ACADEMIC REGULATIONS
PROGRAM STRUCTURE
and
DETAILED SYLLABUS

Bachelor of Technology
(Information Technology)

(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 Information Technology (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 Information Technology 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 Information Technology, 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 Information Technology 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 Information Technology 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 (IT) PROGRAMME STRUCTURE

I B.Tech (IT) — 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 (IT) — 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**	**6**	**6**	**25**	**37**	**825**

II B.Tech (IT) — 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	GR14A2053	Digital Electronics Lab	-	-	2	2	4	75
PC	GR14A2075	Database Management Systems Lab	-	-	2	2	4	75
		Total	**-**	**-**	**-**	**25**	**36**	**725**
MC	GR14A2001	Environmental Science	-	-	-	0	4	100
Total			**14**	**5**	**6**	**25**	**40**	**825**

II B.Tech (IT) — 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	GR14A2076	Computer Organization	3	1	-	4	5	100
PC	GR14A2077	Computer Networks	3	1	-	4	5	100
PC	GR14A2072	Object Oriented Programming Through Java Lab	-	-	2	2	4	75
PC	GR14A2078	Operating systems and Computer Networks Lab	-	-	2	2	4	75
PC	GR14A2079	Web Designing Lab	-	-	2	2	4	75
		Total	**-**	**-**	**-**	**25**	**36**	**725**
MC	GR14A2002	Value Education and Ethics			-	0	4	100
Total			**14**	**5**	**6**	**25**	**40**	**825**

III B.Tech (IT) — I Semester

Group	Sub-Code	Subject	L	T	P	C	H	Marks
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
ES	GR14A2055	Microcontrollers	3	1		4	5	100
ES	GR14A3056	Design and Anaysis of Algorithms	3	1		4	5	100
ES	GR14A3063	Web Technologies Lab			2	2	4	75
HS	GR14A3100	Advanced English Communication Skills Lab			2	2	4	75
ES	GR14A2059	Microcontrollers Lab			2	2	4	75
		TOTAL	**14**	**5**	**6**	**25**	**36**	**725**

III B.Tech (IT) — II Semester

Group	Sub-Code	Subject	L	T	P	C	H	Marks
ES	GR14A3103	Advanced Linux Programming	3	1		4	5	100
ES	GR14A3064	Automata and Compiler Design	3	1		4	5	100
ES	GR14A3065	Object Oriented Analysis and Design	3	1		4	5	100
ES	GR14A3068	Distributed Databases and Systems	3	1		4	5	100
	Open Elective		2	1		3	4	100
ES	GR14A3067	Datawarehousing and Datamining						
ES	GR14A3066	Human Computer Interaction						
ES	GR14A3069	Computer Graphics						
ES	GR14A3070	Embedded Systems						
ES	GR14A3071	Compiler Design and Unified Modeling Language Lab			2	2	4	75
ES	GR14A3072	Advanced Linux Programming Lab			2	2	4	75
SPW	GR14A3101	Industry Oriented Mini Project			2	2	4	75
		TOTAL	**14**	**5**	**6**	**25**	**36**	**725**

IV B.Tech (IT) — I Semester

Group	Sub-Code	Subject	L	T	P	C	H	Marks
HS	GR14A3102	Management Science	3	1		4	5	100
ES	GR14A3060	Scripting Languages	3	1		4	5	100
ES	GR14A4104	Middleware Technologies	2	1		3	4	100
		Elective -I	**3**	**1**		**4**	**5**	**100**
ES	GR14A4077	Software Testing Methodologies						
ES	GR14A3061	Artificial Intelligence and Neural Networks						
ES	GR14A4098	Network Programming						
ES	GR14A4094	Semantic Web and Social Networks						
		Elective -II	**3**	**1**		**4**	**5**	**100**
ES	GR14A4095	Information Retrieval systems						
ES	GR14A4079	Cloud Computing						
ES	GR14A4087	Business Intelligence						
ES	GR14A4093	Wireless Networks and Mobile Computing						
ES	GR14A4084	Scripting Languages Lab			2	2	4	75
ES	GR14A4099	Middleware Technologies Lab			2	2	4	75
ES	GR14A4100	Animations Lab			2	2	4	75
		TOTAL	**14**	**5**	**6**	**25**	**36**	**725**

IV B.Tech (IT) — II Semester

Group	Sub-Code	Subject	L	T	P	C	H	Marks
PC	GR14A4082	Mobile Application Development	2	1		3	4	100
		Elective -III	2	1		3	4	100
ES	GR14A4101	Software Project Management						
ES	GR14A4091	E-Commerce						
ES	GR14A4102	Adhoc Sensor Networks						
ES	GR14A3043	VLSI Design						
		Elective -IV	2	1		3	4	100
ES	GR14A4069	Digital Image Processing						
ES	GR14A4090	Design Patterns						
ES	GR14A4097	Essentials of Big Data Analytics						
ES	GR14A4096	Storage Area Networks						
ES	GR14A4105	Mobile Application Development Lab			2	2	4	75
SPW	GR14A4142	Comprehensive Viva			2	2	4	100
SPW	GR14A4143	Seminar			2	2	4	50
SPW	GR14A4144	Major Project			10	10	10	200
		TOTAL				**25**	**34**	**725**

I-Year

GOKARAJU RANGARAJU
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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, BRIAN W. 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 Identification 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, Infix 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 into 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 a random variable 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, Conceptual 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

