synonyms and Antonyms; One-word substitutes; prefixes and suffixes; words often confused; idioms and phrases.

Speaking & Writing skills: Information transfer: verbal to graphical presentation and from graphical presentation to verbal. Public Speaking: Body Language, Presentation Skills and its Features.

Tutorial-3: Worksheet on the usage of Tenses, Articles and Prepositions
Tutorial-4: Exercises on vocabulary
Tutorial-5: Interpretation of data from different formats

Unit-III

1. Chapter Entitled The Connoisseur from "Enjoying Every day English", Published by Sangam Books, Hyderabad
2. Chapter Entitled Sam Pitroda from "Inspiring Speeches and Lives", Published by Maruthi Publications, Guntur.

Tutorial-5: Story Analysis
Tutorial-6: Present a person who bears risk taking ability to solve the problems of people/society
Tutorial-7: Describe a strange event that occurred in your life

Unit-IV

1. Chapter Entitled Bubbling Well Road from "Enjoying Every day English", Published by Sangam Books, Hyderabad
2. Chapter Entitled Amartya Kumar Sen from "Inspiring Speeches and Lives", Published by Maruthi Publications, Guntur

Tutorial-9: Oral Presentation on "Does the quality of Unity in Diversity helped us to acquaint easily with the trends of globalization?"

Tutorial-10: Develop an essay "The ways to impart moral and ethical values amongst the students."

Unit-V

1. Chapter entitled The Cuddalore Experience from "Enjoying Every day English", Published by Sangam Books, Hyderabad
2. Chapter Entitled Martin Luther King Jr. (I have a dream) from "Inspiring Speeches and Lives", Published by Maruthi Publications, Guntur

Tutorial-11: Presentation on "The possible ways to educate students about Disaster Management."

Tutorial-12: Write or present "Is every present leader was a follower?"

Text Books

1. Enjoying Every day English by A. Rama Krishna Rao- Sangam Books
2. Inspiring Speeches and Lives by Dr.B. Yadava Raju, Dr.C. Muralikrishna, Maruthi Publications.

Reference Books

1. Murphy's English Grammar with CD, Murphy, Cambridge University Press.
2. Effective Technical Communication, M. Ashraf Rizvi, Tata McGraw Hill.
3. Technical Communication, Meenakshi Raman, Sangeeta Sharma, Oxford higher Education.
4. English for Engineers Made Easy, Aeda Abidi, Ritu Chaudhry, Cengage Learning.
5. Communicate or Collapse, Pushp Latha, Sanjay Kumar, PHI Learning Pvt.Ltd.
6. Communication Skills, Sanjay Kumar, Pushp Latha, Oxford Higher Education.
7. A Hand Book for Engineers, Dr. P. Eliah, BS Publications

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

FUNDAMENTALS OF ELECTRONICS ENGINEERING

Course Code: GR14A1019 L:3 T:1 P:0 C:4
I Year I Semester

Unit-I

Semiconductors and pn Junction Diode: Semiconductor Physics: n and p type semiconductors, Mass Action Law, Continuity Equation, Hall Effect, Fermi level in intrinsic and extrinsic semiconductors, Open- circuited p-n junction, Energy band diagram of PN diode, forward bias and reverse bias, Current components in p-n diode, Law of junction, Diode equation, Volt-ampere characteristics of p-n diode, Temperature dependence of V-I characteristic, Transition and Diffusion capacitances, Breakdown Mechanisms in Semiconductor Diodes (Avalanche and Zener breakdown), Zener diode characteristics,

Unit-II

Diode Applications, Special Diodes: Half wave rectifier, ripple factor, full wave rectifier, Harmonic components in a rectifier circuit, Inductor filter, Capacitor filter, L- section filter, Π- section filter, and comparison of various filter circuits in terms of ripple factors, Simple circuit of a regulator using zener diode, Series and Shunt voltage regulators

Special Diodes: Characteristics of Tunnel Diode, Varactor Diode, LED, LCD.

Unit-III

Bipolar Junction Transistor: Junction transistor, Transistor current components, Transistor as an amplifier, Transistor construction, Detailed study of currents in a transistor, Input and Output characteristics of transistor in Common Base, Common Emitter, and Common collector configurations, Relation between Alpha and Beta and Gamma, typical transistor junction voltage values,

Junction Field Effect Transistors (JFET): JFET characteristics (n and p channels), Small signal model of JFET, MOSFET characteristics (Enhancement and depletion mode), Introduction to SCR and UJT.

Unit-IV

Biasing and stabilization : BJT biasing, DC equivalent model, criteria for fixing operating point, Fixed bias, Collector to base bias, Self bias techniques for stabilization, Stabilization factors, Compensation techniques, Compensation against variation in VBE and Ico, Thermal run away, Thermal stability.

Unit-V

Amplifiers: Small signal low frequency transistor amplifier circuits: h-parameter representation of a transistor, Analysis of single stage transistor amplifier using h-parameters: voltage gain, current gain, Input impedance and Output impedance. Comparison of transistor configurations in terms of Ai, Ri, Av, Ro.

Teaching Methodologies

- Power Point presentations
- Tutorial Sheets
- Assignments
- Lab experiments with Multisim software

Text Books

1. David A. Bell; Electronic Devices and Circuits, Oxford University Press, 5th edition, 2008.
2. R.L. Boylestad and Louis Nashelsky; Electronic Devices and Circuits, Pearson/Prentice Hall, 9th Edition, 2006.

Reference Books

1. T.F. Bogart Jr J.S.Beasley and G.Rico; Electronic Devices and Circuits – Pearson Education, 6th edition, 2004.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENGINEERING WORKSHOP

Course Code: GR14A1025 L:0 T:0 P:2 C:2
I Year I Semester

Unit-I

Carpentry Shop – 1:

1.1. Introduction to various types of wood such as Teak, Mango, Sheesham, etc. (Demonstration and their identification).

1.2. Demonstration, function and use of commonly used hand tools. Care, maintenance of tools and safety measures to be observed.
Job I Marking, sawing, planning and chiselling & their practice

1.3. Introduction to various types of wooden joints, their relative advantages and uses.
Job II Preparation of half lap joint
Job III Preparation of Mortise and Tenon Joint

1.4. Safety precautions in carpentry shop.

Unit-II

Fitting Shop – 2:

2.1. Introduction to fitting shop tools, common materials used in fitting shop.

2.2. Description and demonstration of simple operation of hack-sawing, demonstration and description of various types of blades and their specifications, uses and method of fitting the blade.
Job I Marking of job, use of marking tools and measuring instruments.
Job II Filing a dimensioned rectangular or square piece of an accuracy of + 0.5 mm
Job III Filing practice (production of flat surfaces). Checking by straight edge.
Job IV Making a cutout from a square piece of MS Flat using hand hacksaw such as T-fit and V-fit

2.3. Care and maintenance of measuring tools like callipers, steel rule, try square.

Unit-III

House wiring – 3:

3.1 Study, demonstration and identification of common electrical materials such as wires, cables, switches, fuses, PVC Conduits.

3.2 Study of electrical safety measures and demonstration about use of protective devices such as fuses, and relays including earthing.
Job I I dentification of phase, neutral and earth of domestic appliances

and their connection to two pin/three pin plugs.
Job II Preparation of a house wiring circuit on wooden board using fuse, switches, socket, holder, ceiling rose etc. in PVC conduit and PVC casing and capping wiring system.
Job III Two lamps in series and parallel connection with one way switch
Job IV Two lamps in series and one lamp in parallel connection with one way switch.
Job V Stair case lamp connection with two way switch.

Unit-IV

Tin- smithy – 4:

4.1 Introduction to tin -smithy shop, use of hand tools and accessories e.g. different types of hammers, hard and soft mallet, sheet and wire gauge, necessary allowance required during job fabrication, selection of material and specifications.
4.2 Introduction and demonstration of hand tools used in tin -smithy shop.
4.3 Introduction and demonstration of various raw materials used in sheet metal shop e.g. M.S. sheet, galvanized-iron plain sheet, galvanised corrugated sheet, aluminium sheets etc.
4.4. Preparation of a rectangle tray and open scoop/ funnel.

Reference Books

1. Workshop Technology I,II,III, by S K Hajra, Choudhary and A K Chaoudhary. Media Promoters and Publishers Pvt. Ltd., Bombay
2. Workshop Technology by Manchanda Vol. I,II,III India Publishing House, Jalandhar.
3. Manual on Workshop Practice by K Venkata Reddy, KL Narayana et al; MacMillan India Ltd.
4. Basic Workshop Practice Manual by T Jeyapoovan; Vikas Publishing House (P) Ltd.,New Delhi
5. Workshop Technology by B.S. Raghuwanshi, Dhanpat Rai and Co., New Delhi.
6. Workshop Technology by HS Bawa, Tata McGraw Hill Publishers, New Delhi.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPUTER PROGRAMMING LAB

Course Code: GR14A1027 L:0 T:0 P:2 C:2
I Year I Semester

Task- I

a) The heights of three students are 165, 148, 154 cm. respectively. Write a C program to sort the heights of the students in descending order.

b) Write a C program to find the roots of a quadratic equation using if-else.

c) The program should request the user to input two numbers and display one of the following as per the desire of user.

(a) Sum of numbers

(b) Difference of numbers

(c) Product of the numbers

(d)Division of the numbers.

Write a C program using switch statement to accomplish the above task.

d) In a mathematical number sequence let the first and second term in the sequence are 0 and 1. Subsequent terms are formed by adding the preceding terms in the sequence. Write a C program to generate the first 10 terms of the sequence.

Task-II

a) Write a C program to construct pyramid of numbers.

b) The reliability of an electronic component is given by reliability $r=e^{-\lambda t}$ where λ is the component failure rate per hour and t is the time of operation in hours. Determine the reliability at various operating times from 0 to 3000 hours by plotting a graph using a C program. The failure rate λ is 0.001. Plot the graph with a special symbol.

c) Write a C program to accept the date of birth and the current date to find the age of the person . The output should specify the age of a person in terms of number of years, months and days.

Task- III

a) Write a C program to calculate the following Sum: $Sum=1-x^2/2!+x^4/4!-x^6/6!+x^8/8!-x^{10}/10!$

b) For a certain electrical circuit with an induction (L) and Resistance (R) , the damped natural frequency is given by $f=\sqrt{(1/LC - R^2/4C^2)}$. Write a C

program to calculate the frequency for different values of C starting from 0.01 to 0.1.

c) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

Task - IV

a) Write a C program to find both the largest and smallest number in a list of integers.

b) Write a C Program to search whether a given number is present in set of integers

c) Write a C Program to sort a given list of integers.

Task - V

a) Write a C program to count the lines, words and characters in a given text.

b) Write a C program to sort the names of 5 students in the alphabetical order.

Ex: Rita, Sneha, Priti, Briya, kitti as Briya , Kitti, Priti, Rita, Sneha

c) Write a C program to print all the rotations of a given string.

Ex: Rotations of the string "NEWS" are NEWS EWSN WSNE SNEW

Task - VI

a) Write a C program to perform the following operations:
i) To insert a sub-string in a given main string at a given position.
ii) To delete n Characters from a given position in a given string.

b) Write a C program to determine if the given string is a palindrome or not?

Task - VII

Write a C program that uses functions to perform the following:

i) Transpose of a matrix
ii) Addition of Two Matrices
iii) Multiplication of Two Matrices

Task - VIII

Write C programs that use both recursive and non-recursive functions

i) To find the factorial of a given integer.
ii) To print the Fibonacci sequence
iii)To find the GCD (greatest common divisor) of two given integers.

Task- IX

a) Using pointers, write a function that receives a character string and a character as argument and deletes all occurrences of this character in the string.

b) Write a function using pointer parameter that compares two integer

arrays to see whether they are identical. The function returns 1 if they are identical, 0 otherwise.

Task -X

Write a C program that uses functions to perform the following operations on two complex numbers

i) Addition
ii) Subtraction
iii) Multiplication
iv) Division
(Note: represent complex number using a structure.)

Task-XI

a) Write a c program which accepts employee details like (outer structure : name, employid, salary and (inner structure : area, street number, houseno)).Display the employee names and id belonging to a particular area.

b) Let us suppose that a hotel consists of name, address, average room charge and number of rooms. Then write a function to print out hotels with room charges less than a given value.(structures and functions)

Task - XII

a) Write a C Program to display the contents of a file.

b) Write a C Program merging of two files in a single file.

c) Write a C Program to append data into a file.

Task - XIII

a) Write a C program which copies one file to another.

b) Write a C program to reverse the first n characters in a file.
(Note : The file name and n are specified on the command line.)

Task-XIV

a) Write a C program to develop Tic Tac Toe game

b) Write a C program to solve Towers of Hanoi

Text Books

1. Programming in C, Ashok N Kamthane, 2nd edition, Pearson Publication.
2. The C Programming Language, BRIANW. KERNIGHAN Dennis M.Ritchie, Second Edition, PHI.
3. Computer Programming and Data structures by E Balaguruswamy, published by Mc GrawHill.

Reference Books

1. Programming in C, Pradip Dey, Manas Ghosh, Second Edition, Oxford University Press.
2. Let Us C, Yashwanth Kanetkar, 10th Edition, BPB Publications.
3. C& Data structures, P.Padmanabham, B.S. Publications.
4. Computer science, A structured programming approach using C, B.A. Forouzan and R.F. Gilberg, Third edition, Thomson.
5. Programming with problem solving, J.A.Jones & K.Harrow, Dreamtech Press.
6. Programming in C, Stephen G.Kochan, III Edition, Pearson Education.
7. Problem solving and program design in C, Jeri. R. Hanly, Elliot B. Koffman, Pearson Publication.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENGINEERING PHYSICS LAB

Course Code: GR14A1029 L:0 T:0 P:2 C:2
I Year I Semester

List of Experiments

` 1. Determine the energy gap of a given semiconductor.
2. Calculate the energy loss in a given Ferro magnetic material by plotting B-H curve.
3. Calculate the Numerical Aperture of a given optical fiber.
4. Determine the Dielectric constant and Curie temperature of PZT material.
5. Calculate the Acceptance angle of a given optical fiber.
6. Draw V-I & L-I Characteristics of LASER diode.
7. Determine the bending losses in a given optical fibers.
8. Determine the Air-gap losses in a given optical fibers.
9. Determine the Hall Coefficient in Ge semiconductor by using Hall Experimental setup.
10. Determine the carrier concentration, mobility of charge carrier in Ge semiconductor.
11. Measure Ac voltage and frequency through CRO.
12. Measure Resistance and Capacitance by using digital multimeter.
13. Diffraction Grating.
14. Newtons Ring.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

TRANSFORM CALCULUS AND FOURIER SERIES

Course Code: GR14A1003 L:2 T:1 P:0 C:3
I Year II Semester

Unit-I

Improper Integrals and Beta, Gamma Functions: Beta and Gamma functions – Their properties – Evaluation of improper integrals in terms of Beta and Gamma functions.

Unit-II

Laplace Transform: Definition and existence of the Laplace Transform-Elementary functions-Properties of the Laplace transform-Convolution integral - Convolution theorem-Heaviside's unit step-function-Dirac delta function.

The inverse Laplace transform-Properties-Method of partial fractions-Heaviside's inversion formula-Inversion by convolution theorem.
Application of the Laplace transform to solve initial value problems and boundary value problems in ODE. Solution of a system of linear differential equations-Solution of problems in electrical circuits by Laplace transforms method.

Unit-III

Z-Transform and Fourier series: Definition-Z transform of elementary sequences-Properties- The inverse Z Transform, Application of Z transform to solve difference equations Definition of orthogonal functions-The concept of Weight function-Fourier series of periodic functions- Fourier expansion of periodic functions-Half range Fourier series expansions.

Unit-IV

Fourier Transform: Exponential Fourier series-The continuous one dimensional Fourier transform-Properties-Convolution-Parseval's identity- Fourier Sine and Cosine transforms.

Unit-V

Partial differential equations: Formation of PDE-Solution of Lagrange's linear equations-Method of separation of variables to solve IBVP like 1-D heat, 1-D wave and BVP like 2-D Laplace's equations. Application of Fourier transform to the solution of partial differential equations.

Teaching Methodologies

1. Tutorial sheets uploaded in website
2. NPTEL video lectures
3. MATLAB exercises for visualization

Text Books

1. Advanced Engineering Mathematics: R. K. Jain and S. R. K. Iyengar Narosa Publishing House.
2. Advanced Engineering Mathematics: Erwin Kreyszig-Wiley
3. Schaum's outline series on Laplace transforms

Reference Books

1. Higher Engineering Mathematics: B. S. Grewal-Khanna Publications
2. Higher Engineering Mathematics: C. Das Chawla-Asian Publishers
3. GRIET reference manual

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

NUMERICAL METHODS

Course Code: GR14A1004 L:2 T:1 P:0 C:3
I Year II Semester

Unit-I

Root finding techniques and Numerical solution of linear algebraic systems: Bisection method-Regula Falsi- Fixed point iteration method-Newton Raphson method - Rate of convergence of the above methods (without proof). LU decomposition method-Cholesky's method-Jacobi and Gauss Seidel iteration methods- Convergence of iterative methods (without proof).

Unit-II

Interpolation and Cubic Splines: Finite differences - Forward, backward and central differences, Relationship between operators- Interpolation with uniform data**-**Newton's forward and backward difference interpolation formulas- Gauss forward, Gauss backward and Stirling's central interpolation formulas- Lagrange and Newton's divided difference interpolation formulas for non-uniform data-Cubic spline interpolation.

Unit-III

Curve fitting and B-spline approximation: Method of least squares- Fitting a straight line, and second degree parabola, exponential and power curves to data-Approximation of functions by B-Splines (Linear and Quadratic cases only).

Unit-IV

Numerical differentiation and numerical integration: Numerical differentiation using the Newton's forward, backward and central difference formulas-Numerical integration by Trapezoidal rule, Simpson's 1/3rd and 3/8th rules-Gauss-Legendre one point, two point and three point rules.

Unit-V

Numerical solution of initial and boundary value problems in ODE: Initial Value Problems: Picard's method of successive approximation, Solution by Taylor series method, Euler method, Runge-Kutta methods of second and fourth orders. Predictor-corrector methods, Combinations of first and second order P-C methods. Boundary Value Problems in ODE: Finite difference methods for solving second order linear ODE.

Teaching Methodologies

1. Tutorial sheets uploaded in website
2. NPTEL video lectures
3. MATLAB exercises for visualization

Text Books

1. Advanced Engineering Mathematics: R.K.Jain and S.R.K.Iyengar-Narosa Publishing House.
2. Advanced Engineering Mathematics: Erwin Kreyszig- Wiley.
3. Introductory methods of Numerical Analysis (5th edition)-S.S.Sastry-PHI.

Reference Books

1. Applied Numerical Methods using MATLAB- Yang, Cao, Chung & Morris – Wiley Interscience
2. Numerical methods in Engineering with MATLAB-Jaan Kiusalaas -- Cambridge University Press.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENGINEERING CHEMISTRY

Course Code: GR14A1008 L:2 T:1 P:0 C:3
I Year II Semester

Unit-I

Water Technology: Sources of natural water, impurities, hardness: causes, types, expression, units, estimation of hardness of water using complex metric titration method, problems on hardness, Boiler feed water, boiler troubles(scale, sludge, carry over, Caustic Embrittlement, Boiler Corrosion). Internal reatment methods(carbonate, phosphate, calgon), Softening of water – Lime Soda, Ion-Exchange process. Alkalinity of water and its determination, Potable water- its characteristics and steps involved in Municipal Water Treatment, Chlorination-Break Point Chlorination, sterilization by ozonation. Desalination of Brackish water - Reverse Osmosis. Waste water-types of effluents, domestic and industrial effluents(on over view)

Unit-II

Electrochemistry & Corrosion: Concept of Conductances-specific, equivalent, molar conductances and their inter relation ships applications of conductance-conductometric titrations-(Strong acid Vs Strong Base and Weak Acid Vs Strong Base). EMF of a cell, Electrode- Single Electrode Potential, Standard Electrode potential, Electro chemical series and its applications, Electrochemical Cells-types, Galvanic cell: cell representation, Cell reactions, Cell EMF, Electrolytic cells, Concentration cell. Batteries-types Lithium Cell(Li-thionyl Chloride), Secondary cells: Pb-PbO_2 cell, Fuel cells: H_2-O_2 fuel cells and their applications.

Causes and effects of corrosion-types of corrosion- chemical (Dry) corrosion-types and their mechanism, Electrochemical (Wet) corrosion and its mechanism, factors affecting the rate of corrosion – nature of metal and nature of environment. Corrosion Control Methods-Cathodic Protection: Sacrificial Anodic, Impressed Current Cathodic protection. Metallic Coatings –Anodic and Cathodic coatings, Methods of application of metallic coatings- Hot Dipping method(Galvanisation), Cementation(Sheradising), Electroplating(Cu coating), Organic Coatings: Paints – its constituents and their functions.