DIGITAL ELECTRONICS LAB

Course Code: GR142053 L:0 T:0 P:2 C:2
II Year I Semester

LIST OF EXPERIMENTS

1.DESIGN AND SIMULATION OF COMBINATIONAL CIRCUITS USING VHDL

Experiment 1: Realization of Gates
Experiment 2: Half adder, Full adder
Experiment 3: Magnitude comparator
Experiment 4: Decoder
Experiment 5: Multiplexer
Experiment 6: Demultiplexer
Experiment 7: Binary to Grey Code Converter
Experiment 8: Parity Checker

2.DESIGN AND SIMULATION OF SEQUENTIAL CIRCUITS USING VHDL

Experiment 9: D and T Flip-Flops
Experiment 10: Frequency Divider
Experiment 11: Left Shift Register
Experiment 12: Serial to Parallel Shift Register
Experiment 13: Binary Counter
Experiment 14: Asynchronous BCD Up Counter
Experiment 15: Synchronous Down Counter

Note: A minimum of 12 (Twelve) experiments have to be performed and recorded by the candidate to attain eligibility for Practical Examination.

Lab methodologies

- Assignments
- Lab experiments with Xlinix Software

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DATA BASE MANAGEMENT SYSTEMS LAB

Course Code: GR14A2075 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

List of experiments

1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSECT, Constraints. Example:- Select the roll number and name of the student who secured fourth rank in the class.
3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4. Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)
5. i)Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)

   ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
6. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USER defined Exceptions, RAISE-APPLICATION ERROR.
8. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
9. Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.

10. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
11. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

Text Books

1. ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition.
2. ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc-Graw Hill.
3. SQL & PL/SQL for Oracle 10g, Black Book, Dr. P. S. Deshpande.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENVIRONMENTAL SCIENCE

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

Prerequisites: Basic knowledge on basic sciences and natural resources

Course Objectives

- To understand about the importance and scope of Environment.
- To identify, analyze and solve the problems in Environment.
- To participate in team oriented activities aiding constructive thinking and recognize the value of continuing education.

Course Outcomes

- Students will be able to realize the significance of Green development and Wild life protection.
- Students will be able to apply fundamentals of cleanliness and importance of natural resources.
- Students will be able to adopt, grasp and absorb knowledge across disciplines and ability to integrate within research areas of Environmental protection.

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

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**,** 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, 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

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 Publications.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPUTER NETWORKS

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

Unit-I
Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference Models: OSI, TCP/IP, Examples Networks: Arpanet, Internet, ATM.

Physical Layer: Guided Transmission media, Wireless Transmission Media, Communication Satellites. The public Switched Telephone Network, the Mobile Telephone Network

Unit-II
Data link layer: Design issues, framing, error detection and correction, Elementary Data Link Protocol, 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 Control Algorithms, 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, Introduction to Cryptography.

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

Text Books

1. Computer Networks — Andrew S Tanenbaum, 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

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
l 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 SYSTEM AND COMPUTER NETWORKS LAB

Course Code: GR14A1078 L:0 T:0 P:2 C:2
II Year II Semester

PART- I

Objectives

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 all file allocation strategies
   a) Sequential b) Indexed c) Linked
3. Simulate MVT and MFT
4. Simulate all File Organization Techniques
   a) Single level directory b) Two level directory
5. Simulate Bankers Algorithm for Dead Lock Avoidance
6. Simulate all page replacement algorithms
   a) FIFO b) LRU c) LFU
7. Simulate Paging Technique of memory management.

PART-II

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.
3. Implement Dijkstra's algorithm to compute the Shortest path through a graph.
4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table at each node using distance vector routing algorithm. Take an example subnet of hosts. Obtain broadcast tree for it.
5. Using RSA algorithm Encrypt a text data and Decrypt the same.

Teaching methodologies

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

Text Books

1. Operating System Concepts- Abraham S. Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating Systems–Internal and Design Principles Stallings, Fifth Edition–2005, Pearson education/PHI
3. Larry L. Peterson, Bruce S. Davie, "Computer Networks: A Systes Approach", Third Edition, Morgan Kauffmann Publishers Inc., 2003.

Reference 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.
4. James F. Kuross, Keith W. Ross, "Computer Networking, A Top-Down Approach Featuring the Internet", Third Edition, Addison Wesley, 2004.
5. Andrew S. Tanenbaum, "Computer Networks", Fourth Edition, 2003.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

WEB DESIGNING LAB

Course Code: GR14A1079 L:0 T:0 P:2 C:2
II Year II Semester

HTML&HTML5

Introduction: HTML Basic, HTML Elements, HTML Attribute, Structures of HTML,Basic HTML Tags,Lists, Links, Images, Tables ,Forms, Textfields Radio Buttons, Frames, HTML5 I/P Types, HTML5 Input attributes,HTML5 Form Elements,HTML5 Form attributes,HTML5 Web Storage,Web Workers.

Cascading style sheets 3.0

Introduction to css, types of css,css3 Borders, Backgrounds,CSS3 Gradients,CSS3 Text Effects, CSS3 Transitions, CSS32D Transforms,CSS3 3D Transforms,Css3 Animations,Css3 Multiple Columns, User Interface

Java Script

JS Introduction,JS Output, JS Statements, JS Comments,variables,JS Data Types JS ObjectsJS Functions and operatorsJS Array,Boolean, JS MATH,REGEXP,Validation of Forms ,Slide Show Effects in Js,Date / Calendar Integration.

Adobe Photoshop

- Move, Marque, Lasso, Crop, Image Manipulation Tools
- Brushes, Patterns, Gradients
- Pen, Shape, Text Tools
- Working with Layers, Grouping and Smart Objects
- Image Adjustments, Layer Masking, Layer Clipping
- Using Blending Options to create unique effects
- Filter Effects
- Animation using Photoshop
- Brochure Designing
- Designing a Logo
- Creating a Business Card
- Design Banners for Website

Dream weaver

- Template Design in Dream weaver using various tags
- Creating a Site for Static Project using various tool bars

Adobe Flash

- Shape Tween and Motion Tween
- Frame Animation
- Creating Flash Banners
- Creating Flash Intro's
- Creating Flash Website

Word press

Overview, installation + Configuration,Word press Blogs vs. Websites

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

SOFTWARE ENGINEERING

Course Code: GR14A3057 L:3 T:1 P:0 C:4
III Year I 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:2 T:1 P:0 C:3
III Year I 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 I 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 Servlet, 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

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

DESIGN AND ANALYSIS OF ALGORITHMS

Course Code: GR14A3056 L:3 T:1 P:0 C:4
III Year I 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.**, Dynamic programming-1:** General method, applications, matrix chain multiplication, optimal binary search trees, 0/1 knapsack problem

UNIT- III

Dynamic programming -II: All pairs shortest path problem, travelling sales person problem, reliability design.**, 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, Hamiltonian cycles.

UNIT-V

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

WEB TECHNOLOGIES LAB

Course Code: GR14A3063 L:0 T:0 P:2 C:2
III Year I 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
5. Apache Tomcat sever

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 here. Initially this page contains description of the web site.

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	$ 40.5	
		Book : AI Author : S.Russel Publication : Princeton hall	$ 63	
		Book : Java 2 Author : Watson Publication : BPB publications	$ 35.5	
		Book : HTML in 24 hours Author : Sam Peter Publication : Sam	$ 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.

GOKARAJU RANGARAJU
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ADVANCED ENGLISH COMMUNICATION SKILLS LAB

Course Code: GR14A3100 L:0 T:0 P:2 C:2
III Year I 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

MICRO CONTROLLERS LAB

Course Code: GR14A2059 L:0 T:0 P:2 C:2
III Year I Semester

List of experiments on 2G kit

1. LED patterns

a) Blinking LEDs, b) Serial lights,
c) Half on/Half off, d) Alternate on/off

2. Switches & LEDs

a) Press switch to make corresponding LED on,
b) Press switch to make corresponding LED off
c) First switch press, last LED on,
d) First switch press, last LED off

3. LCD

a) Character &string display on LCD,
b) SW1-Display strring1 on first line ofLCD,
c) SW2-Display strring1 on first line of LCD, SW2

4. UART

a) Echo Program,
b) Take command from PC & glow corresponding LED,
c) Press Switch & display switch number on PC,
d) Display data received by UART on LCD

5. TRIAC

a) 220V AC bulb switch on/off,
b) 220 V AC fan speed control with fixed step size.

6. ADC

a) Raw ADC value display on LCE,
b) Raw ADC value display on Hyper Terminal,
c) Engineering unit conversion and display on LCD,
d) Engineering unit conversion and display on Hyper Terminal
e) Limit checking for temperature value and switching on fan using triac
f) Limit checking for ambient light value and switching on light using triac.

7. DAC

a) Fixed step incremented DAC, output seen on multi-meter,
b) DAC input value received from Hyper Terminal
c) DAC input value taken from switches

8. DC motor

a) DC motor control-CW, CCW and stop using switches,
b) DC motor control- CW, CCW and stop using commands received from Hyper Terminal

9. ZigBee

a) Receive data on ZigBee from PC ZigBee dongle and display data on LEDs
b) Receive data on ZigBee from PC ZigBee dongle and display data on LCD
c) Read ADC and transmit data using ZigBee d)Triac based control of fan and light using data received on ZigBee

10. RF 433MHz

a) Receive data on RF from another kit with RF transmitter. Connect PCs to both kits. Type in data in Hyper Terminal of Transmitter kit & see on Hyper Terminal of Receiver kit
b) Read switches on transmitter kit, send their status on RF to receiver kit and control motor using switch status

11. Bluetooth

a) Transfer data to PC using Bluelink,
b) Receive data from PC using BlueLink & display on LCD
c) Transfer data from mobile phone(using a J2ME app) and receive using Blue link and control motor operation
d) Transfer data from mobile phone(using a J2ME app) and receive using BlueLink and control electrical appliance operation

12. Ethernet

a) Transfer data to PC using WIZI05SR and display on Hyper Terminal,
b) Implement an embedded web server

13. RTC

a) Read and display RTC data on LCD,
b) Read and display RTC data on Hyper Terminal,
c) Set RTC using Hyper terminal and display data on Hyper Terminal,
d) Implement an Event Logger with Time Stamp display

14. SDcard

a) Transfer data to PC, store on SDcard and retrieve it back(block transfer)
b) Implement FAT file system on SDcard c) Implement data acquisition system and store data in a CSV file on SD card with time stamp

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ADVANCED LINUX PROGRAMMING

Course Code: GR14A3103 L:3 T:1 P:0 C:4
III Year II Semester

UNIT-I
Utilities-Introduction to Unix file system, vi editor, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, cp, mv, rm, unlink, mkdir, rmdir, du, df, mount, umount, find, unmask, ulimit, ps, who, w, finger, ftp, telnet, text processing utilities and backup utilities, detailed commands to be covered are cat, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, comm, cmp, diff, tr, tar.
Working with the Bourne shell: what is a shell, shell responsibilities, pipes and input Redirection, output redirection, here documents, shell meta characters, shell variables, shell commands, the environment, control structures, shell script examples.