Unit-III

Engineering Materials I: Cement-types-portland cement –composition, Setting & Hardening of Portland cement. Ceramics-types-ceramic products - white wares, Stone ware, properties and applications of ceramics. Refractories-classification,properties(refractoriness,RUL,thermal spalling, thermal conductivity) and their application.

Lubricants: Classification with examples, mechanisms of lubrication (thick film, thin film, extreme pressure), properties of lubricants- viscosity, flash point, fire point, cloud point, pour point (Definition and significance).

Unit-IV

Engineering Materials II: Electronic materials : Semi conductors, Preparation of Pure Ge and Si by Zone Refining, Czochralski Crystal Pulling, Doping Techniques-Epitaxy, Diffusion & ion implantation.

Polymer Materials: Monomer, polymer, types of polymerization-addition and condensation, Plastics-Thermoplastic resins, Thermo set resins. Compounding & fabrication of plastics (compression & Injection moulding), Preparation, Properties, Engineering applications of Hi Density Poly Ethylene(HDPE), Poly Vinyl Chloride(PVC), Bakelite & Nylon 6,6. Liquid Crystal Polymers and their applications, Organic Light Emmiting Diodes (an Over View). Biodegradable polymers-their advantages and their applications. Elastomers – preparation, properties and applications of Butyl rubber, Thiokol rubber, Styrene-Butadiene Rubber. Conducting Polymers-classification with examples-mechanism of conduction in trans poly acetylene and their applications.

Unit-V

Energy sources: Fossil Fuels: Coal –types, analysis of coal- proximate and ultimate analysis and their significance, Calorific value of fuel – HCV, LCV, Determination of Calorific Value using BOMB calorimeter, Theoretical calculation of Calorific Value by Dulong's formula, Numerical Problems. Petroleum-its composition-synthetic petrol – Bergius and Fischer Tropsch's process method , cracking (Definition) and its significance, knocking and its mechanism in Internal Combustion engines, Octane Rating of Gasoline, Composition, and applications of natural gas, LPG, CNG. Bio-fuels: preparation of Bio-diesel by transesterification method, advantages of Bio-fuel.

Teaching Methodologies

1. White Board with marker, OHP & Power Point Presentation
2. Conducting quizzes,
3. Conducting Experiments
4. Assignment uploaded in website.

Text Books

1. A text book of engineering chemistry by PC Jain and Monica Jain, Dhanpat Rai publishing company.

Reference Books

1. A text book of engineering chemistry by SS Dara and SS Umre, S Chand publications.
2. A text book of engineering chemistry by Dr Y Bharathi kumari and Dr Ch Jyothsna, VGS publications.
3. A text book of engineering chemistry by R.P.Mani, K.N.Mishra, B.Rama Devi, V.R.Reddy, cengage learning publications

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DATA STRUCTURES

Course Code: GR14A1010 L:2 T:1 P:0 C:3
I Year II Semester

Unit-I
Introduction to data structures: Stacks, Stack Operations, Representation of a Stack using Arrays, Stack Applications: Recursion, In-fix to postfix Conversion, Evaluating Arithmetic Expressions.

Unit-II
Queues Basic Queues Operations, Representation of a Queue using array, Implementation of Queue Operations using arrays, Applications of Queues, Enqueue, Dequeue, Circular Queues, Priority Queues.

Unit-III
List Introduction, single linked list, representation of a linked list in memory, Operations-insertion, deletion, display, search, Circular linked list, Double linked list, applications Advantages and disadvantages of single linked list, arrays, Implementation of stack, queue using linked list.

Unit-IV
Trees Basic tree concepts, Binary Trees: Properties, Representation of Binary Trees using arrays and linked lists, operations on a Binary tree , Binary Tree Traversals (recursive), Creation of binary tree from in-order and pre(post)order traversals.

Unit-V
Sorting and Searching: Insertion (Insertion sort), selection (heap sort), exchange (bubble sort, quick sort), distribution (radix sort) and merging (merge sort) Algorithm, Searching: Linear, binary search, indexed sequential search.

Teaching Methodologies

1. White Board
2. Marker
3. LCD Projector
4. OHP Projector

Text Books

1. Data Structures, 2/e, Richard F, Gilberg, Forouzan, Cengage
2. Data Structures and Algorithms, 2008,G.A.V.Pai, TMH

Reference Books

1. Data Structure with C, Seymour Lipschutz, TMH
2. Classic Data Structures, 2/e, Debasis, Samanta, PHI, 2009
3. Fundamentals of Data Structure in C, 2/e, Horowitz, Sahni, Anderson Freed, University Press

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENGINEERING GRAPHICS

Course Code: GR14A1023 L:1 T:0 P:2 C:3
I Year II Semester

Unit-I

INTRODUCTION TO ENGINEERING DRAWING: Principles of Engineering Graphics and their Significance Drawing Instruments and their Use Conventions in Drawing Lettering BIS Conventions. Curves used in Engineering Practice & their Constructions: a) Conic Sections, b) Cycloid, Epicycloid and Hypocycloid, c) Involutes.
SCALES: Different types of scales. Plain Scale, Diagonal Scale & Vernier Scale

Unit-II

ORTHOGRAPHIC PROJECTIONS: Principles of Orthographic Projections Conventions First and Third Angle Projections. Projections of Points and Lines inclined to both planes, True lengths, traces.

Unit -III

PROJECTIONS OF PLANES: Planes parallel, perpendicular and inclined to one of the reference planes. Plane inclined to both the reference planes.

PROJECTIONS OF SOLIDS: Projections of Regular Solids inclined to both planes.

Unit-IV

SECTIONS OF SOLIDS: Types of section planes, Section by a plane perpendicular to V.P., Section by a plane perpendicular to H.P.

DEVELOPMENT OF SURFACES: Development of Surfaces of Right Regular Solids Prisms, Cylinder, Pyramid, Cone and their parts.

Unit-V

ISOMETRIC PROJECTIONS: Principles of Isometric Projection Isometric Scale Isometric Views Conventions Isometric Views of Lines, Plane Figures, Simple and Compound Solids Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts.

TRANSFORMATION OF PROJECTIONS: Conversion of Isometric Views to Orthographic Views Conventions.

Teaching Methodology
Power point Presentations, Working models, white board & marker

Text Books

1. Engineering Drawing, N.D. Bhat / Charotar
2. Engineering graphics with Auto CAD- R.B. Choudary/Anuradha Publishers

Reference Books

1. Engineering Drawing and Graphics, Venugopal / New age.
2. Engineering Drawing- Johle/Tata Macgraw Hill.
3. Engineering Drawing, Narayana and Kannaiah / Scietech publishers. Engineering Drawing, Narayana and Kannaiah / Scietech publishers.
4. Engineering Drawing Basanth Agrawal/ C M Agrawal; 2e Mc Graw Hill Education

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

BASIC ELECTRICAL ENGINEERING

Course Code: GR14A1018 L:3 T:1 P:0 C:4
I Year II Semester

Unit-I

Basic Laws: Ohm's law , Kirchhoff's voltage and current laws , Nodes-Branches and Loops , Series elements and Voltage Division , Parallel elements and Current Division , Star-Delta transformation, Independent sources and Dependent sources , Source transformation.

Unit-II

AC Fundamentals-I: Review of Complex Algebra , Sinusoids , Phasors , Phasor Relations of Circuit elements , Impedance and Admittance , Impedance Combinations , Series and Parallel combination of Inductors and Capacitors, Mesh analysis and Nodal Analysis.

Unit-III

AC Fundamentals-II: RMS and Average values, Form factor, Steady State Analysis of Series, Parallel and Series Parallel combinations of R, L,C with Sinusoidal excitation, Instantaneous power, Average power, Real power, Reactive power and Apparent power, concept of Power factor, Frequency.

Unit-IV

Resonance and Network Theorems: Resonance in Electric circuits: Analysis of Series and Parallel Resonance, Theorems: Superposition theorem, Thevinin's theorem, Norton's Theorem, Maximum Power Transfer Theorem, Reciprocity theorem.

Unit-V

Fundamentals Of Electrical Machines: Construction, Principle, Operation and Applications of

(i) DC Motor,

(ii) Single phase Transformer

(iii) Single phase Induction motor

Text Books

1. Fundamentals of Electric Circuits by Charles K.Alexander, Matthew N.O.Sadiku, Tata McGraw Hill Company.

Reference Books

1. Circuit Theory (Analysis and Synthesis) by A. Chakrabarti Dhanpat Rai & Co
2. Network Theory by Prof. B. N. Yoganarasimham.
3. Engineering Circuit Analysis by William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin by Tata McGraw Hill Company.
4. Electrical Engineering Fundamentals by Vincent Deltoro
5. Circuit Theory by Sudhakar and Shyam Mohan

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

BUSINESS COMMUNICATION AND SOFT SKILLS

Course Code: GR14A1024 L:0 T:0 P:2 C:2
I Year II Semester

Unit-I
Just A Minute (JAM): Introduction to public speaking, analyzing and assimilating ideas, audience, voice modulation, Pronunciation and enunciation.

Unit-II
Phonetics: Introduction to speech sounds; identification of sound symbols; vowel and consonants

Unit-III
Roleplay: Introduction to role play; situation handling; non-verbal communication

Unit-IV
Debate: Introduction and features of Debate; Types of Debate; Understanding critical thinking; building sustainable arguments; assessing credibility of the argument; overcoming obstacles

Unit-V
Describing a Person, Situation, Process and Object: Introduction to techniques of clear, brief and impersonal description to a listener or reader.
Unit-VI
Letter Writing: Manual and Emailing, types and formats, content and body of the letter. Email etiquette.

Unit-VII
Report Writing: Formats and types of reports

Unit-VIII
Mind Mapping: Assimilation of thoughts, expansion of ideas on central idea, suggesting parameters to carry forward the thinking process without deviation.

Reference Books

1. Business Communication; Hory Sankar Mukerjee; Oxford University Press
2. Business Communication; Meenakshi Raman, Prakash Singh; Oxford University Press

3. English and Soft skills; SP DHanavel; Orient Blackswan
4. Soft Skills for Everyone; Jeff Butterfield; Cengage Learning
5. Communication Skills; Viva Career Skills Library
6. Personality Development and Soft Skills; Barun K Mitra; Oxford University Press
7. Six Thinking Hats, Penguin Books, Edward De Bono
8. English for Engineer's; Aeda Abidi, Ritu Chaudhry; Cengage Learning
9. Communication Skills ; Sanjay Kumar , Pushpalatha; Oxford University Press
10. Business English : The Writing Skills you need for today's work place: Geffner, Andrea: Fifth edition, Barron's Educational Series, Newyork

Software Used

1. Sky Pronunciation Suite
2. Clarity
3. Mastering English

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

IT WORKSHOP

Course Code: GR14A1026 L:0 T:0 P:2 C:2
I Year II Semester

PC Hardware
Introduces the students to a personal computer and its basic peripherals, installation of system software like MS Windows, Linux and the required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. **The students should work on working PC to install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible.**

Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet. Usage of web browsers, email, newsgroups and discussion forums would be covered. In addition, awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber attacks would be introduced. Productivity tools module would enable the students in crafting professional word documents, spread sheets and slide presentations.

Task 1
Installation of OS Every student should install Ubuntu and RedHat Linux on the computer. Lab instructors should verify the installation and follow it up with viva

Task 2
Hands on experience on Open Office: Every student should install open office on the computer. Students would be exposed to create word documents with images, tables, formula and with additional word processing features, Power point presentation, Excel and access. Lab instructors should verify the installation and follow it up with viva.

Task 3
Internet Based Applications: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google.

Task 4

Networking-Network Infrastructure: Understand the concepts of Internet, intranet, and extranet, local area networks (LANs), wide area networks (WANs), wireless networking, network topologies and access methods.

Task 5

Network Hardware: Understand switches, routers, media types, static routing, dynamic routing (routing protocols), default routes; routing table and how it selects best route(s); routing table memory, network address translation (NAT).
Task 6: Network Protocols: Understand the Open Systems Interconnection (OSI) model, IPv4, IPv6-ipv4toipv6 tunneling protocols to ensure backward compatibility, dual IP stack, subnetmask, gateway, ports, packets, reserved address ranges for local use (including local loopback IP).

Task 7

Network Services: Understand names resolution, networking services, TCP/IP-Tools (such as ping), tracert, pathping, Telnet, IPconfig, netstat, reserved address ranges for local use (including local loopback IP), protocols.

Task 8

Database -Core Database Concepts: Understand how data is stored in tables, Understanding DML and DDL statements

Task 9

Creating and Insertion of Data: Understanding Data types, tables and how to insert data in to the tables.

Task 10

HTML Basic HTML Tags: Understand what are the tags used for creation of website

Task 11

Designing a Static web page: Understand how to create static web page.

Teaching Methodologies

1. Power Point presentations.
2. Assignments.
3. Hands on experiment.

Reference Books

1. Introduction to Information Technology, ITL Education Solutions Limited, Pearson Education.
2. Introduction to Computers, Peter Norton, 6/e Mc Graw Hill

3. Upgrading and Repairing, PC's 18th e, Scott Muller QUE, Pearson Education
4. Comdex Information Technology Course tool kit Vikas Gupta, WILEY Dreamtech
5. IT Essentials PC Hardware and Software Companion Guide, Third Edition by David Anfinson and Ken Quamme- CISCO Press, Pearson Education
6. PC Hardware and A+Handbook Kate J. Chase PHI(Microsoft)
7. ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc- Graw Hill
8. Introduction to Database Systems, C.J.Date Pearson Education.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENGINEERING CHEMISTRY LAB

Course Code: GR14A1030 L:0 T:0 P:2 C:2
I Year II Semester

List Of Experiments

1. Estimation of Total Hardness in sample water by complexometry
2. Estimation of percentage available chlorine in Bleaching Powder.
3. Estimation of Fe2+ by permanganometry.
4. Determination of strength of an acid by potentiometric titration method
5. Determination of strength of an acid using conductometry.
6. Determination of Strength of an acid in Pb-Acid battery titrimetric method
7. Determination of percentage of Iron in Cement sample by colorimetry..
8. Estimation of Calcium in port land cement.
9. Determination of Viscosity of the given unknown liquid by Oswald's viscometer.
10. Determination of surface tention of the given unknown liquid by stalagnometer.
11. Preparation of Thiokol rubber.
12. Determination of percentage Moisture content in a coal sample.

Reference Books

1. Laboratory Manual on Engineering Chemistry, by Dr Sudha Rani, Dhanpat Rai Publishing house.
2. A Text book on Experiments and calculations in Engineering Chemistry, by SS Dara, S Chand publications.
3. Laboratory Manual of Organic Chemistry, by Raj K Bansal, Wiley Eastern Limited, New age international limited.
4. Engineering Chemistry practical manual prepared by faculty of engineering chemistry, GRIET(A) - (for college circulation only)

II-Year

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

PROBABILITY AND STATISTICS

Course Code: GR14A2011 L:2 T:1 P:0 C:3
II Year I Semester

Unit-I

Probability: Basic concepts in Probability - Conditional probability–Addition and Multiplication theorems for two events, (Concepts without derivations)- Bayes theorem.

Random variables: Definition of a random variable, discrete and continuous random variables –Distribution function and statement of its properties. Probability mass function, probability density function with illustrations -Joint, marginal and conditional distributions with illustrations - Mathematical expectation and variance of ar. v with examples and statement of their properties.

Unit-II

Distributions: Binomial, Poisson, Uniform, Normal and Exponential distributions (definition, real life examples, Statements of their Mean, Mode and Variance and problems).fitting of Binomial and Poisson distributions.

Sampling distribution: Definition of Population and sample, Overview of types of sampling(Purposive, Random, SRS with and without replacement cases, Stratified and Systematic random samplings) - Sampling distribution, standard error, statements of sampling distribution of mean(s) (Population variance(s) known and unknown) and proportion(s) (Population proportion(s)known and unknown) with examples.

Unit-III

Estimation and Testing of Hypothesis: Definitions of Point and Interval estimation. Confidence intervals for single mean, difference of two means, single proportion and difference of two proportions. Concepts of Null and Alternative hypotheses, Critical region, Type I and Type II errors, one tail and two-tail tests, Level of significance and power of a test.

Large Samples Tests: Tests of hypothesis for mean(s) (single and difference between means), Tests of hypothesis for proportion(s) (single and difference between proportions), Chi-square test for testing goodness of fit, independence of attributes and single population variance.

Unit-IV

Small samples: Student's t-test for testing the significance of single mean, difference of means(independent samples and paired samples), F-test for equality of variances (Concepts and problem solving) .

Correlation & Regression: Product moment correlation coefficient, Spearman's rank correlation coefficient and Statements of their properties – Simple linear regression, Lines of Regression, Regression coefficients and Statements of their properties, Multiple regression for three variables only.

Unit-V

Stochastic Process: Definitions of stochastic process, parameter space and state space. Classification of stochastic processes and stochastic matrices. Definitions of a Markov chain, transition probability matrix, initial probability distribution, joint distribution and n-step TPM. Classification of states in a Markov chain and limiting distribution.

Queuing theory: Queue description, characteristics of a queuing model, Poisson process, concept of Birth and death process, steady state solutions of (M/M/1: ∞/FIFO) and (M/M/1: N/FIFO)(Concepts and problem solving).

Teaching Methodologies

1. Chalk &Talk
2. ppts

Text Books

1. Probability and statistics for engineers (Erwin Miller and John E. Freund), R.A Johnson and C. B. Gupta, Pearson education.
2. Fundamentals of Stochastic process-Medhi (for Unit-V), New age international publications.
3. Probability and Statistics, Dr. T. K. V. Iyengar, Dr. B. Krishna Gandhi et.al, S. Chand.

Reference Books

1. Fundamentals of Mathematical Statistics, S.C. Gupta ,V. K. Kapoor, S. Chand.
2. Probability, Statistics and Queuing Theory with computer applications- Arnold O.Allen, Academic press.
3. Introduction to Probability and Statistics, 12th edition, W. Mendenhall, R.J. Beaverand, B.M. Beaver, Thomson. (Indian edition)
4. Probability, Statistics and Queuing Theory, 2nd Edition, Trivedi, John Wiley and Sons.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE

Course Code: GR14A2062 L:3 T:1 P:0 C:4
II Year I Semester

Unit-I

Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables, Tautology, Equivalence implication, Normal forms.

Predicates: Predicative logic, Free and Bound variables, Rules of inference, Consistency, Proof of contradiction.

Unit-II

Set Theory: Properties of Binary Relations, Equivalence, Compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function, Composition of functions, Recursive Functions, Lattice and its Properties, Pigeon hole principle and its applications.

Algebraic structures: Algebraic systems, Examples and general properties, Semi groups and monoids, Groups, Sub groups, Homomorphism, Isomorphism.

Unit-III

Elementary Combinatorics: Basis of counting, Permutations and Combinations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial and Multinomial theorems, Principles of Inclusion – Exclusion.

Unit-IV

Recurrence Relation: Generating Functions, Function of Sequences, Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating functions, Characteristics roots solutions of In homogeneous Recurrence Relations.

Unit-V

Graph Theory: Representation of Graphs, DFS, BFS, Spanning Trees, Planar Graphs

Graph Theory and Applications: Basic Concepts, Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers.

Teaching Methodologies

1. Board
2. Markers
3. LCD Projector

Text Books

1. Discrete and Combinational Mathematics- An Applied Introduction-5th Edition – Ralph. P.Grimaldi, Pearson Education
2. Discrete Mathematical Structures with applications to computer science Trembly J.P. & Manohar .P, TMH
3. Mathematical Foundations for Computer Science Engineers, Jayant Ganguly, Pearson Education
4. Discrete Mathematics and its Applications, Kenneth H. Rosen, Fifth Edition.TMH.

Reference Books

1. Discrete Mathematics with Applications, Thomas Koshy, Elsevier
2. Discrete Mathematical Structures, Bernand Kolman, Roberty C. Busby, Sharn Cutter Ross, Pearson Education/PHI.
3. Discrete Mathematical structures Theory and application-Malik & Sen
4. Discrete Mathematics for Computer science, Garry Haggard and others, thomson.
5. Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker Prentice Hall.
6. Logic and Discrete Mathematics, Grass Man & Trembley, Person Education.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DATABASE MANAGEMENT SYSTEMS

Course Code: GR14A2063 L:3 T:1 P:0 C:4
II Year I Semester

Unit-I

Data base System Applications: Data base System VS file System, View of Data, Data Abstraction, Instances and Schemas, data Models: the ER Model, Relational Model, Other Models, Data base System Structure, Data base Users and Administrator, Transaction Management, Data base design and ER diagrams, Attributes and Entity sets, Relationships and Relationship sets, Design Issues, Extended ER Features, Concept Design with the ER Model

Unit- II

Relational Model: Introduction to the Relational Model, Basic Structure, Database Schema, Keys, Relational Algebra, Relational Calculus.

Data on External storage, File organization and Indexing, cluster Indexes, Primary and Secondary Indexes, Index data structures, Hash based Indexing.

UNIT-III

Form of Basic SQL Query, Database Languages, DDL, DML, database Access for applications Programs, Examples of Basic SQL Queries, Introduction to Nested Queries, Correlated Nested Queries, Set Comparison Operators, Aggregative Operators, NULL values, Comparison using Null values, Logical connectivity: AND, OR and NOT, Impact on SQL Constructs, Outer Joins, Disallowing NULL values, Integrity Constraint over relations, Introduction to Views, Destroying /altering Tables and Views.

Unit-IV

Schema refinement: Problems Caused by redundancy, Decompositions, Problem related to decomposition, reasoning about FDS, FIRST, SECOND, THIRD Normal form, BCNF, Lossless join Decomposition, Dependency preserving Decomposition, Schema refinement in Data base Design, Multi valued Dependencies, Fourth Normal Form.

Unit-V

Transaction Concept: Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability, Lock based Protocols, timestamp based protocols, validation based protocols, Multiple Granularity Recovery and Atomicity, Log based recovery, Recovery with concurrent transactions, Buffer Management.

Teaching Methodologies

1. Power Point presentations
2. Tutorial Sheets
3. Assignments
4. Lab experiments with Oracle Software

Text Books

1. "Data base Management Systems", Raghurama Krishnan, Johannes Gehrke, TATA Mc Graw Hill 3rd Edition
2. "Data base System Concepts", Silberschatz, Korth, McGraw hill, V edition.

Reference Books

1. "Introduction to Database Systems", C.J.Date Pearson Education.
2. "Data base Systems design, Implementation, and Management", Rob & Coronel 5th Edition. Thomson.
3. "Database Management Systems" P. Radha Krishna HI-TECH Publications 2005.
4. "Data base Management System", Elmasri Navate Pearson Education.
5. "Data base Management System" Mathew Leon, Leo.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED DATA STRUCTURES THROUGH C++

Course Code: GR14A2064 L:3 T:1 P:0 C:4
II Year I Semester

Unit-I
Introducing OOP, C++ class overview-class definition, objects, class members, constructors and destructors, Inline functions, static class members, friend functions, dynamic memory allocation and deallocation (new and delete), exception handling.

Unit-II
Function overloading, operator overloading, Generic Programming: Function and class templates, inheritance basics, base and derived classes, inheritance types, this pointer, runtime polymorphism using virtual functions, streams I/O.

Unit-III
Priority Queues: Definition, ADT, realizing a priority queue using heaps, definition, insertion, deletion, application-heap sort.
Dictionaries: linear list representation, operations-insertion, deletion and searching, Hash table representation-hash functions, collision resolution strategies-separate chaining and open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing.

Unit-IV
Trees: Binary search trees, definition, ADT, implementation, operations-searching, insertion and deletion, tree traversals technique-inorder, preorder and postorder .

Balanced search trees (part1): AVL trees, definition, height of an AVL tree, representation, operations-insertion, deletion and searching, B-Trees-B-Tree of order m, height of a B-Tree, insertion, deletion and searching.

Unit-V
Balanced Search trees (part II): Introduction to red-black trees and splay trees

Graphs: Representation of Graphs, graph traversal techniques –BFS and DFS,

Teaching Methodologies

1. Power Point presentations
2. White Board
3. Tutorial Sheets
4. Assignments

Text Books

1. Data structures, Algorithms and Applications in C++,S.Sahni, University press (India)pvt ltd, 2nd edition, Orient Longman pvt.ltd.
2. Object Oriented Programming with C++, E Balagurusamy, Mcgraw Hill Higher Education, Second edition.

Reference Books

1. Object Oriented Programming with C++, Subhash K U, Pearson
2. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and D.Mount, Seventh Edition Wiley student edition, John Wiley and Sons.
3. Data Structures and Algorithms in C++, Third Edition, Adam Drozdek, Thomson
4. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DIGITAL LOGIC DESIGN

Course Code: GR14A2065 L:3 T:1 P:0 C:4
II Year I Semester

Unit–I

Binary Systems: Digital Systems, Binary Numbers, Number Base Conversions, Octal and Hexadecimal Numbers, Complements, Signed Binary Numbers, Binary Codes, Binary Storage and Registers, Binary Logic.

Boolean Algebra And Logic Gates: Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations, Digital Logic Gates, Integrated Circuits.

Unit–II

Gate-Level Minimization: The Map method, Four-variable map, Five-Variable map, Product of Sum's simplifications, Don't care conditions, NAND and NOR implementation, other two level implementations, Exclusive-OR Function.

Unit–III

Combinational Logic: Combinational Circuits, Analysis Procedure, Design Procedure, Binary Adder - Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers.

Unit–IV

Synchronous Sequential Logic: Sequential Circuits, latches, Flip-Flops, Analysis of clocked sequential circuits, State Reduction and Assignment, Design Procedure.

Registers and Counters: Registers, shift registers, Ripple Counters, Synchronous Counters, other counters.

Unit–V

Memory and Programmable Logic: Introduction, Random Access Memory, Memory Decoding, Error Detection and correction, Read Only Memory, Programmable logic Array, Programmable Array Logic, Sequential Programmable Devices.

Hardware Description Language: Hardware Description Language, Definition, Structural Definition of HDL, HDL Models for Combinational circuits, HDL for Models for Sequential circuits.

Teaching Methodologies

1. Power Point presentations
2. Tutorial Sheets
3. Assignments

Text Books

1. Digital Design – Fourth Edition, M. Morris Mano, Pearson Education.
2. Fundamentals of Logic Design – Roth, 5th Edition, Thomson.

References Books

1. Switching and Finite Automata Theory by ZviKohavi, Tata McGraw Hill.
2. switching and Logic Design – CVS Rao, Pearson Education
3. Digital Principles and Design – Donald D.Givone, Tata McGraw Hill.
4. Fundamentals of Digital Logic and Micro Computer Design, 5th Edition, M.Rafiquzzaman (John Willey)

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED DATA STRUCTURES THROUGH C++ LAB

Course Code: GR14A2066 L:0 T:0 P:2 C:2
II Year I Semester

Week-1
Write C++ program to implement the following
a) Constructors and destructors
b) Overloading constructors

Week-2
Write C++ program to implement the following variations of Friend Concepts
a) External Function declared as Friend
b) Member Function declared as Friend
c) One Class declared as Friend of another class.

Week-3
Write C++ program to implement the following
a) Function and Operator Overloading
b) Function and Operator Overloading using FRIEND concept

Week-4
Write C++ program to implement Function and Class Templates

Week-5
write a C++ program to implement
a) Single Inheritance
b) Multiple Inheritance
c) Multilevel Inheritance
d) Hybrid Inheritance

Week-6
Write C++ program to implement Runtime Polymorphism.

Week-7
Write C++ program to implement the following using an array.
a) Stack ADT
b) Queue ADT

Week-8
Write a C++ program to implement Open addressing collision resolution strategies of Hashing

a) Linear probing
b) Quadratic probing
c) Double Hashing

Week-9

Write a C++ program to perform the following operations:

a) Insert an element into a binary search tree.
b) Delete an element from a binary search tree.
c) Search for a key element in a binary search tree.

Week-10

Write C++ programs to implement Non-Recursive Tree Traversal techniques

a) Preorder
b) Inorder
c) Postorder.

Week-11

Write C++ program to perform the following operations on AVL tree

a) Insert an element
b) Delete an element from AVL tree
c) Search for a key element in an AVL tree

Week-12

Write C++ programs to Implement Graph Traversal Techniques

a) BFS
b) DFS.

Teaching Methodologies

1. Power Point presentation
2. White Board

Text Books

1. Data structures, Algorithms and Applications in C++,S.Sahni,University press (India)pvt ltd, 2nd edition, Orient Longman pvt.ltd.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DATABASES LAB

Course Code: Gr142067 L:0 T:0 P:2 C:2
II Year I Semester

Recommended Systems/Software Requirements

- Intel based desktop PC
- Mysql/ Oracle latest version Recommended

Task-1

DDL commands (Create, Alter, Drop, Truncate)

1) Create a table EMP with the following structure.

Name	Type
EMPNO	NUMBER(6)
ENAME	VARCHAR2(20)
JOB	VARCHAR2(10)
MGR	NUMBER(4)
DEPTNO	NUMBER(3)
SAL	NUMBER(7,2)

2) Add a column commission to the emp table. Commission should be numeric with null values allowed.
3) Modify the column width of the job field of emp table.
4) Create dept table with the following structure.

Name	Type
DEPTNO	NUMBER(2)
DNAME	VARCHAR2(10)
LOC	VARCHAR2(10)

Deptno as the primarykey

5) Add constraints to the emp table that is empno as the primary key and deptno as the foreign key.
6) Add constraints to the emp table to check the empno value while entering (i.e) empno> 100.
7) Salary value by default is 5000, otherwise it should accept the values from the user.
8) Add columns DOB to the emp table.
9) Add and drop a column DOJ to the emp table.
10) Insert few rows and truncate those from the emp1 table and also drop it.

Task-2: DML COMMANDS (Insert, Select, Update, Delete)

1. Insert 5 records into dept table.
2. Insert 11 records into emp table.
3. Update the emp table to set the default commission of all employees to Rs1000/- who are working as managers.
4. Create a table employee with the same structure as the table emp and insert rows into the table using select clauses.
5. Delete only those who are working as supervisors.
6. Delete the rows whose empno is 7599.
7. List the records in the emp table order by salary in ascending order.
8. List the records in the emp table order by salary in descending order.
9. Display only those employees whose deptno is 30.
10. Display deptno from the table employee avoiding the duplicated values.
11. List the records in sorted order of their employees.
12. Create a manager table from the emp table which should hold details only about the managers.
13. List the employee names and the department name in which they are working.

Task-3: SQL Operators

1. List all employee names , salary and 15% rise in salary.
2. Display the rows whose empno ranges from 7500 to 7600.
3. Display the rows whose empno not in range from 7500 to 7600.
4. Display all the employees in dept 10 and 20 in alphabetical order of names.
5. List the employee names whose commission is null.
6. Display all the details of the records whose employee name starts with 'S'.
7. Display all the details of the records whose employee name does not start with 'M'.
8. Display the names of employees whose second character is 'i'.
9. Display all the details of the records whose employee name ends with 'A'.
10. List all employees which starts with either B or C.
11. List out the employee names whose salary is greater than 5000,6000.

Task-4: SQLAggregate Functions, Group By clause, Having clause

1. Count the total records in the emp table.
2. Calculate the total and average salary of the employee.
3. Determine the max and min salary and rename the column as max_salary andmin_salary.
4. Display total salary spent for employees.
5. Find no.ofdepts in employee table.
6. Display total salary spent for each job category.
7. Display lowest paid employee details under each manager.
8. Display highest paid employee details under each category.

9. Display job wise sum, average, max, min salaries .
10. Display maximum salaries of all the departments having maximum salary > 2000
11. Display average salaries for all departments having more than five employees.
12. Display job wise sum , avg , max , min salaries in department 10 having avg salary > 1000 and the result is ordered by sum of salary in descending order.

Task-5: SQL functions- Practice on Number functions, characterfunctions, datefunctions, conversion functions and miscellaneous functions.

Task-6: Exercise on SQL Functions.

1. Display the employee name concatenate with employee no.
2. Display half of emp name in upper case and half in lower case.
3. Display the month name of date "14-jul-09" in full.
4. Display the Dob of all employees in the format "dd-mm-yy".
5. Display the date two months after the Dob of employees.
6. Display the last date of that month in "05-Oct-09".
7. Display the rounded date in the year format, month format, day format in the employee
8. Display the date 60 days before current date.
9. Display the employee names whose name contains up to 5 characters.
10. Display the names and dob of all employees who were born in February.
11. List out the employee names who will celebrate their birthdays during current month.

Task-7: Nested Queries

1. Find the third highest salary of an employee.
2. Display all employee names and salary whose salary is greater than minimum salary of the company and job title starts with 'M'.
3. Write a query to find all the employees who work in the same job as Jones.
4. Write a query to display information about employees who earn more than any employee in dept 30.
5. Display the employees who have the same job as Jones and whose salary >=Fords
6. Write a query to list the employees in dept 20 with the same job as anyone in dept 30.
7. List out the employee names who get the salary greater than the maximum salaries of dept with dept no 20,30.
8. Display the maximum salaries of the departments whose maximum salary is greater than 9000.
9. Display the maximum salaries of the departments whose minimum salary is greater than 1000 and lesser than 5000.

Task-8: Joins, Set Operators.

1. Display all the employees and the departments implementing a left outer join.
2. Display the employee name and department name in which they are working implementing a right outer join.
3. Display the employee name and department name in which they are working implementing a full outer join.
4. Write a query to display their employee names and their managers salary for every employee.
5. Write a query to output the name , job, empno, deptname and location for each dept, even if there are no employees.
6. Find the name of the manager for each employee.
7. Display the details of those who draw the same salary.
8. Display all the dept numbers available with the dept and accdept tables avoiding duplicates.
9. Display all the dept numbers available with the dept and accdept tables.
10. Display dept no available in both the dept and accdept tables

Task-9: Views

1. Display only the details of the employees those who are managers. 2. Display only the details like empno,empname,deptno, deptname of the employees
3. Display only the details like empno,empname,deptno,deptname of the all the employees except the HOD and CEO .
4. Display all the views generated.
5. Execute the DML commands on the view created.
6. Drop a view.

Task-10: Practices on DCL commands.

Task-11: Practices on Sequence and indexes.

Task-12: Design a Conceptual Database design and Logical Data design for Hospital Management System.

Text Books

1. The complete reference,3rd edition byjames R.Groff, PaulN.Weinberg, AndrewJ.Oppel
2. SQL&PL/SQLforOracle10g,BlackBook,Dr.P.S.Deshpande.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DIGITAL LOGIC DESIGN LAB

Course Code: GR14A2068 L:0 T:0 P:2 C:2
II Year I Semester

A. COMBINATIONAL CIRCUITS

1. Realization of Gates (AND, OR, NOT, NAND, NOR)
   Exercise: Realize an XOR and XNOR gates
2. Design half adder and full adder using Gates
   Exercise: Design half subtractor circuit
3. Verification of four bit magnitude comparator
   Exercise: Verify an 8bit magnitude comparator
4. Design a 2 to 1 Multiplexer
   Exercise: Implement a 4 to 1 Multiplexer.
5. Design a 2 to 4 Decoder and 1 to 4 Demultiplexer
   Exercise: Implement a 3 to 8 decoder and design a 1 to 4 demultiplexer using 1 to 2 demultiplexer.
6. Design a 4 bit Parity Checker
   Exercise: Design a 4 bit Parity Generator.

B. SEQUENTIAL CIRCUITS

1. Verification of truth tables of D and T Flip-Flops
   Exercise: Verify JK Flip-Flop
2. Conversion of JK Flip-Flop to D Flip-Flop
   Exercise: Convert JK Flip-Flop to T Flip-Flop
3. Design of 8 bit left Shift Register
   Exercise: Design a 4 bit right shift Register
4. Design a Binary Counter
   Exercise: Design of Decade Counter
5. Design of Asynchronous Up Counter
   Exercise: Design an Asynchronous mod Counter
6. Design of Synchronous Down Counter
   Exercise: Design an Synchronous Up/Down Counter

C. HARDWARE DESCRIPTION LANGUAGE

1. Simulation of Logic Gates
2. Simulation of any given Boolean Expression.
   Example: Y = A'B + AB'C'
3. Simulation of Multiplexers, Comparators and Decoders.
4. Simulation of Sequential Counter.

Note: A minimum of 12 experiments are to be performed and recorded by the candidate to attain eligibility for practical examination.

Text Books

1. DigitalDesign-FourthEdition,M.MorrisMano,PearsonEducation.
2. FundamentalsofLogicDesign-Roth,5thEdition,Thomson.

Reference Books

1. SwitchingandFiniteAutomataTheorybyZviKohavi,TataMcGrawHill.
2. switchingandLogicDesign-CVSRao,PearsonEducation.
3. DigitalPrinciplesandDesign-DonaldD.Givone,TataMcGrawHill.
4. FundamentalsofDigitalLogicandMicroComputerDesign,5thEdition, M.Rafiquzzaman(JohnWilley).

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENVIRONMENTAL SCIENCE

Course Code: GR14A2001 L:2 T:0 P:0 C:0
II Year I Semester

Unit-I

Introduction to Environment, Ecology and Ecosystems: Definition, Importance and Scope of Environmental Studies, Public Awareness and Participation. Ecology, Concept of Ecosystem, Classification of Ecosystem, Structure, Components and Function of Ecosystem. Typical Ecosystem, Food Chain, Food Web. Biodiversity- Types and values.

Unit–II

Natural Resources: Definition, Occurrence, Classification of resources, Important natural resources for human society, Utilization-positive and negative effects of Water resources, Mineral resources, Forest resources, Energy resources, Land resources. Role of individuals in conservation of important natural resources.

Unit-III

Environmental Pollution: Definition, Classification of Pollution, Types of Pollution and Pollutants. Causes, effects and control of – Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution and Nuclear Pollution.

Unit–IV

Environmental Problems and Management Policies: Natural Disasters-Types, causes and effects; Global warming, Climate change-El Nino-La Nina, Ozone layer- location, role and degradation; Deforestation and desertification. Management: Technological solutions, Preventive methods, control techniques; Green Belt development, Rainwater harvesting, Renewable and alternate resources.

Unit-V

National Policy on Environment Protection and Sustainability: Air (Pollution and prevention) act 1981; Water (Pollution and prevention) Act 1974; Pollution Act 1977; Forest Conservation Act; Wildlife Protection Act; Municipal solid waste management and handling Act; Biomedical waste management and handling Act; Hazardous waste management and handling rules. Role of IT in environment, environmental ethics, environmental economics.

Sustainable development: Cause and Threats to sustainability; Strategies for achieving sustainable development; Concept of Green buildings and Clean Development Mechanism (CDM).

Teaching Methodology

1. White board and marker
2. OHP and Field visit

Text Books

1. Text Book of Environmental Studies, ErachBarucha. University Press
2. Text book of Environmental Science and Technology by M.Anji Reddy 2007

Reference Books

1. Biotechnology & Environmental Chemistry. Surinder Jeswal& Anupama Deswal, DhanpatRai & Co Pvt. Ltd.
2. A Text Book of Environmental Science. Aravind Kumar. APH Publishing Corporation.
3. Glimpses of Environment. Dr. KVSG. Murali Krishna. Environmental Protection Society

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Course Code: GR14A2104 L:2 T:1 P:0 C:3
II Year II Semester

Unit-I

Introduction & Demand Analysis: Definition and Scope: Definition, Nature and Scope of Managerial Economics. **Demand Analysis:** Demand Determinants, Law of Demand and its exceptions. **Elasticity of Demand:** Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting.

Unit-II

Production & Cost Analysis: Production Function – Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale. **Cost Analysis:** Cost concepts. Break-even Analysis (BEA)-Determination of Break-Even Point (simple problems) - Managerial Significance.

Unit-III

Markets & New Economic Environment: Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition. Price-Output Determination in case of Perfect Competition and Monopoly. Pricing: Objectives and Policies of Pricing. **Methods of Pricing. Business:** Features and evaluation of different forms of Business Organisation: Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types. New Economic Environment: Changing Business Environment in Post-liberalization scenario.

Unit-IV

Capital Budgeting: Capital: Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising capital.

Capital Budgeting: features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method and Internal Rate of Return (IRR) (simple problems).

Unit-V

Introduction to Financial Accounting & Financial Analysis: Accounting Concepts and Conventions - Double-Entry Book Keeping. Accounting Cycle:

Journal, Ledger, Trial Balance, Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments).

Financial Analysis: Analysis and Interpretation of Liquidity Ratios, Activity Ratios, Capital structure Ratios and Profitability ratios. Du Pont Chart.

Teaching Methodologies

- Lectures
- Power Point presentations
- Seminars
- Working out problems on black/white boards,
- Conducting tutorials
- Giving homework and/or assignments etc.

Text Books

1. **Aryasri:** Managerial Economics and Financial Analysis, TMH, 2009.
2. **Atmanand:** Managerial Economics, Excel, 2008.