UNIT-II
Files System: Unix file structure, directories, files and devices, System calls, library functions, low level file access, usage of open, creat, read, write, close, lseek, stat, fstat, umask, dup, dup2. The standard I/O (fopen, fclose, fflush, fseek, fgetc, getc, fputc, putc, fgets, gets), formatted I/O, streams and file descriptors, file and directory maintenance (chmod, chown, unlink, link, symlink, mkdir, rmdir, chdir, getcwd), Directory handling system calls (opendir, readdir, closedir,rewinddir, seekdir, telldir)

UNIT-III
Unix Process and Signals: What is process, process structure, starting new process, waiting for a process, zombie process, process control, process identifiers, system call interface for process management-fork, vfork, exit, wait, waitpid, exec, system, Signals- Signal functions, unreliable signals, interrupted system calls, kill and raise functions, alarm, pause functions, abort, sleep functions.

UNIT-IV
Interprocess Communication Overview: Introduction to IPC,IPC between processes on a single computer system, IPC between processes on different systems, file and record locking, other unix locking techniques, pipes, FIFOs, streams and messages, namespaces, introduction to three types of IPC(system-V)-message queues, semaphores and shared memory.

UNIT-V

Message Queues-Unix system: V messages, unix kernel support for messages, unix APIs for messages, client/server example. Semaphores-Unix system-V semaphores, unix kernel support for semaphores, unix APIs for semaphores, file locking with semaphores. Shared Memory-Unix system-V shared memory, unix kernel support for shared memory, unix APIs for shared memory, semaphore and shared memory example.

Text Books

1. Unix the ultimate guide, Sumitabha Das, TMH
2. Unix Network Programming, W.R.Stevens, Pearson/PHI

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

AUTOMATA AND COMPILER DESIGN

Course Code: GR14A3064 L:3 T:1 P:0 C:4
III Year II Semester

Unit -I
Introduction: Alphabets, Strings and Languages; Automata and Grammars, Deterministic Finite Automata (DFA)-Formal Definition, Simplified notation: State transition graph, Transition table, Language of DFA, Nondeterministic Finite Automata (NFA), Equivalence of NFA and DFA, Minimization of Finite Automata, Regular Expressions, Arden's theorem.

Unit -II
Compiler Structure: Compilers and Translators, Various Phases of Compiler, Pass Structure of Compiler, Bootstrapping of Compiler. Lexical Analysis: The role of Lexical Analyser, A simple approach to the design of Lexical Analyser, Implementation of Lexical Analyser. The Syntactic Specification of Programming Languages: CFG, Derivation and Parse tree, Ambiguity, Capabilities of CFG. Basic Parsing Techniques: Top-Down parsers with backtracking, Recursive Descent Parsers, Predictive Parsers.

Unit- III
Bottom–up Parsers: Shift-Reduce Parsing, Operator Precedence Parsers,LR parsers (SLR, Canonical LR, LALR) Syntax Analyser Generator: YACC, **Intermediate Code Generation:** Different Intermediate forms: three address code, Quadruples & Triples. Syntax Directed translation mechanism and attributed definition. Translation of Declaration, Assignment, Control Flow, Boolean expression, Array References in arithmetic expressions, procedure calls, case statements, postfix translation

Unit- IV
Run Time Memory Management: Static and Dynamic storage allocation, stack based memory allocation schemes, Symbol Table management, Error Detection and Recovery: Lexical phase errors,Syntactic phase errors, Semantic errors

Unit -V
Code Optimization and Code Generation: Local optimization, Loop optimization, Peephole optimization, Basic blocks and flow graphs, DAG, Data flow analyser, Machine Model, Order of evaluation, Register allocation and code selection.

TEXT BOOKS

1. Introduction to Theory of Computation.Sipser, 2nd Edition, Thomson.
2. Hopcroft, Ullman, “Introduction to Automata Theory, Languages and Computation”, Pearson Education
3. Compilers Principles, Techniques and Tools Aho, Ullman, Sethi, Pearson Education

REFERENCE BOOKS

1. Modern Compiler Construction in C , Andrew W.Appel Cambridge University Press.
2. Compiler Construction, LOUDEN, Thomson.
3. Elements of Compiler Design, A. Meduna, Auerbach Publications, Taylor and Francis Group.
4. Principles of Compiler Design, V. Raghavan, TMH.
5. Engineering a Compiler, K. D. Cooper, L. Torczon, ELSEVIER.
6. Introduction to Formal Languages and Automata Theory and Computation - Kamala Krithivasan and Rama R, Pearson.
7. Modern Compiler Design, D. Grune and others, Wiley-India.
8. A Text book on Automata Theory, S. F. B. Nasir, P. K. Srimani, Cambridge Univ. Press.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