Reference Books

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi.2009
2. H. Craig Peterson & W. Cris Lewis, Managerial Economics, PHI, 2009
3. Lipsey & Chrystel, Economics, Oxford University Press, 2009

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

OPERATING SYSTEMS

Course Code: GR14A2069 L:3 T:1 P:0 C:4
II Year II Semester

Unit-I

Computer System and Operating System Overview: Overview of computer operating systems, operating systems functions, protection and security, distributed systems, special purpose systems, operating systems structures and systems calls, operating systems generation

Unit-II

Process Management: Process concepts threads, scheduling-criteria algorithms, their evaluation, Thread scheduling, case studies Linux, Windows

Concurrency: Process synchronization, the critical- section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic transactions. Case studies Linux, Windows

Unit-III

Memory Management: Swapping, contiguous memory allocation, paging, structure of the page table , segmentation, virtual memory, demand paging, page replacement algorithms, case studies; Linux, Windows, Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery from deadlock.

I/O systems, Hardware, application interface, kernel I/O subsystem, Transforming I/O requests, Hardware operation, performance.

Unit-IV

File system Interface: The concept of a file, Access Methods, Directory structure, file sharing, protection. File System implementation- File system structure, file system implementation, directory implementation, allocation methods, free-space management, efficiency and performance.

Mass-storage structure: Overview of Mass-storage structure, Disk structure, disk attachment disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure.

Unit-V

Protection: Protection, Goals of Protection, Principles of Protection, Domain of protection, Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection, Security- The Security problem, program threats, system and network threats, cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer – security classifications.

Teaching Methodologies

1. Power Point presentations
2. Tutorial Sheets
3. Assignments

Text Books

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating Systems' – Internal and Design Principles Stallings, Fifth Edition–2005, Pearson education/PHI

References Books

1. Operating systems- A Concept based Approach-D. M. Dhamdhere, 2nd Edition, TMH
2. Operating System A Design Approach-Crowley, TMH.
3. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Course Code: GR14A2070 L:3 T:1 P:0 C:4
II Year II Semester

Unit-I

Introduction: OOP concepts, history of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and casting, simple java program.

Classes and Objects: concepts of classes, objects, constructors, methods, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion.

String handling: String, StringBuffer, StringTokenizer.

Unit-II

Inheritance: base class object, subclass, member access rules, super uses, using final with inheritance, method overriding, abstract classes.

Interfaces: defining an interface, implementing interface, differences between classes and interfaces and extending interfaces.

Packages: defining, creating and accessing a package, importing packages, access control, exploring package - Java.io

Unit-III

Exception handling: concepts of exception handling, benefits of exception handling, exception hierarchy, checked and unchecked exceptions, usage of-try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.

Multithreading: differences between multi-threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.

Unit-IV

Applets: concepts of applets, differences between applets and applications, life cycle of applet, types of applets, creating applets, passing parameters to applets.

Event Handling: events, event sources, event classes, event listeners, delegation event model, handling mouse and key board events, adapter classes.

The AWT class hierarchy, user interface components-labels, button, canvas, scrollbars, text components, checkbox, checkbox groups, choices, lists.

Unit-V

Layout manager: layout manager types-border, grid, flow, card and grid bag**.**

Swing: Introduction, limitations of AWT, components, containers, exploring swing- JApplet, JFrame and JComponent, Icons and Labels, text fields, buttons – The JButton class, Checkboxes, Radio buttons, Combo boxes, Tabbed Panes, ScrollPanes, Trees and Tables.

Teaching Methodologies

White-board, marker, power point presentations

Text Books

1. Java The complete reference, 8th editon, Herbert Schildt, TMH.
2. Understanding OOP with Java, up dated edition, T.Budd, Pearson education.

Reference Books

1. An Introduction to programming and OO design using Java, J. Nino and F.A. Hosch, John Wiley & sons.
2. An Introduction to OOP, second edition, T. Budd, pearson education.
3. Introduction to Java programming 6th edition, Y. Daniel Liang, pearson education.
4. An introduction to Java programming and object oriented application development, R. A. Johnson-Thomson

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

FORMAL LANGUAGES AND AUTOMATA THEORY

Course Code: GR14A2071 L:3 T:1 P:0 C:4
II Year II Semester

Unit-I

Fundamentals: Strings, Alphabet, Language, Operations, Finite state machine, definitions, finite automaton model, acceptance of strings and languages, deterministic finite automaton and non-deterministic finite automaton, transition diagrams and language recognizers.

Finite Automata: NFA with ϵ transitions - significance, acceptance of languages.

Conversions and Equivalence: Equivalence between NFA with and without ϵ transitions, NFA to DFA conversion, minimisation of FSM, equivalence between two FSM's, Finite Automata with output- Moore and Melay machines.

Unit-II

Regular Languages: Regular sets, regular expressions, identity rules, Constructing finite automata for a given regular expressions, Conversion of finite automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets.

Unit-III

Grammar Formalism: Regular grammars-right linear and left linear grammars, equivalence between regular linear grammar and FA, inter conversion, Context free grammar, derivation trees, sentential forms. Right most and leftmost derivation of strings.

Unit-IV

Context Free Grammars: Ambiguity in context free grammars, Minimisation of context free grammars, Chomsky normal form, Greibach normal form, Pumping Lemma for Context Free Languages, Enumeration of properties of CFL.

Push Down Automata: Push down automata, definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence, equivalence of CFL and PDA, interconversion. Introduction to DCFL and DPDA.

Unit-V

Turing Machine: Turing Machine, definition, model, design of TM, computable functions, recursively enumerable languages. Church's hypothesis, counter machine, types of Turing machines.

Computability Theory: Chomsky hierarchy of languages, linear bounded automata and context sensitive language, LR(0) grammar, decidability of problems, Universal Turing Machine, undecidability of posts correspondence problem, Turing reducibility, definition of P and NP problems, NP complete and NP hard problems.

Teaching Methodologies

- Board
- Markers
- LCD Projector.

Text Books

1. "Introduction to Automata Theory Languages and Computation", Hopcroft H.E. and Ullman J. D, Pearson Education.
2. "Introduction to Theory of Computation" –Sipser 2nd edition Thomson.

Reference Books

1. "Introduction to Computer Theory", Daniel I.A. Cohen, John Wiley.
2. "Introduction to languages and the Theory of Computation", John C Martin, TMH.
3. "Elements of Theory of Computation", Lewis H.P. and Papadimition C.H. Pearson /PHI.
4. "Theory of Computer Science - Automata languages and computation" - Mishra and Chandrashekaran, 2nd edition, PHI.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPUTER ORGANIZATION

Course Code: GR14A2076 L:3 T:1 P:0 C:4
II Year II Semester

Unit-I

Basic Structure of Computers: Computer Types, Functional unit, Data Representation, Fixed Point Representation, Floating – Point Representation, Error Detection codes.

Register Transfer Language and Micro operations: Register Transfer language, Register Transfer, Bus and memory transfers, Arithmetic Micro operations, Logic micro operations, Shift micro operations, Arithmetic logic shift unit.

Unit-II

Basic Computer Organization and Design: Instruction codes, Computer Registers, Computer instructions, Timing and Control, Instruction cycle, Memory Reference Instructions, Input – Output and Interrupt, Complete Computer Description.

Micro Programmed Control: Control memory, Address sequencing, micro program example, design of control unit, Micro program Sequencer, Hard wired control Vs Micro programmed control.

Unit-III

Central Processing Unit Organization: General Register Organization, STACK organization, Instruction formats, Addressing modes, DATA Transfer and manipulation, Program control, Reduced Instruction Set Computer.

Computer Arithmetic: Addition and subtraction, multiplication Algorithms, Floating – point Arithmetic operations, BCD Adder.

Unit-IV

Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt, Direct memory Access, Input –Output Processor (IOP).

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, Dependencies, Vector Processing.

Unit-V

Memory Organisation: Memory Hierarchy, Main memory- RAM and ROM chips, Memory Address map, Auxiliary memory – Magnetic Disks, Magnetic Tapes, Associative Memory – Hardware Organization, Match Logic, Cache Memory – Associative mapping, Direct mapping, Set associative mapping, Writing into cache and cache initialization, Cache Coherence, Virtual memory – Address Space and Memory Space, Address mapping using pages, Associative Memory page table, Page Replacement.

Multi Processors: Characteristics or Multiprocessors, Interconnection Structures, Cache Coherence, Shared Memory Multiprocessors.

Teaching Methodologies

1. Power Point Presentations
2. Tutorial Sheets
3. Assignments

Text Books

1. Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson/PHI
2. Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.

Reference Books

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI/Pearson
3. Fundamentals or Computer Organization and Design, - Sivaraama Dandamudi Springer Int. Edition.
4. Computer Architecture a quantitative approach, John L. Hennessy and David A. Patterson, Fourth Edition Elsevier 5. Computer Architecture: Fundamentals and principles of Computer Design, Joseph D. Dumas II, BS Publication.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB

Course Code: GR14A2072 L:0 T:0 P:2 C:2
II Year II Semester

Recommended Systems/Software Requirements
Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space JDK Kit. Recommended

Week-1: Write java programs that implement the following
a) Constructor
b) Parameterized constructor
c) Method overloading
d) Constructor overloading.

Week-2
a) Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.
b) Write a Java program for sorting a given list of names in ascending order.
c) Write a Java Program that reads a line of integers, and then displays each integer and the sum of all the integers (Use StringTokenizer class of java.util)

Week-3: Write java programs that uses the following keywords
a) this
b) super
c) static
d) final

Week-4
a) Write a java program to implement method overriding
b) Write a java program to implement dynamic method dispatch.
c) Write a Java program to implement multiple inheritance.
d) Write a java program that uses access specifiers.

Week-5
a) Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.
b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

c) Write a Java program that displays the number of characters, lines and words in a text file

Week-6

a) Write a Java program for handling Checked Exceptions.
b) Write a Java program for handling Unchecked Exceptions.

Week- 7

a) Write a Java program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds.
b) Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

Week-8

a) Develop an applet that displays a simple message.
b) Develop an applet that receives an integer in one text field, and computes its factorial value and returns it in another text field, when the button named "Compute" is clicked.

Week 9

Write a Java program that works as a simple calculator. Use a grid layout to arrange button for the digits and for the +, -,*, % operations. Add a text field to display the result.

Week-10

a) Write a Java program for handling mouse events.
b) Write a Java program for handling key events.

Week-11

1. Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the textfields Num1 and Num 2.
   The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1or Num2 were not an integer, the program would throw NumberFormatException. If Num2 were Zero, the program would throw an Arithmetic Exception and display the exeption in a message dialog box.

Week -12

a) Write a java program that simulates traffic light. The program lets the user select one of three lights: red, yellow or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No
I Light is on when the program starts.

b) Write a Java program that allows the user to draw lines, rectangles and ovals.

Week -13

Create a table in Table.txt file such that the first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using JTable component.

Text Books

1. Java;the complete reference,8th editon ,Herbert Schildt, TMH.
2. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI.
3. Introduction to Java programming, Sixth edition, Y.Daniel Liang, Pearson Education.
4. Big Java, 2nd edition, Cay Horstmann, Wiley Student Edition, Wiley India Private Limited

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

OPERATING SYSTEMS LAB

Course Code: GR14A2073 L:0 T:0 P:2 C:2
II Year II Semester

PART I

Objective

To understand the operating System functionalities System/ Software Requirement

1. Simulate the following CPU scheduling algorithms
   a) Round Robin b) SJF c) FCFS d) Priority
2. Simulate Bankers Algorithm for Dead Lock Avoidance.
3. Simulate all page replacement algorithms
   a) FIFO b) LRU c) LFU
4. Simulate Paging Technique of memory management.
5. Implement following memory Fragmentation Algorithms
   (a)Internal Fragmentation
   (b)External Fragmentation
6. Simulate all file allocation strategies
   a) Sequential b) Indexed c) Linked
7. Simulate MVT and MFT.
8. Simulate all File Organization Techniques
   a) Single level directory b) Two level directory
9. Simulate the following Disk Scheduling Algorithms
   (a) First Come-First Serve (FCFS)
   (b)Shortest Seek Time First (SSTF)
   (c)Elevator (SCAN)
   (d)Circular SCAN (C-SCAN)
   (e)LOOK
   (f)C-LOOK
10. Simulate the Producer-Consumer Problem.
11. Simulate the Readers-Writers Problem using Semaphore.
12. Simulate the Dinning Philosophers Problem.

Text Books

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating Systems' – Internal and Design Principles Stallings, Fifth Edition–2005, Pearson education/PHI.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED DATABASES LAB

Course Code: GR14A2074 L:0 T:0 P:2 C:2
II Year II Semester

PL/SQL

Recommended Systems/Software Requirements:

- Intel based desktop PC
- Mysql/Oracle latest version Recommended

Task-1

1. Write a PL/SQL program to find sum of two numbers.
2. Write a PL/SQL program for finding Multiples of 5.
3. Write a PL/SQL program for display the Multiplication Tables up to given number.
4. Write a PL/SQL program to generate reverse for given number.
5. Write a PL/SQL program to find whether a given number is prime or not.

Task-2

1. Write a PL/SQL block using string functions
2. Write a PL/SQL program to print a string in a letter by letter format.
3. Write a PL/SQL program to insert a space after each letter in a given string.
4. Write a PL/SQL program to print the number of products from product table whose prices are between 0 to 50 , 50 to 100,100 to 150 , 150 to 200, 200 to 250.
5. Write a PL/SQL program to calculate the student grade using case statement.

Task-3

1. Write a PL/SQL to display the employee details using %type data type.
2. Write a PL/SQL to display the employee details using %row type data type.
3. Write a PL/SQL code to retrieve the employee name, join_date, and designation from employee database of an employee whose number is input by the user.
4. Write a PL/SQL code to calculate tax for an employee of an organization .

Task-4

1. Write a PL/SQL program to display employee details using cursors.
2. Write a PL/SQL program to display top 10 employee details based on salary using cursors.
3. Write a PL/SQL program to display student mark list using cursors.

4. Write a PL/SQL program to update the salary of employees who earn Less than the average.

Task-5

1. Write a PL/SQL program to update the commission values for all employees with salary less than 2000 by adding Rs.1000 to existing employees.
2. Write a PL/SQL code to calculate the total salary of first n records of employee table. The value of n is passed to cursor as parameter.

Task-6

1. Write a row trigger to insert the existing values of the salary table in to a new table when the salary table is updated.
2. Write a trigger on the employee table which shows the old values and new values of ename after any updations on ename on Employee table.

Task-7

1. Write a PL/SQL procedure for inserting , deleting and updating an employee table .
2. Writ a PL/SQL procedure to find the number of students ranging from 100-70%, 69-60%, 59-50% & below 49% in each course from the student_course table given by the procedure as parameter.

Task-8

Create a PL/SQL function that accepts 2 numbers and returns the addition of passed values. Also Write the code to call your function.

1. Write a PL/SQL function that accepts department number and returns the total salary of the department. Also Write a function to call the function.

Task-9

Write a PL/SQL program to handle predefined exception.

2) Write a PL/SQL program to handle user defined exception.

Task -10

Write a PL/SQL code to create

a) Package specification
b) Package body For the insert, retrieve, update and delete operations on a student table.

Task -11

Develop banking application by performing the following:

a) Create customer and transaction tables.
b) Write a procedure to Insert and delete the values in the customer table.

c) Write a procedure to update the customer table based on the transactions in the transaction table.

Text Books

1. "ORACLE PL/SQL by example", Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition
2. "ORACLE DATABASE LOG PL/SQL Programming", SCOTTURMAN, Tata Mc-GrawHill.
3. "SQL & PL/SQL for Oracle 10g", BlackBook, Dr.P.S. Deshpande.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

VALUE EDUCATION AND ETHICS

Course Code: GR14A2002 L:2 T:0 P:0 C:0
II Year II Semester

Unit-I
Values and self development –social values and individual attitudes, Work ethics, Indian vision of Moral and non-moral valuation, Standards and principles, Value judgments. Importance of cultivation of values, Sense of duty, Devotion, Self reliance, Confidence, Concentration, Truthfulness, Cleanliness, Honesty, Humanity, Power of faith, National unity, Patriotism, Love for nature, Discipline.

Unit-II
Personality and Behavior Development-Soul and scientific attitude, God and scientific attitude, Positive thinking, Integrity and discipline, Punctuality, Love and Kindness, Avoiding fault finding, Free from anger, Dignity of labor, Universal brotherhood and religious tolerance, True friendship, Happiness Vs suffering, love for truth, Aware of self destructive habits, Association and cooperation, Doing best, Saving nature.

Unit-III
Character and Competence-Science Vs God, Holy books Vs blind faith, Self management and good health, Equality, Nonviolence, Humanity, Role of women, All religions and same message, Mind your mind, Self control, Honesty, Studying effectively.

Unit-IV
Professional consciousness Ethics: Ethical Human conduct, Development of human consciousness, Implications of value based living, Holistic technologies, Production systems, Universal human order, Code of conduct.

Unit-V
Legislative procedures: Rights and Rules, Human Rights, Valuable groups, Copy rights, IPR, RTI Act, Lokpal, Ombudsman.

Text Books

1. Chakraborty,S.K., Values and Ethics for Originations Theory and Practice, Oxford University Press, New Delhi, 2001
2. R R Gaur, R Saugal, G P Bagaria, “A foundation course in Human values and Professional Ethics”, Excel books, New Delhi, 2010.

Reference Books

1. Frankena, W.K., Ethics, Prentice Hall of India, New Delhi, 1990.
2. Kapoor, S.K., Human rights under International Law and Indian Law, Prentice Hall of India, New Delhi, 2002.

III-Year

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

UNIX AND SHELL PROGRAMMING

Course Code: GR14A3050 L:3 T:1 P:0 C:4
III Year I Semester

UNIT - I

Introduction to UNIX: Functions of Operating Systems, Single user and Multi user OS, History of UNIX, Features of UNIX, Structure of UNIX, shell and kernel functionalities. UNIX Utilities: Directory commands – mkdir, chdir, rmdir, who, ls; I/O redirection and File handling utilities – input output redirection operators, cat, touch, cp, mv, rm, ln, unlink, more; Disk utilities – du, df, mount, unmounts; Security by file permissions – chmod, umask, chown, chgrp; process utilities – ps, nice, nohup, kill; Networking commands – finger, ftp, telnet, arp, mail, wall, news; Backup utilities – cpio, tar; Text processing utilities and Filters - cat, tail, head, sort, nl, uniq, tr, comm, cmp, diff, cut, paste, join, tee, grep, egrep, fgrep; pipe operator, here documents.

UNIT – II

Editors in UNIX: Visual Editor – Modes of operation, creating and editing files, Inserting and appending text, Deleting Text, Navigating cursors, Stream editor – Sed commands, regular expressions with Sed, Sed pattern flags, examples.
Working with UNIX shell: Introduction to shell, types of shell, shell Meta characters, shell variables, shell commands, control structures, positional parameters, command line arguments, shell script examples.

UNIT - III

Unix File System: Types of Files, Hierarchical Unix file system, Structure of file system, file descriptors, System calls – File related system calls - usage of open, creat, read, write, close, unlink, link, symlink, lseek, stat, fstat, umask, dup, dup2, chmod, chown,; Directory handling system calls - opendir, readdir, closedir, rewinddir, seekdir, telldir, mkdir, rmdir, chdir, getcwd The Standard I/O library function - fopen, fclose, fgetc, getc, fputc, putc, fgets, gets, fflush, fseek; Formatted I/O library function – fscanf, fprintf,sscanf,sprintf.

UNIT-IV

Unix Process: process basics, process identifiers, process structure, process control, creating a new process, waiting for a process, process termination, Daemon Process, zombie process, orphan process, system call interface for process management - fork, vfork, exit, wait, waitpid, exec.

Signals: Signal concepts, unreliable signals, interrupted system calls, kill and raise functions, signal handling mechanism, signal function, alarm, pause, abort, sleep, system functions.

UNIT - V

Awk - advanced filter : Simple awk filtering, Fields, variables and expressions, Arrays, Functions, control flow, example awk scripts.

Inter process Communication Overview: Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, streams and messages, name spaces, pipes, FIFOs.

TEXT BOOKS

1. Unix the ultimate guide, Sumitabha Das, TMH
2. Unix and Shell Programming, B.M.Harwani, Oxford university press.
3. Unix Network Programming, W.R.Stevens, Pearson/PHI

REFERENCE BOOKS

1. Advanced Programming in the Unix environment, W.R.Stevens, Pearson education.
2. Unix system programming using C++, T.Chan, PHI
3. Unix for programmers and users, third edition, Graham Glass, King Ables, Pearson education.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPILER DESIGN

Course Code: GR14A3051 L:3 T:1 P:0 C:4
III Year I Semester

UNIT - I
Overview of Compilation: Phases of Compilation – Lexical Analysis, Regular grammar and regular expression for common programming language features, pass and phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzer generator.