OBJECT ORIENTED ANALYSIS AND DESIGN

Course Code: GR14A3065 L:3 T:1 P:0 C:4
III Year II 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.
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.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DISTRIBUTED DATABASES AND SYSTEMS

Course Code: GR14A3068 L:3 T:1 P:0 C:4
III Year II 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

DATAWAREHOUSING AND DATA MINING

Course Code: GR14A3067 L:2 T:1 P:0 C:3
III 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
Data Warehouse and OLAP Technology for DataMining: Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture,Data Warehouse Implementation, Further Development of Data Cube Technology, From Data Warehousing to Data Mining Data Cube Computation and Data Generalization: Efficient Methods for Data Cube Computation, Attribute-Oriented Induction.

UNIT-III
Mining Frequent Patterns, Associations and Correlations: BasicConcepts, Efficient and Scalable Frequent Itemset Mining Methods, Mining various kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint-Based Association Mining.

UNITI-IV
Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Back propagation, Support Vector Machines, Associative Classification, Prediction, Accuracy and Error measures, Evaluating the accuracy of a Classifier or a Predictor
Cluster Analysis Introduction: Types of Datain Cluster Analysis,A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Outlier Analysis-Distance-Based Outlier Detection, Density-Based Local Outlier Detection.

UNIT-V
Mining Streams, Time Series and Sequence Data: Mining Data Streams, Mining Time Series Data, Mining Sequence Patterns in Transactional Databases Mining Object, Spatial, Multimedia, Text and Web Data: Multidimensional

Analysis and Descriptive Mining of Complex Data Objects, Spatial Data Mining, Multimedia Data Mining, Text Mining, Mining the World Wide Web

TEXTBOOKS

1. DataMining–Conceptsand Techniques -Jiawei Han and Micheline Kamber, Morgan Kaufmann Publishers, Elsevier, Second Edition, 2006.
2. Introduction to Data Mining–Pang Ning Tan, Michael Steinbach and Vipin Kumar, Pearson education.

REFERENCE BOOKS

1. Data Mining Techniques–Arun K.Pujari, Second Edition, University Press.
2. Data Warehousing in the Real World, Sam Aanhory and Dennis Murray, Pearson Edn Asia.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

HUMAN COMPUTER INTERACTION

Course Code: GR14A3066 L:2 T:1 P:0 C:3
III Year II Semester

UNIT-I
Introduction: Importance of user Interface – definition, importance of good design. Benefits of good design. A brief history of Screen design, The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

UNIT-II
Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.

UNIT-III
Screen Designing: Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow.

UNIT-IV
Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls, Components – text and messages, Icons and increases – Multimedia, colors, uses problems, choosing colors,Software tools – Specification methods, interface – Building Tools.

UNIT-V
Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

TEXT BOOKS
1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamaTech.
2. Designing the user interface. 3rd Edition Ben Shneidermann , Pearson Education Asia.

REFERENCES

1. Human – Computer Interaction. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, PEARSON.
2. Interaction Design PRECE, ROGERS, SHARPS. Wiley Dreamtech,
3. User Interface Design, Soren Lauesen Pearson Education

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPUTER GRAPHICS

Course Code: GR14A3069 L:2 T:1 P:0 C:3
III Year II Semester

UNIT-I
Introduction, Application areas of Computer Graphics, overview of graphics systems, video- display devices, raster- scan systems, random scan systems, graphics monitors and work stations and input devices.
Output primitives: Points and lines, linedrawing algorithms, mid-pointcircleand ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fillandflood-fillalgorithms

UNIT-II
2-D geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.
2-D viewing : The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm

UNIT-III
3Dgeometrictrans formations: Translation, rotation, scaling, reflection and shear transformations, composite transformations.
3-Dviewing:Viewingpipeline,viewingcoordinates,viewvolumeandgeneral projection transforms and clipping.
3-D object representation: Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods.

UNIT-IV
Visible surface detection methods : Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP- tree methods, area sub-division and octree methods.

UNIT-V
Computer animation: Design of animation sequence, general computer animationfunctions,rasteranimation,computeranimationlanguages,keyframesystems, motion specifications.

TEXTBOOKS

1.“ComputerGraphicsCversion”,DonaldHearnandM.PaulineBaker,Pearson Education.
2. “ComputerGraphicsPrinciples&practice”,secondeditioninC,Foley, VanDam,FeinerandHughes,PearsonEducation.

REFERENCES

1. “ComputerGraphics”,secondEdition,DonaldHearnandM.PaulineBaker, PHI/PearsonEducation.
2.“ComputerGraphicsSecondedition”,Zhigandxiang,RoyPlastock,Schaum’s outlines, TataMc-Grawhilledition.
3. ProceduralelementsforComputerGraphics,DavidFRogers,TataMcGraw hill,2ndedition.
4. “PrinciplesofInteractiveComputerGraphics”,NeumanandSproul,TMH.5. PrinciplesofComputerGraphics,ShaliniGovil,Pai,2005,Springer.
5. ComputerGraphics,StevenHarrington,TMH

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

EMBEDDED SYSTEMS

Course Code: GR14A3070 L:2 T:1 P:0 C:3
III Year II Semester

Unit - I

Introduction to Embedded Systems: Embedded Systems, Processor Embedded to a system, Embedded hardware units and devices in a system, Embedded software in a system, Examples of Embedded systems, Soc(System on chip) and use of VLSI circuit design technology, complex system design and processors, Design process in Embedded system, formalization of system design, design process and design examples, classification of embedded systems, skills required for embed system design.