UNIT - II
Top down Parsing : Context free grammars, Top down parsing – Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictive parsing.
Bottom up parsing : Shift Reduce parsing, LR and LALR parsing, Error recovery in parsing , handling ambiguous grammar, YACC – automatic parser generator.

UNIT - III
Semantic analysis: Intermediate forms of source programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, Syntax directed translation, Conversion of popular programming languages language constructs into Intermediate code forms, Type checker.
Symbol Tables : Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information .

UNIT - IV
Block structures and non block structure storage allocation: Static, Runtime stack and heap storage allocation, storage allocation for arrays, strings and records.
Code optimization : Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation.

UNIT - V
Data flow analysis: Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.
Object code generation: Object code forms, machine dependent code optimization, register allocation and assignment, generic code generation algorithms, DAG for register allocation.

TEXT BOOKS

1. Principles of compiler design -A.V. Aho , J.D.Ullman, Pearson Education.
2. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

REFERENCE BOOKS

1. Lex&Yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
2. Modern Compiler Design- Dick Grune, Henry E. Bal, Cariel T. H. Jacobs, Wiley dreamtech.
3. Engineering a Compiler-Cooper & Linda, Elsevier.
4. Compiler Construction- Louden, Thomson.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

MICROCONTROLLERS

Course Code: GR14A2055 L:3 T:1 P:0 C:4
III Year I Semester

UNIT-I

Introduction and 8086 Architecture: Introduction to microprocessors, 8086 Architecture: Functional diagram, Register organization, Memory segmentation, Programming model, Memory address, Physical memory organization, Signal description of 8086, Timing diagrams, Interrupts of 8086.

UNIT-II

Introductionand8051Architecture: Introductiontomicrocontrollers,comparing microprocessors and microcontrollers, 4,8,16 and 32 bit microcontrollers, DevelopmentsystemsforMicrocontrollers, Architecture;Architectureof8051, pin configuration of 8051microcontroller, hardware input pins, output pins ports and external memory, counters and timers,serial data input/output and interrupts.

UNIT-III

MovingDataandLogicalOperations: Introduction,Addressingmodes,External Datamoves,CodeMemoryRead-onlyDataMoves,PUSHandPOPOpcodes,Data Exchanges,LogicalOperations;Introduction,Byte-LevelLogicalOperations,Bit-LevelLogicalOperations,RotateandSwapOperations

UNIT-IV

Arithmetic Operations, Jump and Call Opcodes: Introduction,Flags, IncrementingandDecrementing, Addition,Subtraction,Multiplicationand Division,Decimal Arithmetic,JumpandCallopcodes;introduction,Thejump andcall program range,Jumps,CallsandSubroutines,call and returns, Interrupts andReturns

UNIT-V

8051MicrocontrollerDesign: Introduction, Microcontrollerspecification, MicrocontrollerDesign,TestingtheDesign,Timingsubroutines,SerialDataTransmi ssion.

ApplicationsandSerialDataCommunication:Keboards,Displays, PulseMeasurement,D/Aand A/DConversions,MultipleInterrupts,Serialdata Communication;

Teaching methodologies

- Power Point presentations
- Tutorial Sheets
- Assignments

Text Book

1. D.V.Hall, Microprocssors and Interfacing, TMH,2nd edition 2006.
2. KennethJ.Ayala,The8051MicrocontrollerArchitectureProgrammingand Applications,2ndEdition,PenramInternationalPublishers(I),1996.

Reference Book

1. A.K.Ray and K.M. Bjurchandani, TMH, 2nd edition, Advanced Microprocessors and Peripherals TMH, 2006
2. MohammedAriMazidiandJanciGillispie,The8051Microcontrollerand EmbeddedSystems,PearsonEducationAsia,NewDelhi,2003.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPUTER NETWORKS

Course Code: GR14A2077 L:3 T:1 P:0 C:4
III Year I Semester

Unit-I
Introduction: Uses of Computer Networks, Network Hardware, Network Software, ReferenceModels: OSI, TCP/IP, Examples Networks: Arpanet, Internet, ATM.
Physical Layer: Guided Transmission media, Wireless Transmission Media, CommunicationSatellites. The public Switched Telephone Network, the Mobile Telephone Network

Unit-II
Data link layer: Design issues, framing, error detection and correction, Elementary Data LinkProtocol, Sliding Window Protocols. Medium Access sub layer: The Channel Allocation Problem, Multiple Access Protocols, Ethernet, wireless LANS, Bluetooth, Data Link Layer Switching.

Unit-III
Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion ControlAlgorithms, QoS, & the Network Layer in the Internet.

Unit-IV
Transport Layer: Transport Services, Elements of Transport Protocols. The Internet Transport Protocols: UDP & TCP.

Unit-V
Application Layer: DNS, Electronic Mail, the World Wide Web, Multi Media, Cryptography.

Teaching methodologies
1 White board
2 Power Point presentations
3 Tutorials
4 Assignments

Text Books

1 Computer Networks — Andrew S Tanen baum, 4th Edition, Pearson Education/PHI
2 Data Communications and Networking – Behrouz A. Forouzan,Third Edition TMH.

References Books

1 An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education
2 Understanding communications and Networks- 3rd Edition, W.A. Shay, Thomson A

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

PRINCIPLES OF PROGRAMMING LANGUAGE

Course Code: GR14A3053 L:3 T:1 P:0 C:4
III Year I Semester

UNIT-I

Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, Influences on Language design, Language categories, Programming Paradigms – Imperative, Object Oriented, Functional Programming , Logic Programming. Programming Language Implementation: Compilation and Virtual Machines, programming environments.

UNIT - II

Syntax and Semantics: General Problem of describing Syntax and Semantics, formal methods of describing syntax - BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, denotational semantics and axiomatic semantics for common programming language features.

Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

UNIT - III

Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation, mixed mode assignment, Assignment Statements, Control Structures – Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions, user defined overloaded operators, co routines.

UNIT - IV

Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object

oriented programming in small talk, C++, Java, C#, Ada 95.
Concurrency: Subprogram level concurrency, semaphores, monitors, message passing, Java threads, C# threads.
Exception handling: Exceptions, Exception propagation, Exception handler in Ada, C++ and Java.
Logic Programming Language : Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

UNIT - V
Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative languages.

TEXT BOOKS
1. Concepts of Programming Languages Robert .W. Sebesta 6/e, Pearson Education.
2.. Programming Languages –Louden, Second Edition, Thomson.

REFERENCE BOOKS
1. Programming languages –Ghezzi, 3/e, John Wiley
2. Programming Languages Design and Implementation – Pratt and Zelkowitz, Fourth Edition PHI/Pearson Education
3. Programming languages –Watt, Wiley Dreamtech
4. LISP Patric Henry Winston and Paul Horn Pearson Education.
5. Programming in PROLOG Clocksin, Springer

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

MICROCONTROLLERS LAB

Course Code: GR14A2059 L:3 T:1 P:0 C:4
III Year I Semester

Listofexperimentson2Gkit

1. LEDpatterns
a)BlinkingLEDs,b)Seriallights,c)Halfon/Halfoff,d)Alternateon/off

2. Switches&LEDs
a) Press switch to make corresponding LED on, b)Press switch to make correspondingLEDoffc)Firstswitchpress,lastLEDon,d)Firstswitchpress,last LEDoff

3. LCD
a)Character&stringdisplayonLCD,b)SW1-Displaystrring1onfirstlineof LCD,c)SW2-Displaystrring1onfirstlineofLCD,SW2

4. UART
a)EchoProgram,b) TakecommandfromPC&glowcorrespondingLED, c)PressSwitch&displayswitchnumberonPC,d)DisplaydatareceivedbyUART on LCD

5. TRIAC
a)220VACbulbswitchon/off b)220VACfanspeedcontrolwithfixedstepsize

7. ADC
a)Raw ADCvaluedisplayonLCE,b)Raw ADCvaluedisplayonHyper Terminal,c)Engineering unit conversion and display on LCD, d)Engineering unit conversionanddisplayonHyperTerminale)Limitcheckingfortemperaturevalue and switching on fan using triac f)Limit checking for ambient light value and switchingonlightusingtriac.

8. DAC
a) Fixed step incremented DAC,output seen on multi-meter, b)DAC input valuereceivedfromHyperTerminalc)DACinputvaluetakenfromswitches

9. DCmotor

a)DCmotorcontrol-CW,CCWandstopusingswitches,b)DCmotorcontrol-CW,CCWandstopusingcommandsreceivedfromHyperTerminal

10. ZigBee

a) ReceivedataonZigBeefromPCZigBeedongleanddisplaydataonLEDs
b) Receive data on ZigBee from PC ZigBee dongle and display data on LCD
c) ReadADCandtransmitdatausingZigBee
d) Triacbasedcontroloffanandlight usingdatareceivedonZigBee

11. RF433MHz

a) Receive data on RF from another kit with RF transmitter. Connect PCs to bothkits.TypeindatainHyperTerminalofTransmitterkit&seeonHyperTerminal of Receiver kit b) Read switches on transmitter kit, send their status on RF to receiverkitandcontrolmotorusingswitchstatus

12. Bluetooth

a) TransferdatatoPCusingBluelink,b)ReceivedatafromPCusingBlueLink &displayonLCDc)Transfer data from mobile phone(using aJ2ME app) and receive using Blue link and control motor operation d)Transfer data from mobile phone(using a J2ME app) and receive using BlueLinkand control electrical applianceoperation

13. Ethernet

a) TransferdatatoPCusing WIZI05SRanddisplayonHyperTerminal, b)Implementanembeddedwebserver

14. RTC

a) Read and display RTC data on LCD, b)Read and display RTC data on Hyper Terminal,c)SetRTCusingHyperterminalanddisplaydataonHyper Terminal,d)ImplementanEventLoggerwithTimeStampdisplay

15. SDcard

a) Transfer data to PC, store on SDcardand retrieve it back(block transfer) b)ImplementFATfilesystemonSDcardc)Implementdataacquisitionsystemand store data ina CSV file on SD card with time stamp

Note:A minimum of 10(Ten) experiments have to be performed and recorded bythecandidatetoattaineligibilityforPracticalExamination

Lab methodologies

- Assignments
- Lab experiments with Arduino software

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED JAVA PROGRAMMING LAB

Course Code: GR14A3054 L:3 T:1 P:0 C:4
III Year I Semester

Exception Handling and Packages:

Task 1

Create a package griet.cse.hyd<your branch id>. <your id>.<your first name>. For e.g., griet.cse.Hyd05.14241A0510.Anu
Now create a Greeter class in this package having the following features:
Attributes:
name String //indicates name of the person to be greeted
Member functions:
Greeter(aName) //constructor to initialize the name of the person to be greeted by this greeter.
sayHello() //returns a hello message with the name of the person initialized earlier.
sayGoodBye() //bids goodbye to the person named earlier.
Create another class in the same package called Advisor that has the following features:
Attributes:
message string[5]// contains five advice messages
Member functions:
advisor() // default constructor to initialize an array of strings with atleast five advice messages
GetAdvice() // randomly selects an advice from the available list of messages and returns it to the caller of this method
Outside the package, from your working directory, create a class GreeterTest that constructs Greeter objects for all command-line arguments and prints out the results of calling sayHello(). The program should then display an advice and finally bid goodbye to each of the persons/entities in reverse order of the names entered at the command line.

Task 2

a)Create a class Number having the following features:

Attributes

int		first number
int		second number
result	double	stores the result of arithmetic operations performed on a and b

Member functions

Number(x, y)	constructor to initialize the values of a and b
add()	stores the sum of a and b in result
sub()	stores difference of a and b in result
mul()	stores product in result
div()	stores a divided by b in result

Test to see if b is 0 and throw an appropriate exception since division by zero is undefined.
Display a menu to the user to perform the above four arithmetic operations.

b)Create a class BankAccount having the members as given below:

1.accNo integer
2.custName string
3.accType string (indicates 'Savings' or 'Current')
4.balance float

Include the following methods in the BankAccount class:

1.void deposit(float amt);
2.void withdraw(float amt);
3.float getBalance( );
4.float getBalance( );

- deposit(float amt) method allows you to credit an amount into the current balance. If amount is negative, throw an exception Negative Amount to block the operation from being performed.
- withdraw(float amt) method allows you to debit an amount from the current balance. Please ensure a minimum balance of Rs. 1000/- in the account for savings account and Rs. 5000/- for current account, else throw an exception Insufficient Funds and block the withdrawal operation. Also throw an exception Negative Amount to block the operation from being performed if the amt parameter passed to this function is negative.
- getBalance() method returns the current balance. If the current balance is below the minimum required balance, then throw an exception Low Balance Exception accordingly.

Have constructor to which you will pass, accno, cust_name, acctype and initial balance. And check whether the balance is less than 1000 or not in case of savings account and less than 5000 in case of a current account. If so, then raise a Low Balance Exception. In either case if the balance is negative then raise the Negative Amount exception accordingly.

c) Create a class USERTRAIL with following specifications.

val1, val2 type int

Methods

- boolean show () will check if val1 and val2 are greater or less than Zero Have constructor which will val1, val2 and check whether if it is less than 0 then raise a custom Exception (name: Illegal value exception.)

IO Streams & GUI Programming:

Task 3

Write a program which take source file and destination file as input as command line arguments. It copies the source file contents to destination file. If source file does not exist, it should give appropriate message to use. If destination file does not exist, it should be created. If it exists, program should ask that, "whether you want to overwrite?(Yes/No"). On the basis of user choice, appropriate action should be taken. Note: Files may be any type of files like bitmap files, exe files, text files etc

Task 4

a) Write a stream based program which will accept Roll Number, Name, Age and Address from user. Age and Roll-no should be numeric. Handle with built-in exception. None of the field should be blank. Handle with custom exception, Ask user, whether to write the data in the file .If answer is yes then data is saved into a file as an object (User can write many records in the file), otherwise terminate the current program .Write another program to display all the records saved into the file.

b)Write a program which will accept an input String from and write the input in the file io.txt,Show size of the file, Read contents from the file and display them on console, Delete io.txt file using File class

Multithreading

Task 5

Write a multithreaded program that will accept 4 strings from the command line and search in a particular file for a given string and display the status of each search on the screen. Note that, all threads are operating on the same file. Write a Java application that will accept two filenames (text files) as command line arguments and use two threads to read contents from the two text files. Each of the threads should sleep for a random time after displaying filename with each line. Write a java application that will create and start two threads. One thread will read a text file (Number.txt) containing five positive integers one on each line. The second thread should calculate factorial of the number read by the first thread and print the message on the screen as "Factorial of x is y" ,here x is number & y is factorial of the number. The two threads should work in synchronization. Handle all necessary exceptions.

Task 6

a) Implement three classes: Storage, Counter and Printer.

- The Storage class should store an integer.
- The Counter class should create a thread and starts counting from 0 (0,1,2,3…) and stores each value in the Storage class.
- The Printer Class should create a thread that keeps reading the value in the Storage class and printing it.

Write a program that creates an instance of the Storage class and set up a Counter and Printer object to operate on it. Identify that, whether synchronization is required or not in this program. If yes, implement it.

b) Modify the above program to ensure that each number is printed exactly once, by adding suitable synchronizon.

Networking & Collections:

Task 7

a) Write console based networking application as follows, Write client Application which should send hello to server. Server application should accept client request and it should send welcome client message to client application. b) Write a client application which will send login Id and password to the server as an object. Server Application should respond to the client request by validating login Id and Password. If login Id and Password are GRIET and CSE respectively send valid user or invalid user message to client application .Create a class called Login, attribute are user Id and password.

Task 8

a) Write a program to add list of student names to ArrayList and it should find a particular name whether it exists or not in the list.

b) Create a Product class with Product Id & Product Name. Write a program to accept information of 10 products and store that in Hash Table. Search a particular product in the Hash Table. Remove a particular product id and product name from the Hash Table. The product list is as follows:

Product Id	Product Name
P001	Maruti800
P002	MarutiZen
P003	MarutiEsteem

Task 9

Implement vector class for this problem

- Create an Employee class which will have details like EmployeeNo, EmployeeName and Address. You should pass value for EmployeeNo, EmployeeName and Address through constructor.
- Create a method addInput( ) which will add employee details to vector.

- Create method display( ) which should display all data from vector using Enumeration.

Note: addInput( ) and display( ) should not be member functions of Employee class.

Task 10

Create Phone book having user interface like

1. Add new phone book entry
2. Search Phone Number
3. Quit.

Option 1 it allows add name and Phone no.
Option 2 it has to take name as input from the user based on that it should return phone number
Option 3: will terminate the program
Use HashMap to store phone book entries.

JDBC

Task 11

- Write a java program to display the first 5 records from the table Emp. (Use Type-4 driver for oracle)
- Write a java program to display the first 5 records from the table Emp. (Use Type-1 driver for oracle)
- Write a java program to display the first 5 records from the table Emp. (Use Type-1 driver for MS-Access)
- Write a java program to find number of records in the table Emp. (Use Type-4 driver for Oracle)

Task 12

Write a java program as follows

Accept the empno from the user.

a) Write a method display( ) which takes the empno as parameter and displays the detail information of the employee.
b) Write a method update() which takes the empno as a parameter. Displays the current salary and updates the salary entered by user.
c) Delete the record of the employee whose empno is entered.If employee with the entered empno doesn't exists ask for the new empno .if employee with the empno does not exits display appropriate message to user.

Oracle Query to For Emp Table.

```
create table emp
        ( EMPNO         NOT NULL NUMBER(4),
        ENAME           VARCHAR2(10) ,
```

JOB	VARCHAR2(9),
MGR	NUMBER(4),
HIREDATE	DATE,
SAL	NUMBER(7,2),
COMM	NUMBER(7,2),
DEPTNO	NUMBER(2)

Task 13

Any Applications on Result Set, Prepared Statement, Callable Statement, Transaction Management.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

UNIX PROGRAMMING AND COMPILER DESIGN LAB

Course Code: GR14A3055 L:3 T:1 P:0 C:4
III Year I Semester

Task 1

a) Practice the following commands in UNIX environment
(i) File Handling Utilities (ii) Disk Utilities
b) Practice the given commands in UNIX environment
(i) Security by File Permissions (iii) Process Utilities
c) Demonstrate all Text Processing Utilities in UNIX.
d) Practice Stream editor commands.

Task2

a) Write a shell script to print the sum of even numbers from given n numbers.
b) Write a shell script that accepts a file name as argument and display specified number of lines from the beginning of file.
c) Write a shell script that takes an argument and checks if argument supplied is a file or a directory and reports accordingly. If the argument is a directory, display the contents of directory.

Task 3

a) Write a shell script to demonstrate the creation of a menu to display list of files, process status, users of a system, current date, present working directory and exit from prompt (using case statement).
b) Write an awk script to count the number of lines in a file that do not contain vowels.
c) Write an awk script to find the number of characters, words and lines in a file.

Task **4**

a) Write a C program that makes a copy of a file using standard I/O and system calls.
b) Implement in C the following UNIX commands using System calls
a. cat b. ls
c) Write a program that takes one or more file/directory names as command line input and reports the following information on the file.
a. File type.
b. Number of links.
c. Time of last access.

d. Read, Write and Execute permissions.

d) Write a C program that demonstrates redirection of standard output to a file.
Ex: ls> f1.

Task 5

a) Write a C program to create a child process and allow the parent to display "parent" and the child to display "child" with Process ID's on the screen.
b) Write a C program to create a Zombie process.
c) Write a C program that illustrates how an orphan is created.
d) Write a C program that illustrates suspending and resuming processes using signals.

Task 6

a) Write a C program that illustrates how to execute two commands concurrently with a command pipe. Ex: - ls –l | sort
b) Write C programs that illustrate communication between two unrelated processes using named pipe.

Task 7

Design a lexical analyzer for tokenizing an expression and identify comment lines in the program.

Task 8

Implement the following techniques.
a) Brute force technique b) RDP

Task 9

Find the first set and follow of a given grammar.

Task 10

Design shift-reduce parser for a given grammar.

Task 11

Implement intermediate code generation and code generation for a given expression.

Task 12

a) LEX Program to count the number of lines, words and letters, capital letters, small letters and digits in a file.
b) Function usage in LEX program.
c) Design a simple arithmetic calculator: Use LEX and YACC.

Case Study: Implement parsing techniques for a given grammar and show DFA.

TEXT BOOKS

- Unix the ultimate guide, SumitabhaDas,TMH.
- Unix Network Programming, W.R.Stevens,Pearson/PHI
- Principles of compiler design -A.V. Aho ,J.D.Ullman, Pearson Education.
- Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

REFERENCE BOOKS

1. Unix System Programming using C++,T.Cahn.PHI.
2. Unix for programmers and users , third edition, Graham Glass, King Ables, Pearson education.
3. Lex&Yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
4. Compiler Construction- Louden, Thomson

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DESIGN AND ANALYSIS OF ALGORITHMS

Course Code: GR14A3056 L:3 T:1 P:0 C:4
III Year II Semester

UNIT -I

Introduction: Definition of algorithm, properties of an Algorithm, performance analysis--space complexity & time complexity, asymptotic notations: big oh notation, omega notation, theta notation, little oh notation & little omega notation. Disjoint sets: disjoint set Representation, Operations, union and find algorithms.