Unit - II

Devices and Buses for Devices Network: I/O Devices:- Types and Examples of I/O devices, Synchronous, Iso-synchronous and Asynchronous Communications from Serial Devices - Examples of Internal Serial-Communication Devices:- SPI, UART, Parallel Port Devices - Timer and Counting Devices – Serial Communication using: 'I2C', 'USB', 'CAN'- Advanced I/O Serial high speed buses: ISA, PCI, PCI- X, cPCI and advanced buses.

Unit - III

Programming Concepts and Embedded Programming in C, C++ : Programming in assembly language (ALP) vs High Level Language - C Program Elements:- Macros and functions, Use of Date Types, Structure, Pointers, Function Calls - Concepts of Embedded Programming in C++:- Objected Oriented Programming, Embedded Programming in C++, 'C' Program compilers – Cross compiler – Optimization of memory needs.

Unit - IV

Real Time Operating Systems: Definitions of process, tasks and threads – Inter Process Communication:- Shared data problem, Use of Semaphore(s), Priority Inversion Problem and Deadlock Situations, Message Queues, Mailboxes, Pipes, Virtual (Logical) Sockets, Remote Procedure Calls (RPCs) - Operating System Services:- Goals, Structures, Kernel, Process Management, Memory Management, Device Management - Real Time Operating System - RTOS Task scheduling models:- Co-operative Round Robin Scheduling, Cyclic Scheduling with Time Slicing.

Unit - V

System Design Techniques: Design Methodologies, Requirement Analysis, Specification, System Analysis and Architecture Design. Design Examples:- Telephone PBX- System Architecture, Ink jet printer - Hardware Design and Software Design, Personal Digital Assistants, Set-top Boxes.

Text Book

1. Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw-Hill, First reprint Oct. 2003
2. Computers as Components-principles of embedded computer system design, Wayne Wolf, Elseveir.
3. The 8051 Microcontroller, Third Edition, Kenneth J.Ayala, Thomson.

Reference Books

1. Steve Heath, Embedded Systems Design, Second Edition-2003, Newnes,
2. David E.Simon, An Embedded Software Primer, Pearson Education Asia, First Indian Reprint 2000.
3. Frank Vahid and Tony Givargis, Embedded Systems Design – A unified Hardware /Software Introduction, John Wiley, 2002.
4. Embedding system building blocks, Labrosse, via CMP publishers.
5. Embedded Systems, Raj Kamal, TMH.
6. Micro Controllers, Ajay V Deshmukhi, TMH.
7. Embedded System Design, Frank Vahid, Tony Givargis, John Wiley.
8. Microcontrollers, Raj kamal, Pearson Education.
9. An Embedded Software Primer, David E. Simon, Pearson Education.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPILER DESIGN & UNIFIED MODELLING LANGUAGE LAB

Course Code: GR14A3071 L:0 T:0 P:2 C:2
III Year II Semester

I. UML diagrams to be developed are:

- Use Case diagram.
- Class diagram.
- Sequence diagram.
- Collaboration diagram.
- State diagram.
- Activity diagram
- Component Diagram
- Deployment Diagram.

II. Case Studies:

- ATM System.
- Library Management System
- Railway reservation system.
- Hospital Management System.
- School Management System

Compiler Design Lab

Task 1: Design a lexical analyzer for to kenizing an expression.
Task 2: Design a lexical analyzer to identify comment lines in a program.
Task 3: Implement brute force technique for a given grammar.
Task 4: Implement RDP for a given grammar.
Task 5: Find the first set of a given grammar.
Task 6: Find the follow set of a given grammar.
Task 7: Construct predictive parser for a given grammar.
Task 8: Design shift-reduce parser for a given grammar.
Task 9: Design operator precedence for a given grammar.
Task 10: Design LALR parser for a given grammar.
Task 11: Generate a three address code for a given expression.
Task 12: Generate an optimized three address code for a given expression.

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

ADVANCED LINUX PROGRAMMING LAB

Course Code: GR14A3072 L:0 T:0 P:2 C:2
III Year II Semester

1. Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
2. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
3. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
4. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file, the number of lines on it is also reported.
5. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files
6. Write a shell script to list all of the directory files in a directory.
7. Write a shell script to find factorial of a given integer.
8. Write an awk script to count the number of lines in a file that do not contain vowels.
9. Write an awk script to find the number of characters, words and lines in a file.
10. Write a C program that makes a copy of a file using standard I/O and system calls
11. Implement in C the following UNIX commands using System calls (A). cat (B). ls (C). mv
12. 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.
13. Write a C program to emulate the UNIX ls –l command.
14. Write a C program to list for every file in a directory, its inode number and file name.
15. Write a C program that demonstrates redirection of standard output to a file. Ex: ls > f1.
16. Write a C program to create a child process and allow the parent to display “parent” and the child to display “child” on the screen.
17. Write a C program to create a Zombie process.