UNIT-II

Divide and conquer: General method, applications, binary search, quick sort, merge sort, strassen's matrix multiplication. Time complexities of divide and conquer algorithms.

UNIT- III

Dynamic programming -1: General method, applications, matrix chain multiplication, optimal binary search trees, 0/1 knapsack problem All pairs shortest path problem, travelling sales person problem, reliability design.

Dynamic programming -II: Greedy method: General method, applications--job sequencing with deadlines, 0/1 knapsack problem, minimum cost spanning trees, single source shortest path problem.

UNIT-IV

Backtracking: General method, applications, n-queen problem, sum of subsets problem, graph coloring, Hamiltoni an cycles.

Branch and Bound-I: General method, applications, travelling sales person problem, /1 knapsack problem: LC branch and bound solution, FIFO branch and bound solution

UNIT-V

Branch and Bound-II

NP-hard and NP-complete problems: Basic concepts, non deterministic algorithms, deterministic algorithms, Introduction to P class problems, NP class problems.

TEXT BOOKS

1. Ellis Horowitz, SatrajSahni and S Rajasekharam, Fundamentals of Computer Algorithms, Galgotia publishers

2. T H Cormen, C E Leiserson, and R L Rivest, Introduction to Algorithms, 3rdEdn, Pearson Education

REFERENCE BOOKS

1. R C T Lee, Hang and TT Sai, Introduction to Design and Analysis of Algorithms, A strategic approach, TMH

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SOFTWARE ENGINEERING

Course Code: GR14A3057 L:3 T:1 P:0 C:4
III Year II Semester

UNIT-I

Introduction to Software Engineering : The evolving role of software, Changing Nature of Software, Software myths.

A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Process models: The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

UNIT-II

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

UNIT-III

Design Engineering: Design process and Design quality, Design concepts, the design model.

Creating an architectural design: Software architecture, Data design, Architectural styles and patterns, Architectural Design.

Performing User interface design : Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT-IV

Testing Strategies : A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

Product metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

UNIT-V

Metrics for Process and Products: Software Measurement, Metrics for software quality.

Risk management : Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

Quality Management : Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOKS

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition.McGrawHill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson education.

REFERENCE BOOKS

1. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers
2. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiely.
3. Systems Analysis and Design- Shely Cashman Rosenblatt,Thomson Publications.
4. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

INFORMATION SECURITY

Course Code: GR14A3058 L:3 T:1 P:0 C:4
III Year II Semester

UNIT-I
Security Attacks(Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security.
Conventional Encryption Principles, Conventional encryption algorithms(DES,Blowfish,Idea), cipher block modes of operation, location of encryption devices, key distribution, Approaches of Message Authentication, Secure Hash Functions(MD-5,SHA-1) and HMAC.

UNIT-II
Public key cryptography principles, public key cryptography algorithms (RSA, Deffie-Hellman), digital signatures, digital Certificates, Certificate Authority and key management, Kerberos, X.509 Directory Authentication Service.

UNIT-III
Email privacy: Pretty Good Privacy (PGP) and S/MIME.

UNIT -IV
IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management, Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

UNIT - V
Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3.
Intruders, Viruses and related threats ,Firewall Design principles, Trusted System, Intrusion Detection Systems.

TEXT BOOKS
1. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education.
2. Hack Proofing your network by Ryan Russell, Dan Kaminsky, Rain ForestPuppy, Joe Grand, David Ahmad, Hal Flynn IdoDubrawsky, Steve W.Manzuik and Ryan Permeh, wileyDreamtech

REFERENCE BOOKS

1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Network Security - Private Communication in a Public World by CharlieKaufman, Radia Perlman and Mike Speciner, Pearson/PHI.
3. Cryptography and network Security, Third edition, Stallings, PHI/Pearson
4. Principles of Information Security, Whitman, Thomson.
5. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
6. Introduction to Cryptography, Buchmann, Springer.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

WEB TECHNOLOGIES

Course Code: GR14A3059 L:3 T:1 P:0 C:4
III Year II Semester

UNIT-I
HTML Common tags- List, Tables, images, forms, Frames, Cascading Style sheets,
Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

UNIT-II
XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors (DOM and SAX).
Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties
Persistence, Customizes, Java Beans API, Introduction to EJB's

UNIT - III
Web Servers and Servlets: Tomcat web server, Introduction to Servlets, Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servlet Package, Reading Servlet parameters, Reading Initialization parameters, The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues.

UNIT-IV
Introduction to JSP: The Problem with Servelet, The Anatomy of a JSP Page, JSP Processing, JSP Application Design with MVC Setting Up and JSP Environment, Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat.
JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods, Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages, Sharing Session and Application Data, Memory Usage Considerations

UNIT V
Database Access : Database Programming using JDBC, Studying Javax.sql.* package,Accessing a Database from a JSP Page, Application – Specific

Database Actions,Deploying JAVA Beans in a JSP Page, Introduction to struts framework..

TEXT BOOKS

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNIT s 1,2 ,3)
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH (Chapters: 25) (UNIT 4)
3. Java Server Pages –Hans Bergsten, SPD O'Reilly (UNITs 5,6,7,8)

REFERENCE BOOKS

1. Programming world wide web-Sebesta,Pearson
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
3. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
4. Jakarta Struts Cookbook , Bill Siggelkow, S P D O'Reilly for chap 8.
5. Murach's beginning JAVA JDK 5, Murach, SPD
6. An Introduction to web Design and Programming –Wang-Thomson
7. Web Applications Technologies Concepts-Knuckles,John Wiley
8. Programming world wide web-Sebesta,Pearson
9. Web Warrior Guide to WebProgrammming-Bai/Ekedaw-Thomas
10. Beginning Web Programming-Jon Duckett WROX.
11. Java Server Pages, Pekowsky, Pearson.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SCRIPTING LANGUAGES

Course Code: GR14A3060 L:3 T:1 P:0 C:4
III Year II Semester

UNIT-I

Introduction to Scripting: Scripts and Programs, Origin of Scripting, Scripting Today, Characteristics of Scripting Languages, Web Scripting, and the universe of Scripting Languages. PHP Basics: PHP Basics- Features, Embedding PHP Code in your Web pages, Outputting the data to the browser, Data types, Variables, Constants, expressions, string interpolation, control structures, Function, Creating a Function, Function Libraries, Arrays, strings and Regular Expressions.

UNIT-II

MYSQL Basics: Introduction to MYSQL: Database Concepts, General Overview of MYSQL database, Installation. Connecting and disconnecting from MYSQL Server, Querying the database, Data Definition Language, Functions and Logical operators, Access privilege system.

UNIT-III

Advanced PHP Programming: PHP and Web Forms, Files, PHP Authentication and Methodolgies-Hard Coded, File Based, Database Based, IP Based, Login Administration, Uploading Files with PHP.

UNIT-IV

Sending Email using PHP, PHP Encryption Functions, the Mcrypt package, Building Web sites for the World – Translating Websites- Updating Web sites Scripts, Creating the Localization Repository, Translating Files, text, Generate Binary Files, Set the desired language within your scripts, Localizing Dates, Numbers and Times.

UNIT-V

Python: Introduction to Python langauge, Python-syntax, statements,functions, Built -in- functions and Methods, Modules in Python, Exception Handling, Integrated Web Applications in Python – Building Small, Efficient Python Web Systems ,Web Application Framework.

TEXT BOOKS

1. The World of Scripting Languages, David Barron,Wiley India.
2. Beginning PHP and MySQL, 3rd Edition, Jason Gilmore, Apress Publications.
3. Python Web Programming, Steve Holden and David Beazley,New Riders Publications.

REFERENCE BOOKS

1. Open Source Web Development with LAMP using Linux, Apache, MYSQL, Perl and PHP, Lee and B.Ware (Addison Wesley) Pearson Education.
2. Programming Python, M.Lutz, SPD.
3. PHP 6 Fast and Easy Web Development,Julie Meloni and Matt Telles, Cengage Learning Publications.
4. PHP 5.1,I.Bayross and S.Shah,The X Team,SPD.
5. Core Python Programming,Chun,Pearson Education.
6. Guide to Programming with Python,M.Dawson,Cengage Learning.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ARTIFICIAL INTELLIGENCE AND NEURAL NETWORKS

Course Code: GR14A3061 L:3 T:1 P:0 C:4
III Year II Semester

UNIT -I

Introduction: AI problems, foundation of AI and history of AI intelligent agents, Agents and Environments, the concept of rationality, the nature of environments, structure of agents, problem solving agents, problem formulation.

Searching: Searching for solutions, uniformed search strategies – breadth first search, depth first search, search with partial information (Heuristic search) greedy best first search, A* search. Game Playing: Adversal search, Games, minmax, algorithm, optimal decisions in multiplayer games, Alpha-Beta pruning, Evaluation functions, cutting of search.

UNIT - II

Knowledge Representation & Reasons: logical Agents, Knowledge – Based Agents, the Wumpus world, logic, propositional logic, Resolution patterns in Propositional logic, Resolution, Forward & Backward Chaining.

First order logic: Inference in first order logic, propositional vs. first order inference, unification & lifts forward chaining, Backward chaining, Resolution.

UNIT-III

Characteristics of Neural Networks: Historical Development of Neural Networks Principles, Artificial Neural Networks: Terminology, Models of Neuron, Topology, Basic Learning Laws, Pattern Recognition Problem, Basic Functional Units, Pattern Recognition Tasks by the functional units.

UNIT-IV

Feed for ward Neural Networks: Introduction, Analysis of pattern Association Networks, Analysis of Pattern Classification Networks, Analysis of pattern storage Networks. Analysis of Pattern Mapping Networks.

Feedback Neural Networks: Introduction, Analysis of Linear Auto-associative FF Networks, Analysis of Pattern Storage Networks.

UNIT-V

Competitive Learning Neural Networks & Complex pattern Recognition: Introduction, Analysis of Pattern Clustering Networks, Analysis of Feature mapping Networks, Associative Memory.

TEXT BOOKS

1. Artificial Intelligence – A Modern Approach. Second Edition, Stuart Russel, Peter Norvig, PHI/ Pearson Education.
2. Artificial Neural Networks B. YagnaNarayana, PHI

REFERENCE BOOKS

1. Artificial Intelligence, 2nd Edition, E.Rich and K.Knight (TMH).
2. Artificial Intelligence and Expert Systems – Patterson PHI.
3. Expert Systems: Principles and Programming- Fourth Edn, Giarrantana/ Riley, Thomson.
4. PROLOG Programming for Artificial Intelligence. Ivan Bratka- Third Edition – Pearson Education.
5. Neural Networks Simon Haykin PHI
6. Artificial Intelligence, 3rd Edition, Patrick Henry Winston., Pearson Edition.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

MULTICORE COMPUTING AND ARCHITECTURE

Course Code: GR14A3062 L:3 T:1 P:0 C:4
III Year II Semester

UNIT-I

Introduction to Multi-core Architecture: Motivation, Parallel Computing Platforms, Differentiation between Hyper threading and Multi-Core architectures, Multi Threading on Single-Core and Multi-Core Platforms, Understanding the Performance.

System Overview on Threading: Definition, Application Programming Models and Threading, Virtual Environment.

UNIT-II

Programming Paradigms: Fundamental Concepts of Programming: Task Decomposition, Data Decomposition and Data Flow decomposition, Parallel Programming Patterns.

Threading and Parallel Programming Constructs : Synchronization, Critical sections, Deadlock, Synchronization Primitives, Flow-Control based Concepts

UNIT-III

Models: Threading APIs for Microsoft Windows, Microsoft .Net Framework, POSIX threads.

Open MP: Challenges in Threading a Loop, Data- race conditions, Performance Oriented Programming, Open MP Environment Variables, Compiling, Debugging.

UNIT-IV

Algorithm Structure Design Space: Introduction, Choosing an Algorithm Structure Pattern, Task Parallelism Pattern, Divide and Conquer Pattern, Recursive Data Pattern, Pipeline Pattern and Event –Based Coordination Pattern.

Basics of MPI: Getting Started, Basic Point-to-Point Message Passing, Collective Operations and Single –Core Processor fundamentals.

UNIT-V

Optimizations: Enhancing Parallelism, Dependence Analysis, Tiling for Locality and Communication, Aggregation for Communication. Load- Balancing Strategies, Virtualization. Speculative Parallelization, Transactional Memories. Bottlenecks, Small Critical Sections.

TEXT BOOKS

1. Multi-Core Programming-: Increasing Performance through Software , by ShameemAkther and J. Roberts, Intel Press, 2006 Intel Corporation. (Unit I to Unit III)
2. Patterns for Parallel Programming,Timothy G. Mattson, Beverly A. Sanders, Berna L. Massingil, pearson education,2004 (Unit –IV)
3. Parallel Programming: Techniques And Applications Using Networked Workstations And Parallel Computers, 2/E, Pearson Education India, 01-Sep-2006 (Unit V)

REFERENCE BOOKS

1. Introduction to High Performance Computing for Scientists and Engineers ,Chapman & Hall/CRC Computational Science ,July 02, 2010 by CRC Press.
2. Computer Organization and Design, David A. Patterson, John L. Hennessy, Morgan Kaufmann Publishers, 1998.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED ENGLISH COMMUNICATION SKILLS LAB

Course Code: GR14A3100 L:3 T:1 P:0 C:4
III Year II Semester

Unit-I
Functional English: Starting a conversation, responding appropriately and relevantly. Body Language, Role play in different situations

Unit-II
Vocabulary: Synonyms & Antonyms, Word Roots, One word substitutes, Prefixes & Suffixes, Study of word origin, Idioms and Phrases, Analogy.

Unit- III
Group Discussion: Introduction to Group Discussion its features and qualities desired in a participant of Group Discussion.

Unit-IV
Presentation Skills: Knowing audience; acquiring content; organizing ideas; foreseeing the possible clarifications sought; adopting of appropriate medium; positive stage presence; Presenting and feedback

Unit-V
Letter Writing & Résumé Writing: Manual and Emailing; types and formats; content and body of the letter. Email etiquettes; Resume Writing, tools required for writing resume's, role of cover letter in a resume.

Unit-VI
Interview Skills: Introduction, various types of questions asked in an interview, qualities required to be a competent interviewee.

Unit-VII
Reading comprehension: Introduction, types of reading, qualities of a good reader

Unit-VIII
Technical Report Writing
Formats and types of reports

Reference Books

1. English language laboratories: A Comprehensive Manual; NiraKonar, PHI Learning Pvt.Ltd.,Delhi.
2. Effective Technical Communication: A Guide for Scientist and Engineers;Barun K. Mitra, OUP.
3. Great Answers to Though Interview Questions; Martin John Yate; Seventh Edition;Kogan Page.
4. Business Communication; HorySankarMukerjee;OUP.
5. Technical Communication, Meenakshi Raman, Sangeeta Sharma, Oxford higher Education.
6. Professional Presentations; Malcom Goodale; Cambridge University Press.
7. Murphy's English Grammar with CD, Murphy, Cambridge University Press.
8. Effective Technical Communication, M. Ashraf Rizvi, Tata McGraw Hill.
9. Communication Skills, Sanjay Kumar, PushpLatha, Oxford Higher Education.
10. Business communication; Second Edition,Prentice Hall of India , New Delhi.
11. English for Engineers Made Easy, AedaAbidi, Ritu Chaudhry, Cengage Learning.
12. Effective Business Communication ; Seventh Edition; Murphy, HertaA.,Herbert W. Hildebrandt, and Jane P.Thomas 2009,Tata Mc Graw-Hill Publishing Company Limited, New Delhi.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

WEB TECHNOLOGIES LAB

Course Code: GR14A3063 L:3 T:1 P:0 C:4
III Year II Semester

1. XML editor like Altova Xml-spy [www.Altova.com/XMLSpy free] , Stylusstudio , etc.,
2. A database either Mysql or Oracle
3. JVM(Java virtual machine) must be installed on your system
4. BDK(Bean development kit) must be also be installed

Task -1
Design the following static web pages required for an online book store web site.

Home Page: The static home page must contain three frames.

Top frame : Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).

Left frame: At least four links for navigation, which will display the catalogue of respective links.
For e.g.: When you click the link “CSE” the catalogue for CSE Books should be displayed in the Right frame.

Right frame: The pages to the links in the left frame must be loaded

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Description of the Web Site			

Fig 1.1

Login Page

This page looks like below:

Logo	Web Site Name			
Home	**Login**	**Registration**	**Catalogue**	**Cart**
CSE **ECE** **EEE** **CIVIL**	User Name Password Submit Reset			

CATOLOGUE PAGE

The catalogue page should contain the details of all the books available in the web site in a table.

The details should contain the following:

1. Snap shot of Cover Page.
2. Author Name.
3. Publisher.
4. Price.
5. Add to cart button.

Logo	Web Site Name			
Home	**Login**	**Registration**	**Catalogue**	**Cart**
CSE **ECE** **EEE** **CIVIL**	   	Book : XML Bible Author : Winston Publication : Wiely Book : AI Author : S.Russel Publication : Princeton hall Book : Java 2 Author : Watson Publication : BPB publications Book : HTML in 24 hours Author : Sam Peter Publication : Sam	$ 40.5 $ 63 $ 35.5 $ 50	   

Note: Week 2 contains the remaining pages and their description.

Task -2
Cart Page
The cart page contains the details about the books which are added to the cart. The cart page should look like this:

Logo	Web Site Name			
Home	**Login**	**Registration**	**Catalogue**	**Cart**
CSE **ECE** **EEE** **CIVIL**	**Book name**	**Price**	**Quantity**	**Amount**
	Java 2	$35.5	2	$70
	XML bible	$40.5	1	$40.5
			Total amount -	**$130.5**

Registration Page
Create a "registration form "with the following fields

1. Name (Text field)
2. Password (password field)
3. E-mail id (text field)
4. Phone number (text field)
5. Sex (radio button)
6. Date of birth (3 select boxes)
7. Languages known (check boxes English, Telugu, Hindi, Tamil)
8. Address (text area)

Task-3
Validation

Write *JavaScript* to validate the following fields of the above registration page.

1. Name (Name should contains alphabets and the length should not be less than 6 characters).

2. Password (Password should not be less than 6 characters length).

3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)

4. Phone number (Phone number should contain 10 digits only).

Note : You can also validate the login page with these parameters.

Task-4

Design a web page using CSS (Cascading Style Sheets) which includes the following:

1. Use different font, styles: In the style definition you define how each selector should work (font, color etc.).

Then, in the body of your pages, you refer to these selectors to activate the styles.

For example:

```
<HTML>
<HEAD>
<style type="text/css">
B.headline {color:red; font-size:22px; font-family:arial; text-
decoration:underline}
</style>

</HEAD>

<BODY>
<b>This is normal bold</b><br>
Selector {cursor:value}

For example:

<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>

<b class="headline">This is headline style bold</b>
</BODY>

</HTML>
```

2. Set a background image for both the page and single elements on the page. You can define the background image for the page like this:

```
BODY {background-image:url(myimage.gif);}
```

3. Control the repetition of the image with the background-repeat property. As background-repeat: repeat Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

4. **Define styles for links as**

A:link
A:visited
A:active
A:hover

Example:

```
<style type="text/css">
A:link {text-decoration: none}
A:visited {text-decoration: none}
A:active {text-decoration: none}
A:hover {text-decoration: underline; color: red;}
</style>
```

5. **Work with layers:**

For example:

```
LAYER 1 ON TOP:
<div style="position:relative; font-size:50px; z-index:2;">
LAYER 1</div>
<div style="position:relative; top:-50; left:5; color:red; font-
size:80px; z-index:1">LAYER 2</div>
LAYER 2 ON TOP:
<div style="position:relative; font-size:50px; z-index:3;">
LAYER 1</div>
<div style="position:relative; top:-50; left:5; color:red; font
size:80px; z-index:4">LAYER 2</div>
```

6. **Add a customized cursor:**

Selector {cursor:value}
For example:

```
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
```

```
.Hlink{cursor:help}
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</Html>
```

Task-5

Write an XML file which will display the Book information which includes the following:

1. Title of the book
2. Author Name
3. ISBN number
4. Publisher name
5. Edition
6. Price

Write a Document Type Definition (DTD) to validate the above XML file.
Display the XML file as follows.

The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.
Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.
Hint: You can use some xml editors like XML-spy

Task- 6

Visual Beans

Create a simple visual bean with a area filled with a color.
The shape of the area depends on the property shape. If it is set to true then the shape of the area is Square and it is Circle, if it is false.
The color of the area should be changed dynamically for every mouse click. The color should also be changed if we change the color in the "property window ".

Task-7

1. Install TOMCAT web server and APACHE.
   While installation assign port number 4040 to TOMCAT and 8080 to

APACHE. Make sure that these ports are available i.e., no other process is using this port.

2. Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root.
   Access the pages by using the urls
   http://localhost:4040/rama/books.html (for tomcat)
   http://localhost:8080/books.html (for Apache)

Task-8

User Authentication :

Assume four users user1,user2,user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a servelet for doing the following.

1. Create a Cookie and add these four user id's and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user(i.e., user-name and password match) you should welcome him by name(user-name) else you should display " You are not an authenticated user ".

Use init-parameters to do this. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters() method.

Task-9

Install a database(Mysql or Oracle).Create a table which should contain at least the following fields: name, password, email-id, phone number(these should hold the data from the registration form).Practice 'JDBC' connectivity.

Write a java program/servlet/JSP to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page (week2).

Task-10

Write a JSP which does the following job:

Insert the details of the 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database (similar to week8 instead of cookies).

Task-11

Create tables in the database which contain the details of items (books in our case like Book name , Price, Quantity, Amount)) of each category. Modify your catalogue page (week 2)in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using JDBC.

Task-12

HTTP is a stateless protocol. Session is required to maintain the state. The user may add some items to cart from the catalog page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time(i.e., from different systems in the LAN using the ip-address instead of localhost). This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method session.invalidate()).

Modify your catalogue and cart JSP pages to achieve the above mentioned functionality using sessions.

VI-Year

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

OBJECT ORIENTED ANALYSIS AND DESIGN

Course Code: GR14A3065 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT - I
Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.
Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

UNIT - II
Advanced Structural Modeling: Advanced classes, Advanced relationships, Interfaces, Types and Roles, Packages.
Class & Object Diagrams: Terms, Concepts, Modeling Techniques for Class & Object Diagrams.

UNIT - III
Basic Behavioral Modeling-I: Interactions, Interaction diagrams**,** Sequence diagram, collaboration diagram.
Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

UNIT - IV
Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT - V
Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.
Case Study: The Unified Library application

TEXT BOOKS
1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.
2. UML 2 Toolkit, Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY-Dreamtech India Pvt. Ltd.

REFERENCE BOOKS

1. Fundamentals of Object Oriented Design in UML, Meilir Page-Jones, PearsonEducation.
2. Modeling Software Systems Using UML2, Pascal Roques, WILEY-Dreamtech India Pvt. Ltd.
3. Object Oriented Analysis & Design, Atul Kahate, The McGraw-Hill Companies.
4. Practical Object-Oriented Design with UML, Mark Priestley, TATA Mc GrawHill.
5. Appling UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SOFTWARE TESTING METHODOLOGIES

Course Code: GR14A4077 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT - I
Introduction: Purpose of testing, Dichotomies, Model for testing, Consequences of Bugs, Taxonomy of Bugs

UNIT - II
Flow Graphs and Path Testing: Basics concepts of Path Testing, Predicates, Path Predicates and Achievable Paths, Path Sensitizing, Path Instrumentation, Application of Path Testing.
Transaction Flow Testing: Transaction flows, transaction flow testing techniques.

UNIT - III
Dataflow Testing: Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.
Domain Testing: Domains and paths, Nice & ugly domains, Domain Testing, domains and interfaces testing, domain and interface testing, domains and testability tips.

UNIT - IV
Paths, Path products and Regular expressions: Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.
Logic Based Testing: Overview, decision tables, path expressions, KV charts, specifications.

UNIT - V
State, State Graphs and Transition Testing: State graphs, good & bad state graphs, state testing, Testability tips.
Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, Node Reduction algorithm.

TEXT BOOKS
1. Software Testing Techniques - BorisBeizer, Dreamtech, second edition.
2. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.

REFERENCE BOOKS

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing Techniques – SPD(Oreille)
3. Software Testing in the Real World – Edward Kit, Pearson.
4. Effective methods of Software Testing, Perry, John Wiley.
5. Art of Software Testing – Meyers, John Wiley.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

MANAGEMENT SCIENCE

Course Code: GR14A3102 L:3 T:1 P:0 C:4
IV Year I Semester

Unit-I

Introduction to Management & Organisation: Concepts of Management and Organization: Nature, Importance, Functions and Theories of Management;Systems Approach to Management; Leadership Styles; Social Responsibilities of Management. Designing Organisational Structures: Basic concepts relating to Organisation;Departmentation and Decentralisation, Types and Evolution of mechanistic and organic structures of organisation and suitability.

Unit-II

Operations &Marketing Management: Principles and Types of Plant Layout, Methods of production (Job, batch and Mass Production), Work Study -Basic procedure involved in Method Study and Work Measurement.Statistical Quality Control: Control Charts for Variables and Attributes (Simple Problems) and Acceptance Sampling, Deming's contribution to quality. Objectives of InventoryControl, EOQ, ABC Analysis, Purchase Procedures, Stores Management and Stores Records - Functions of Marketing, Marketing Mix, Marketing Strategies based on Product Life Cycle, Channels of Distribution.

Unit-3

Human Resources Management (HRM): Concepts of Personnel Management, HRM and HRD and Industrial Relations (IR), HRM vs. PMIR. Basic functions of HR Manager: Manpower planning, Recruitment and Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Analysis, Job Description, and Job Evaluation.

Unit-4

Project Management (PERT/CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing (simple problems).

Unit-5

Strategic Management and Contemporary Strategic Issues: Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives. Contemporary Management Practices: Basic concepts of MIS, End User Computing, Materials Requirement Planning (MRP), Just-In-Time (JIT) System, Total Quality Management (TQM), Six Sigma and Capability Maturity Model (CMM) Levels, Supply Chain Management, Enterprise Resource Planning (ERP), Performance Management, Business Process Outsourcing (BPO), Business Process Re-engineering and Bench Marking, Balanced Score Card.

Teaching Methodologies

1. Lecture Method
2. Use of OHP
3. Power Point Presentation
4. Tutorials and Assignments

Text Book

1. Aryasri: Management Science, TMH, 2009.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

MOBILE COMPUTING AND APPLICATIONS
(ELECTIVE I)

Course Code: GR14A4078 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT- I
Introduction to Mobile Computing: Introduction, applications, simplified referenced model.
Medium Access Control: Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA, Comparison.

UNIT-II
Telecommunication systems: GSM:Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

UNIT-III
Mobility and location-based services: Introduction, Data Acquisition of Location Information, GIS, Location Information Modeling, Location-Based Services Applied, Utilizing Location-Based Services with Mobile Applications, Representing Location with UML, Security and Privacy of Location Information, Localization and Internationalization, Latest Developments in Location-Based Efforts

UNIT-IV
The Mobile Development Process: Introduction, Back to the Dimensions of Mobility, Applying the Wisdom Methodology to Mobile Development, UML-Based Development Cycle for Mobile Applications
Architecture, Design, and Technology Selection for Mobile Applications: Introduction, Practical Concerns with Architectures, Architectural Patterns for Mobile Applications

UNIT-V
Mobile Application Development Hurdles: Introduction, Voice User Interface Hurdles, Hurdles with Multimodal Applications, Problems with Building Location-Based Applications, Power Use.
Testing Mobile Applications: Introduction, Validating the Mobile Use Cases before Development, The Effect of the Dimensions of Mobility on Software Testing, Stress Testing and Scalability Issues, Testing Location-Based Functionality.

Support for Mobility: File systems: Consistency, coda, little work, Ficus, Mio-NFS, Rover.
Outlook: Architecture of future networks.

TEXT BOOKS

1. Jochen Schiller, "Mobile Communications", Second Edition, Pearson education, 2004. (Unit I-All chapters, Unit II-All chapters, & Unit V: Last two chapters)
2. Reza B'far, "Mobile Computing Principles: Designing And Developing Mobile Applications With UML And XML", Cambridge University Press, 2005. (Unit III-All chapters, Unit IV-All chapters and Unit V - First two chapters).

REFERENCE BOOKS

1. Adelstein, Frank, Gupta, Sandeep KS, Richard, Golden, Schwiebert, Loren, "Fundamentals of Mobile and Pervasive Computing", ISBN: 0071412379, McGraw-Hill Professional, 2005.
2. Hansmann, Merk, Nicklous, Stober, "Principles of Mobile Computing", Springer, second edition, 2003.
3. Martyn Mallick, "Mobile and Wireless Design Essentials", Wiley DreamTech, 2003.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

CLOUD COMPUTING
(ELECTIVE-I)

Course Code: GR14A4079 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT-I

Cloud Architecture and Models: Technologies for Network-Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture. Cloud Models:- Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud –Cloud Solutions - Cloud ecosystem – Service management – Computing on demand.

UNIT-II

Virtualization: Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation.

UNIT-III

Cloud Infrastructure: Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.

UNIT-IV

Programming Model: Parallel and Distributed Programming Paradigms – MapReduce, Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine,
Amazon AWS - Cloud Software Environments -Eucalyptus, Open Nebula, OpenStack, Aneka, CloudSim

UNIT-V

Security in the Cloud: Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.

Text Books

1. George Reese, “Cloud Application Architectures: Building Applications and Infrastructure in the Cloud” O'Reilly
2. Kumar Saurabh, “ Cloud Computing – insights into New-Era Infrastructure”, Wiley India,2011
3. RajkumarBuyya, Christian Vecchiola, S.TamaraiSelvi, ‘Mastering Cloud Computing”, TMGH,2013.

Reference Books

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, Morgan Kaufmann Publishers, 2012.
2. John W.Rittinghouse and James F.Ransome, “Cloud Computing: Implementation, Management, and Security”, CRC Press, 2010.
3. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach”, TMH, 2009.
4. Ronald L. Krutz, Russell Dean Vines, “Cloud Security – A comprehensive Guide to Secure Cloud Computing”, Wiley – India, 2010.
5. Nick Antonopoulos, Cloud computing, Springer Publications, 2010

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

NATURAL LANGUAGE PROCESSING
(ELECTIVE I)

Course Code: GR14A4080 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT-I

Components of natural language processing: lexicography, syntax, semantics,

Pragmatics: word level representation of natural languages prosody & natural languages.

UNIT-II

Formal languages and grammars: Chomsky hierarchy, Left-Associative grammars, Ambiguous grammars, resolution of ambiguities.

UNIT-III

Computation linguistics: recognition and parsing of natural language structures: ATN & RTN, General techniques of parsing: CKY, Earley and Tomitas algorithm.

UNIT-IV

Semantics-knowledge representation semantic networks logic and inference pragmatics, Graph models and optimization, prolog for natural language semantic.

Application of NLP: intelligent work processors: Machine translation, user interfaces, Man- Machine interfaces, natural language querying, tutoring and authoring systems.

UNIT-V

Speech processing, components of speech recognition systems, Interactive voice response systems(IVRS), recognition commercial use of NLP.

TEXT BOOKS

1. "Natural Language Understanding" JamesAlien ,Benjamin-1995, ~Cummings Pub. Comp. Ltd., 2."Speech recognition systems"

REFERENCE BOOKS

1. "Language as a cognitive process", Terry Winograd 1983,AW
2. "Natural Language processing in prolog" G.Gazder,1989,Addison Wesley.
3. "Introduction of Formal Language Theory", MdljArbib&Kfaury, 198 SpringerVerlog

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

BUSINESS INTELLIGENCE
(ELECTIVE II)

Course Code: GR14A4087 L:3 T:1 P:0 C:4
IV Year I Semester

Unit-I

Business Data and Business Intelligence: An Introduction: What is data? Data and business, Big Data, Information and insight, challenges in data decision, operational and informational data, Data decision challenge, Decision Support System, understanding Business Intelligence, Business Intelligence and its components, Importance of Business Intelligence, Business Intelligence areas, Business Intelligence Implementation, Business Intelligence and Integration Implementation, Overview of IBM Cognos BI.

Unit-II

Data warehouse: An Overview: Data warehouse architecture, Data warehouse Modelling and Design, Challenges , Data Modelling requirements, Modelling Techniques;Entity relationship Modelling, Dimensional Modelling, Temporal Modelling, Multidimensional data modelling, ERM Vs MDDM, What is Metadata, Types of metadata, Benefits of metadata, Data Analytics Techniques: OLAP and OLTP systems

Unit-III

Building and Accessing a Data Warehouse: Enterprise data warehouse, Challenges of Building a Warehouse, Data warehouse for decision support system, Data Analytics, Data analytics techniques, Information Mining Vs Data mining, Usage of Data Mining, Information Integration, Data warehouse Master Data Management System, MDM Logical Architecture, DB2 UDB Warehouse

Unit IV

IBM Cognos BI: IBM Cognos Framework Manager, Connection of Framework Manager to Cognos Business Intelligence,Framework Manager Query Model, Frame work manager Model Types, Enterprise Components, Architecture, Security, Query Modes, Model types, Framework Manager Workflow, Administration Workflow, Cognos Configuration

Unit-V

Query and Reporting: Query and Process flow, Report studio, Generation of different reports such as List, cross tab ,Charts, Prompts etc, Focus reports using prompts and filters, Drilling from one report to another, Report using Relational Data

Text Books

1. Chuck Ballard, Dirk Herreman, Don Schau, Rhonda Bell,DataModeling Techniques for Data Warehousing , IBM [ebook]

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

FUNDAMENTALS OF IMAGE PROCESSING
(ELECTIVE-II)

Course Code: GR14A4088 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT-I
Fundamental steps of image processing, components of an image processing of system.The image model and image acquisition, sampling and quantization, relationship between pixels, distance functions, scanner.

UNIT-II
Statistical and spatial operations, Intensity functions transformations, histogram processing, smoothing & sharpening – spatial filters Frequency domain filters, homomorphic filtering, image filtering & restoration. Inverse and weiner filtering, FIR weiner filter, Filtering using image transforms, smoothing splines and interpolation.
Morphological and other area operations, basic morphological operations, opening and closing operations, dilation erosion, Hit or Miss transform, morphological algorithms, extension to grey scale images.

UNIT-III
Segmentation and Edge detection region operations, basic edge detection, second order detection, crack edge detection, gradient operators, compass and Laplace operators, edge linking and boundary detection, thresholding, region based segmentation, segmentation by morphological watersheds.
Image compression: Types and requirements, statistical compression, spatial compression, contour coding, quantizing compression, image data compression-predictive technique, pixel coding, transfer coding theory, lossy and lossless predictive type coding, Digital Image Water marking.

UNIT-IV
Representation and Description: Chain codes, Polygonal approximation, Signature Boundary Segments, Skeltons, Boundary Descriptors, Regional Descriptors, Relational Descriptors, Principal components for Description, Relational Descriptors

UNIT-V
Pattern Recognition Fundamentals: Basic Concepts of pattern recognition, Fundamental problems in pattern recognition system, design concepts and methodologies, example of automatic pattern recognition systems, a simple automatic pattern recognition model

Pattern classification: Pattern classification by distance function: Measures of similarity, Clustering criteria, K-means algorithm, and Pattern classification by likelihood function: Pattern classification as a Statistical decision problem, Bayes classifier for normal patterns.

TEACHING METHODOLOGIES

1. Power Point presentations
2. Tutorial Sheets
3. Assignments

TEXT BOOKS

1. Digital Image Processing Third edition, Pearson Education, Rafael C. Gonzalez, Richard E. Woods
2. Pattern recognition Principles: Julus T. Tou, and Rafel C. Gonzalez, Addision-Wesly Publishing Company

REFERENCE BOOKS

1. Image Processing, Analysis and Machine Vision, Second Edition, Milan Sonka, Vaclav Hlavac and Roger Boyle. Thomson learning.
2. Digital Image Processing – Williamk. Pratl –John wiley edition
3. Fundamentals of digital image processing – by A.K. Jain. PH
4. Pattern classification, Richard Duda, Hart and David strok John Weily publishers.
5. Digital Image Processing, S. Jayaraman, S. Esakkirajan, T. Veerakumar, TMH.
6. Pattern Recognition, R. Shinghal, Oxford University Press.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DISTRIBUTED DATABASES AND SYSTEMS
(ELECTIVE-II)

Course Code: GR14A4068 L:3 T:1 P:0 C:4
IV Year I Semester

Unit-I

Features of Distributed versus Centralized Databases, Principles of Distributed Databases, Levels Of Distribution Transparency, Reference Architecture for Distributed Databases, Types of Data Fragmentation, Distributed Database Design.

Translation of Global Queries to Fragment Queries, Equivalence transformations for Queries, Transforming Global Queries into Fragment Queries, Distributed Grouping and Aggregate Function Evaluation, Parametric Queries.

Unit-II

The Management of Distributed Transactions, A Framework for Transaction Management, Supporting Atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions, Architectural Aspects of Distributed Transactions

Concurrency Control, Foundation of Distributed Concurrency Control, Distributed Deadlocks, Concurrency Control based on Timestamps, Optimistic Methods for Distributed Concurrency Control.

Unit-III

Reliability, Basic Concepts, Nonblocking Commitment Protocols, Reliability and concurrency Control, Determining a Consistent View of the Network, Detection and Resolution of Inconsistency, Checkpoints and Cold Restart, Distributed Database Administration.

Unit-IV

Introduction to Distributed Systems: The different forms of computing, monolithical, distributed, parallel and cooperative computing, the architecture of distributed applications.

Paradigms for distributed applications-massage passing paradigm, the client-server paradigm, the peer to peer paradigm, the message passing (MOM) paradigm- point to point message model and the publisher-subscriber message model, RPC model, The distributed Object Paradigms, choosing a paradigm for an application.

Unit-V

Distributed Object Space Paradigm (RMI): message passing verses distributed objects, an archetypal distributed object architecture, distributed object system, RPC, RMI, the RMI java architecture, java RMI API, a simple RMI application, steps for building an RMI application, testing and debugging, comparison of RMI and socket API,Introduction to CORBA distributed architectures,

Text Books

1. Distributed Databases Principles & Systems, Stefano Ceri, Giuseppe Pelagatti,TMH.
2. Distributed computing principles and applications, M LLiu, Pearson Edition.
3. Distributed computing principles and applications A.S Tanenbaum.

Reference Books

1. Principles of Distributed Database Systems, M. Tamer Ozsu, Patrick Valduriez , Pearson Education, 2nd Edition.
2. Distributed Systems, Concepts and Design, 3rd Edition G.Colouris, J.Dollimore, Pearson .Education

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED NETWORK PROGRAMMING LAB

Course Code: GR14A4083 L:3 T:1 P:0 C:4
IV Year I Semester

Task 1: Implement the following forms of IPC.
a)Pipes b)FIFO

Task 2: Implement file transfer using Message Queue form of IPC.

Task 3: Write a programme to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions.

Task 4: Design a Client and Server Application to transfer the given input file. (without using transport layer protocols)

Task 5: Design TCP iterative Client and Server Application to reverse the given input sentence.

Task 6: Design TCP client and server application to transfer file.

Task 7: Design a TCP Concurrent Server to convert a given text into upper case using multiplexing system call "select".

Task 8: Design a TCP concurrent server to echo given set of sentences using "poll" function.

Task 9: Design UDP Client and Server Application to reverse the given input sentence.

Task 10: Design UDP Client Server to transfer a file.

Task 11: Design using poll client Server Application to multiplex TCP and UDP requests for converting a given text into upper case.

Task 12: Design a RPC application to add and subtract a given pair of integers.

REFERENCE BOOKS:

1. Advance Unix Programming Richard Stevens, Second Edition Pearson Education
2. Advance Unix Programming, N.B. Venkateswarlu, BS Publication.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SCRIPTING LANGUAGES LAB

Course Code: GR14A4084 L:3 T:1 P:0 C:4
IV Year I Semester

PHP

Week 1: Write a PHP script for the following. a. Find the biggest of 3 numbers. b. Find the factorial of a number (while loop) c. To reverse the digit (Use do while) d. Find the sum of the digits (Use for loop) e. Display the Fibonacci series for a particular limit.(Use for loop) f. Check the given letter is vowel or not. g. Check whether the given number is Prime or not.

Week 2

a. Write a PHP script to create an associative array with book details and display.
b. Write a PHP script to create an array and try with all array functions.

Week 3

a. Write a PHP script to create Cookie, store a value "Ganesh" in the cookie.
b. Write a PHP script to store, retrieve and delete data using session variables.
c. Write a program for Cinema Ticketing. All the age should be over 12 years, if less than, don't allow to get ticket. (apply the exception handling).

Week 4

a. Write a PHP program to display the contents of a file using fgets, fgetc, fread functions.
b. Write a PHP program to upload a file and display the contents in server.