18. Write a C program that illustrates how an orphan is created.
19. Write a C program that illustrates how to execute two commands concurrently with a command pipe. Ex: - ls –l | sort
20. Write C programs that illustrate communication between two unrelated processes using named pipe
21. Write a C program to create a message queue with read and write permissions to write 3 messages to it with different priority numbers.
22. Write a C program that receives the messages (from the above message queue as specified in (21)) and displays them.
23. Write a C program to allow cooperating processes to lock a resource for exclusive use, using a) Semaphores b) flock or lockf system calls.
24. Write a C program that illustrates suspending and resuming processes using signals
25. Write a C program that implements a producer-consumer system with two processes. (Using Semaphores).
26. Write a C program that illustrates two processes communicating using shared memory

IV-Year

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-1
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-2
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

SCRPTING LANGUAGES

Course Code: GR14A3060 L:3 T:1 P:0 C:4
IV Year I 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 Part-1: 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
Advanced PHP Programming Part-2: 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

MIDDLEWARE TECHNOLOGIES

Course Code: GR14A4104 L:2 T:1 P:0 C:3
IV Year I Semester

UNIT-I
CLIENT/SERVER CONCEPTS: Client – Server – File Server, Database server, Group server, Object server, Web server. Middleware – General middleware – Service specific middleware. Client/Server Building blocks-RPC – Messaging – Peer – to – Peer.

UNIT-II
EJB ARCHITECTURE: EJB –EJB Architecture – Overview of EJB software architecture – View of EJB – Conversation – Building and Deploying EJBs – Roles in EJB.

UNIT-III
EJB APPLICATIONS: EJB Session Beans – EJB entity beans – EJB clients – EJB Deployment – Building an application with EJB.
UNIT-IV
CORBA: CORBA – Distributed Systems – Purpose – Exploring CORBA alternatives – Architecture overview – CORBA and networking model – CORBA object model – IDL – ORB – Building an application with CORBA.

UNIT-V
COM: COM – Data types – Interfaces – Proxy and stub – Marshalling – Implementing server/Client – Interface pointers – Object Creation, Invocation, Destruction – Comparison COM and CORBA – Introduction to .NET – Overview of .NET architecture–Marshalling – Remoting.

TEXT BOOKS
- Robert Orfali, Dan Harkey and Jeri Edwards, “The Essential Client/server Survival Guide”, Galgotia publications Pvt. Ltd., 2002.(UNIT 1)
- Tom Valesky, “Enterprise Java Beans”, Pearson Education, 2002.(UNIT 2 & 3)
- Jason Pritchard. “COM and CORBA side by side”, Addison Wesley,2000 (UNIT 4 & 5)
- Jesse Liberty, “Programming C#”, 2nd Edition, O’Reilly press,2002. (UNIT 5)

REFERENCES

- Mowbray, " Inside CORBA", Pearson Education, 2002.
- Jeremy Rosenberger, "Teach yourself CORBA in 14 days", Tec media,2000

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.

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 - BarisBeizer, 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

ARTIFICIAL INTELLIGENCE AND NEURAL NETWORKS

Course Code: GR14A3061 L:3 T:1 P:0 C:4
IV Year I 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

Feedforward 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

NETWORK PROGRAMMING

Course Code: GR14A4098 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT-I
Introduction to Network Programming: OSI model, Unix standards, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application.
Sockets: Address structures, value – result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function.

UNIT-II
TCP client server: Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination, Crashing and Rebooting of server host shutdown of server host.

UNIT-III
I/O Multiplexing and socket options: I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option IPV6 socket option ICMPV6 socket option IPV6 socket option and TCP socket options.

UNIT-IV
Elementary UDP sockets: Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP.

UNIT-V
Elementary name and Address conversions: DNS, gethostbyname function, Resolver option, Function and IPV6 support, uname function, other networking information. Remote Login: Terminal line disciplines, Pseudo-Terminals, Terminal modes, Control Terminals, rlogin Overview, RPC Transparency Issues.

Text Book
1. UNIX Network Programming, Vol. I, Sockets API, 2nd Edition. - W.Richard Stevens, Pearson Edn. Asia.
2. UNIX Network Programming, 1st Edition, - W.Richard Stevens. PHI.

References

1. UNIX SYSTEMS PROGRAMMING USING C++ T CHAN, PHI.
2. UNIX for programmers and Users, 3RD Edition, GRAHAM GLASS, KING ABLES, Pearson Education.
3. Advanced UNIX programming, 2nd edition, M J Rochkindpearson education.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SEMANTIC WEB AND SOCIAL NETWORKS

Course Code: GR14A4094 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT-I
Web Intelligence: Thinking and Intelligent Web Applications, The Information Age ,The World Wide Web, Limitations of Today's Web, The Next Generation Web, Machine Intelligence, Artificial Intelligence, Ontology, Inference engines, Software Agents, Berners-Lee www, Semantic Road Map, Logic on the semantic Web.

UNIT-II
Knowledge Representation for the Semantic Web: Ontologies and their role in the semantic web, Ontologies Languages for the Semantic Web – Resource Description Framework(RDF) / RDF Schema, Ontology Web Language(OWL), UML, XML/XML Schema.

UNIT-III
Ontology Engineering: Ontology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology Mapping, Logic, Rule and Inference Engines.