Week 5

Create a registration form which contains fields name, Roll No, Gender and a submit button. All the details should be displayed in the server page when the user clicks the submit button.

Week 6

a. Design a database in MYSQL using PHP. Create table in database. Store, Update, Delete and Retrieve data from the table. Display the data from the table.
b. Design a PHP application that will provide a form containing fields to fill book detail (Book title, Author, Publication, ISBN, Price and category). Display filled details to the user.

Week-7

Write a PHP script that will demonstrate POSIX regular expressions for validating
i)Name ii) Pin Code iii) Date iv) Email-id.

Week-8

Using PHP and MySQL, develop a program to accept book information viz. Accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search results with proper headings.

PHYTHON

Week-9

Write a Python script using basic data types.

a. Find the biggest of 3 numbers.
b. To check whether a number is positive or negative.
c. Find the factorial of a number d. To reverse the digit e. Find the sum of the digits f. Fibonacci series for a particular limit.

Week-10

a. Write a Python script to test built in methods of Strings.
b. Write a Python script to test various functions of List and Tuple.

Week-11

a. Write a Python script to test various functions of Dictionary.
b. Write a Python script to define a function and calling the function by passing arguments. (using pass by value & pass by reference).

TEXT BOOKS

a. Beginning.PHP.and.MySQL.3rd.Edition W. Jason Gilmore-Third Edition Apress publications
b. Python-Standard Library by Frederik Luth- O'Relly
c. Practical Programming in Python by Jeffery Elkener

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

OBJECT ORIENTED ANALYSIS AND DESIGN LAB

Course Code: GR14A4085 L:3 T:1 P:0 C:4
IV Year I Semester

Task 1: Draw the class and object diagrams for the above applications.

Task 2: Draw the Use-case diagrams for the above applications.

Task 3: Draw the sequence diagrams for the above applications.

Task 4: Draw the collaboration diagrams for the above applications.

Task 5: Draw the activity diagrams for the above applications.

Task 6: Draw the State-chart diagrams for the above applications.

Task 7: Draw the component diagrams for the above applications.

Task 8: Draw the deployment diagrams for the above applications.

Task 9: Student should perform forward and Reverse Engineering, and Generate documentation of the project.

II. Student has to take up another case study of his/her own interest and do the same as mentioned in the first nine weeks. Task 10: Draw the Interactive diagrams for their case study.

Task 11: Draw the Behavioral diagrams for their case study.

Task 12: Perform forward and reverse engineering for the above case study and generate a report of the same.

TEXT BOOKS

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.
2. UML 2 Toolkit, Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY-Dreamtech India Pvt. Ltd.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DATAWAREHOUSING AND DATA MINING

Course Code: GR14A3067 L:3 T:1 P:0 C:4
IV Year II Semester

UNIT-I

Introduction: Fundamentals of data mining, Data Mining Functionalities, ClassificationofDataMiningsystems,DataMining TaskPrimitives,Integration ofaDataMiningSystemwithaDatabaseoraData WarehouseSystem,Major issues in Data Mining. DataPreprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, DiscretizationandConceptHierarchyGeneration.

UNIT-II

DataWarehouseandOLAPTechnologyforDataMining:DataWarehouse, MultidimensionalDataModel,DataWarehouseArchitecture,DataWarehouse Implementation,FurtherDevelopmentofDataCubeTechnology,FromData WarehousingtoDataMiningDataCubeComputationandDataGeneralization: EfficientMethodsforDataCubeComputation,Attribute-OrientedInduction.

UNIT-III

MiningFrequentPatterns, AssociationsandCorrelations:BasicConcepts, EfficientandScalableFrequentItemsetMiningMethods,Miningvariouskinds ofAssociationRules,FromAssociationMiningtoCorrelationAnalysis,Constraint-BasedAssociationMining.

UNITI-IV

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification,ClassificationbyBack propagation,Support VectorMachines, AssociativeClassification,Prediction, AccuracyandErrormeasures,Evaluating theaccuracyofaClassifieroraPredictor

ClusterAnalysisIntroduction:TypesofDatainClusterAnalysis,ACategorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-BasedMethods, Outlier Analysis-Distance-BasedOutlierDetection, Density-BasedLocalOutlierDetection.

UNIT-V

MiningStreams,TimeSeriesandSequenceData: MiningDataStreams,MiningTi meSeriesData,MiningSequencePatternsinTransactionalDatabasesMiningObje ct,Spatial,Multimedia,Textand WebData:Multidimensional Analysis and

Descriptive Mining of Complex Data Objects, Spatial Data Mining, MultimediaDataMining,TextMining,MiningtheWorldWideWeb

TEXTBOOKS

1. DataMining–ConceptsandTechniques -JiaweiHanand MichelineKamber, MorganKaufmannPublishers,Elsevier,SecondEdition,2006.
2. IntroductiontoDataMining–PangNingTan,MichaelSteinbachand VipinKumar, Pearsoneducation.

REFERENCE BOOKS

1. DataMiningTechniques–ArunK.Pujari,SecondEdition,University Press.
2. DataWarehousingintheRealWorld,SamAanhoryandDennisMurray, PearsonEdnAsia.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

REAL TIME OPERATING SYSTEMS
(ELECTIVE III)

Course Code: GR14A4086 L:3 T:1 P:0 C:4
IV Year II Semester

UNIT-I
REVIEW OF OPERATING SYSTEMS: Basic Principles– System Calls – Files – Processes – Design and Implementation of processes – Communication between processes – Operating System structures.

UNIT-II
DISTRIBUTED OPERATING SYSTEMS: Topology – Network types – Communication – RPC – Client server model – Distributed file system – Design strategies.

UNIT-III
REAL TIME MODELS AND LANGUAGES: Based – Process Based and Graph based Models – Petrinet Models – Real Time Languages – RTOS Tasks –RT scheduling - Interrupt processing – Synchronization – Control Blocks – Memory Requirements.

UNIT-IV
REAL TIME KERNEL: Principles-Design issues-Polled Loop Systems-RTOS Porting to a Target – Comparison and study of RTOS VX works and COS-Case studies.

UNIT-V
RTOS APPLICATION DOMAINS: RTOS for Image Processing – Embedded RTOS for voice over IP – RTOS for fault Tolerant Applications – RTOS for Control Systems

.

TEXT BOOKS

1. Charles Crowley, “Operating Systems-A Design Oriented approach”, McGraw Hill 1997.
2. C.M. Krishna, Kang, G.Shin, “Real Time Systems”, McGraw Hill, 1997.
3. Tanenbaum, “Distributed Operating Systems”, Pearson Education.
4. Raymond J.A.Bhur, Donald L.Bailey, “An Introduction to Real Time Systems”, PHI 1999.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

E-COMMERCE
(ELECTIVE-III)

Course Code: GR14A4091 L:3 T:1 P:0 C:4
IV Year II Semester

Unit-I

INTRODUCTION TO E-COMMERCE: E-commerce, Difference between E-commerce and E-business, Purpose of E-Commerce, Eight Unique Features of E-commerce Technology, Web 2:0, Types of E-commerce, Growth of the Internet and the Web, Origins and Growth of E-commerce, Understanding E-commerce.

Unit-II

E-COMMERCE BUSINESS MODELS AND CONCEPTS: E-commerce Business Models, Business-to-Consumer (B2C) Business Models, Business-to-Business (B2B) Business Models, Business Models in Emerging E-commerce Areas.

Unit-III

BUILDING AN E-COM WEB SITE: Building an E-commerce Web Site, Choosing Software, Choosing the Hardware, E-commerce Site Tools.

Unit- IV

ONLINE SECURITY AND PAYMENT SYSTEMS: Security Threats in the E-commerce Environment,Technology Solutions, payment systems, E-commerce Payment System, Electronic Billing Presentment and Payment.

Unit-V

ONLINE CONTENT AND MEDIA: Online Content, Online Publishing Industry, Online Entertainment Industry.

Text Book

1. Kenneth C. Laudon Carol Guercio Traver, “E-commerce: business, technology, society”, Fifth edition, Pearson Prentice Hall, 2009. (Unit-1:Chapter -1, Unit-II: Chapter-2, Unit-III: Chapter-4, Unit-IV: Chapter-5, Unit-V:Chapter-10)

Reference Books

1. Dave Chaffey, "E-Business and E-Commerce Management: Strategy, Implementation and Practice", Fifth edition, Pearson Education, 2013.
2. K.K. Bajaj, Debjani Nag, "E-Commerce: The Cutting Edge of Business", Second edition, McGraw Hill Education (India) Private Limited, 2005.
3. David Whiteley ,"E-Commerce: Strategy, Technologies And Applications", McGraw Hill Education (India) Private Limited, 2001.
4. SteffanoKorper, "The E-Commerce Book: Building the E-Empire", Morgan Kaufmann, 2000.

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INSTITUTE OF ENGINEERING AND TECHNOLOGY

MOBILE APPLICATION DEVELOPMENT
(ELECTIVE-III)

Course Code: GR14A4082 L:3 T:1 P:0 C:4
IV Year II Semester

UNIT-I

J2ME Overview: Java 2 Micro Edition and the World of Java, Inside J2ME, J2ME and Wireless Devices. Small Computing Technology: Wireless Technology, Radio Data Networks, Microwave Technology, Mobile Radio Networks, Messaging, Personal Digital Assistants.

J2ME Architecture and Development Environment:J2ME Architecture, Small Computing Device Requirements, Run-Time Environment, MIDlet Programming, Java Language for J2ME, J2ME Software Development Kits, Hello World J2ME Style, Multiple MIDlets in a MIDlet Suite, J2ME Wireless Toolkit.

UNIT II

J2ME Best Practices and Patterns: The Reality of Working in a J2ME World, Best Practices

Commands, Items, and Event Processing: J2ME User Interfaces, Display Class, The Palm OS Emulator, Command Class, Item Class, Exception Handling.

UNIT-III

High-Level Display: Screens: Screen Class, Alert Class, Form Class, Item Class, List Class, Text Box Class, Ticker Class.

Low-Level Display: Canvas: The Canvas, User Interactions, Graphics, Clipping Regions, Animation.

Record Management System: Record Storage, Writing and Reading Records, Record Enumeration, Sorting Records, Searching Records, Record Listener.

UNIT- IV

JDBC Objects: The Concept of JDBC, JDBC Driver Types, JDBC Packages, Overview of the JDBC Process, Database Connection, statement Objects, Result set, Transaction Processing, Metadata, Data Types, Exceptions. JDBC and Embedded SQL: Model Programs, Tables, Indexing, Inserting Data into Tables, Selecting Data from a Table, Metadata, Updating Tables, Deleting Data form a Table, Joining Tables, Calculating Data, Grouping and Ordering Data, Sub queries, VIEWs.

UNIT-V

Generic Connection Framework: The Connection, Hypertext Transfer Protocol, Communication Management Using HTTP Commands, Session Management, Transmit as a Background Process

TEXT BOOKS

1. J2ME: The Complete Reference, James Keogh, Tata McGrawHill.

REFERENCES

1. Enterprise J2ME: Developing Mobile Java Applications, Michael Juntao Yuan, Pearson Education, 2004.
2. Beginning Java ME Platform, Ray Rischpater, Apress, 2009.
3. Beginning J2ME: From Novice to Professional, Third Edition, Sing Li, Jonathan B. Knudsen, Apress, 2005.
4. Kicking Butt with MIDP and MSA: Creating Great Mobile Applications, First Edition, J.Knudsen, Pearson.

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CYBER SECURITY
(ELECTIVE-IV)

Course Code: GR14A4089 L:3 T:1 P:0 C:4
IV Year II Semester

UNIT-I

Introduction to Cyber Crime: Challenges of cyber crime, Classifications of Cybercrimes: E-Mail Spoofing, Spamming, Internet Time Theft, Salami attack/Salami Technique, Data Diddling, Web jacking, Online Frauds, Software Piracy, Computer Network Intrusions, Password Sniffing, Identity Theft, cyber terrorism, Virtual Crime , Perception of cyber criminals: hackers, insurgents and extremist group etc. Web servers hacking, session hijacking.

UNIT-II

Cybercrime on Mobile and Wireless Device: Proliferation of Mobile and Wireless Devices, trends in Mobility Credit Card Frauds in Wireless Computing, Types and techniques of Credit Card Frauds, Attacks on Mobiles: Mobile Viruses, Mishing, Vishing, Smishing& Hacking Bluetooth. Web server hacking, session hijacking.

UNIT-III

Tools and Methods in Cybercrime: Proxy Servers and Anonymizers, Password Cracking, Keyloggers and Spyware, virus and worms, Trojan Horses, Backdoors, DoS and DDoS Attacks , Buffer and Overflow, Attack on Wireless Networks, Phishing : Method of Phishing, Phishing Techniques.

UNIT-IV

Cyber Crime and Criminal justice: Concept of Cyber Crime and the IT Act, 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cheating, Defamation, Harassment and E-mail Abuse, Other IT Act Offences, Monetary Penalties, jurisdiction and Cyber Crimes, Nature of Criminality, Strategies to tackle Cyber Crime and Trends. The Indian Evidence Act of 1872 v. Information Technology Act, 2000: Status of Electronic Records as Evidence, Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages.

UNIT-V

Introduction to Cyber Forensics: Information Security Investigations, Corporate Cyber Forensics, Scientific Method in Forensic analysis, investigating large scale Data breach cases. AnalyzingMalicious software. Types of Computer

Forensics Technology, Types of Business Computer Forensic Technology, Specialized Forensics Techniques.

Text Books

1. Principles of Cyber crime, Jonathan Clough Cambridge University Press
2. Cyber Security by Nina Godbole, SunitBelapure, Willey-India
3. Cyber Law Simplified, VivekSood, TMH.

Reference Books

1. John R. Vacca, Computer Forensics:Computer Crime Scene Investigation, 2nd Edition, CharlesRiver Media, 2005
2. Cyber Laws and IT Protection, Harish Chander, PHI.

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DESIGN PATTERNS
(ELECTIVE-IV)

Course Code: GR14A4090 L:3 T:1 P:0 C:4
IV Year II Semester

UNIT - I
Introduction: What Is a Design Pattern?, Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

UNIT-II
A Case Study: Designing a Document Editor: Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, Summary.

UNIT-III
Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.
Structural Pattern Part-I: Adapter, Bridge, Composite.

UNIT-IV
Structural Pattern Part-II: Decorator, Façade, Flyweight, Proxy.
Behavioral Patterns Part-I: Chain of Responsibility, Command, Interpreter, Iterator.

UNIT - V
Behavioral Patterns Part-II: Mediator, Memento, Observer, State, Strategy, Template Method Visitor, Discussion of Behavioral Patterns. What to Expect from Design Patterns, A Brief History, The Pattern Community An Invitation, A Parting Thought.

TEXT BOOKS
1. Design Patterns by Erich Gamma, Pearson Education

REFERENCE BOOKS
1. Pattern's in JAVA Vol-I by Mark Grand,Wiley DreamTech.
2. Pattern's in JAVA Vol-II by Mark Grand,Wiley DreamTech.
3. JAVA Enterprise Design Patterns Vol-III by Mark Grand,Wiley DreamTech.

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ESSENTIALS OF BIG DATA ANALYTICS

Course Code: GR14A4097 L:3 T:1 P:0 C:4
IV Year II Semester

UNIT-I

INTRODUCTION TO BIG DATA AND HOLDUP: Introduction to BigData Platform – Big Data definition, Challenges of Conventional Systems : Enterprise/structured data, Social/unstructured Data, Unstructured data needs for Analytics, Analytics vs Reporting, Data Analytic Tools, History of Hadoop, Components of Hadoop, Analyzing the Data with Hadoop, Different Echosystems of Hadoop, IBM Big Data Platform Strategy and Introduction to InfosphereBigInsights.

UNIT- II

HDFS(Hadoop Distributed File System): Significance of HDFS in Hadoop,Design of HDFS, HDFS Architecture overview, 5 daemons of Hadoop : Name Node, Data Node, Secondary Node, Job Tracker and Task Tracker, their functionality, Data Storage in HDFS : Introduction about Blocks, Data replication, Accessing HDFS : CLI(Command Line Interface) and admin commands, How to store various types of data in HDFS using CLI-command.

UNIT-III

Map Reduce Map Reduce Architecture,Map Reduce Programming Model, Map Reduce Java API, Anatomy of Map Reduce Job run, Failures, Job Scheduling, Sort & Shuffle phase, Task Execution. Map Reduce Program using IBM BigInsights. Adaptive Map Reduce. Introduction to Oozie, Overview of Managing job Execution. Apache Pig : Introduction to Apache Pig, Map Reduce Vs Apache Pig, SQL Vs Apache Pig, Pig Datatypes, Modes Of Execution in Pig.

UNIT-IV

Data Stores on Hadoop Hive: Introduction, architecture ,Integration with Hadoop, Hive Tables : Managed Tables, External Tables, Hive Query Language(Hive QL) Hbase:Introduction to HBase, Architecture, HBase Vs RDBMS, HBaseUseCasesHmaster. Introduction to Zookeeper.

UNIT-V

IBM APPLICATIONS ON HADOOP

Big SQL: Introduction to Big SQL, Datatypes, Big SQL Statistics.

Big Sheets: Introduction, Processing and Accessing BigSheets, Big SQL Integration.

Text Books

1. Tom White " Hadoop: The Definitive Guide" Third Edit on, O'reily Media, 2012.

References

1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
2. Jay Liebowitz, "Big Data and Business Analytics" Auerbach Publications, CRC press (2013)
3. Tom Plunkett, Mark Hornick, "Using R to Unlock the Value of Big Data: Big Data Analytics with Oracle R Enterprise and Oracle R Connector for Hadoop", McGraw-Hill/Osborne Media (2013), Oracle press.
4. AnandRajaraman and Jefrey David Ulman, "Mining of Massive Datasets", Cambridge University Press, 2012.
5. Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", John Wiley & sons, 2012.
6. Glen J. Myat, "Making Sense of Data", John Wiley & Sons, 2007
7. Pete Warden, "Big Data Glossary", O'Reily, 2011.
8. Michael Mineli, Michele Chambers, AmbigaDhiraj, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley Publications, 2013.
9. ArvindSathi, "BigDataAnalytics: Disruptive Technologies for Changing the Game", MC Press, 2012
10. Paul Zikopoulos ,Dirk DeRoos , Krishnan Parasuraman , Thomas Deutsch , James Giles , David Corigan , "Harness the Power of Big Data The IBM Big Data Platform ", Tata McGraw Hill Publications, 2012.

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DATAWARE HOUSING AND DATA MINING LAB

Course Code: GR14A2002 L:3 T:1 P:0 C:4
IV Year I Semester

Implement the following alogorithms using C/C++ language

1 Implement classification using K nearest neighbor classification
2 Implement decision tree based algorithm for classification
3 Implement Kmeans algorithm for clustering
4 Implement Apriori algorithm for association rule
5 Implement Naive Bayesian Classification algorithm
6 Implement Linear Regression technique

The German Credit Data

Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. Credit dataset (original) Excel Spreadsheet version of the German credit data. (Download from web)

In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer).

A few notes on the German dataset:

- DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter).
- Own_telephone: German phone rates are much higher than in Canada, so fewer people own telephones.
- Foreign_worker: There are millions of these in Germany (many from Turkey). It is very hard to get German citizenship if you were not born of German parents.
- There are 20 attributes in judging a loan applicant. The goal is to classify the applicant into two categories: good or bad.

Task-7

List all the categorical (or nominal) attributes and the real-valued atributes separately. What attributes do you think might be crucial in making the credit assessment? Come up with some simple rules in plain English using your selected attributes. One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.

Check to see if the data shows a bias against "foreign workers" (attribute 20),or "personal-status" (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created

in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss.

Task-8: Suppose you use your above model trained on the complete dataset, and classify credit good/bad for each of the examples in the dataset. What % of examples can you classify correctly? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy? Why or Why not?

Task-9: One approach for solving the problem encountered in the previous question is using cross-validation? Describe what is cross-validation briefly. Train a Decision Tree again using cross-validation and report your results. Does your accuracy increase/decrease? Why? (10marks)

Task-10: Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.)

Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting the misclassifications equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross-validation results. Are they significantly different from results obtained in problem 6 (using equal cost)?

Task 11: Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees? How does the complexity of a Decision Tree relate to the bias of the model?

You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning - Explain this idea briefly. Try reduced error pruning for training your Decision Trees using cross-validation (you can do this in Weka) and report the Decision Tree you obtain? Also, report your accuracy using the pruned model. Does your accuracy increase?

Task 12: (Extra Credit): How can you convert a Decision Trees into "if-then-else rules". Make up your own small Decision Tree consisting of 2-3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules - one such classifier in Weka is rules. PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough

in making the decision, yes, just one! Can you predict what attribute that might be in this dataset? One R classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and one R.