UNIT-IV
Semantic Web Applications, Services and Technology: Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base ,XML Based Web Services, Creating an OWL-S Ontology for Web Services, Semantic Search Technology, Web Search Agents and Semantic Methods,

UNIT-V
Social Network Analysis and semantic web: What is social Networks analysis, development of the social networks analysis, Electronic Sources for Network Analysis – Electronic Discussion networks, Blogs and Online Communities, Web Based Networks. Building Semantic Web Applications with social network features.

TEXT BOOKS

1. Thinking on the Web - Berners Lee, Godel and Turing, Wiley inter science, 2008.
2. Social Networks and the Semantic Web, Peter Mika, Springer, 2007.

REFERENCE BOOKS

1. Semantic Web Technologies, Trends and Research in Ontology Based systems, J.Davies, R.Studer, P.Warren, John Wiley & Sons.
2. Semantic Web and Semantic Web Services -Liyang Lu Chapman and Hall/CRC Publishers,(Taylor & Francis Group)
3. Information Sharing on the semantic Web - HeinerStuckenschmidt; Frank Van Harmelen, Springer Publications.
4. Programming the Semantic Web, T.Segaran, C.Evans, J.Taylor, O'Reilly, SPD.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

INFORMATION RETRIEVAL SYSTEMS

Course Code: GR14A4095 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT-I
Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses.
Information Retrieval System Capabilities: Search, Browse, Miscellaneous

UNIT-II
Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction.
Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure.

UNIT-III
Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages
Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.

UNIT-IV
User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, Weighted searches of Boolean systems, Searching the Internet and hypertext.
Information Visualization: Introduction, Cognition and perception, Information visualization technologies.

UNIT-V
Text Search Algorithms: Introduction, Software text search algorithms, Hardware text search systems.
Information System Evaluation: Introduction, Measures used in system evaluation, Measurement example – TREC results.

TEXT BOOK
1. Kowalski, Gerald, Mark T Maybury: Information Retrieval Systems: Theory and Implementation, Kluwer Academic Press, 1997.

REFERENCES

1. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992.
2. Modern Information RetrivalBy Yates Pearson Education.
3. Information Storage &RetievalBy Robert Korfhage – John Wiley & Sons.

GOKARAJU RANGARAJU
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CLOUD COMPUTING

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

BUSINESS INTELLIGENCE

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,Data Modeling Techniques for Data Warehousing , IBM [ebook]
2. Business Analytics : Data Analytics & Decision Making by S. Christian Albright and Wayne L. Winston.
3. Analytics at Work by Morisson
4. Competing on Analytics - Davenport
5. IBM Cognos 10 Report Studio : Practical Examples by Philip & Roger
6. IBM Cognos BI 10.2 Administration Essentials by Mehmood Awan Khalid.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

WIRELESS NETWORKS AND MOBILE COMPUTING

Course Code: GR14A4093 L:3 T:1 P:0 C:4
IV Year I Semester

UNIT - I

Introduction to Mobile Communications and Computing : Mobile Computing (MC) : Introduction to MC, novel applications, limitations, and architecture. Introduction to Network Technologies and Cellular Communications

GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

WLAN: Infrared vs. Radio Transmission, Infrastructure and Ad-Hoc Networks, IEEE 802.11, Blue Tooth: Use Scenarios, Physical Layer, MAC layer, Networking, Security, Link Management,

HIPERLAN: Protocol Architecture, Physical Layer, Channel Access Control Sub-layer, MAC Sub-layer

UNIT - II

Wireless MAC: Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA.

Mobile Network Layer: Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).

UNIT - III

Mobile Transport Layer: Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

UNIT - IV

Database Issues: Hoarding techniques, caching invalidation mechanisms, client server computing with adaptation, power-aware and context-aware computing, transactional models, query processing, recovery, and quality of service issues.

Data Dissemination: Communications asymmetry, classification of new data delivery mechanisms, push-based mechanisms, pull-based mechanisms, hybrid mechanisms, selective tuning (indexing) techniques.

UNIT - V

Mobile Ad hoc Networks (MANETs): Overview, Properties of a MANET, applications of MANET , routing and various routing algorithms such as AODV, DSR, DSDV etc.., security in MANETs.

Protocols and Platforms for mobile computing: Wireless Application Protocol-WAP. (Introduction, protocol architecture, and treatment of protocols of all layers), XML J2ME, javaCARD,

TEXT BOOKS

1. JochenSchiller,"MobileCommunications",Addison-Wesley. (Chapters 4,7,9,10,11), second edition, 2004.
2. Raj Kamal " Mobile Computing", Oxford University, Press 2007

REFERENCES

1. Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", ISBN: 0521817331, Cambridge University Press, October 2004,
2. Adelstein, Frank, Gupta, Sandeep KS, Richard III, Golden , Schwiebert, Loren, "Fundamentals of Mobile and Pervasive Computing", ISBN: 0071412379, McGraw-Hill Professional, 2005.
3. Hansmann, Merk, Nicklous, Stober, "Principles of Mobile Computing", Springer, second edition, 2003.
4. Martyn Mallick, "Mobile and Wireless Design Essentials", Wiley DreamTech, 2003.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SCRPTING LANGUAGES LAB

Course Code: GR14A4084 L:0 T:0 P:2 C:2
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.

Week-9

Write a PHP script using scalar variables.

i. Find the biggest of 3 numbers.
ii. To check whether a number is positive or negative.
iii. Find the factorial of a number (while loop)
iv. To reverse the digit (Use do while)
v. Find the sum of the digits (Use for loop)
vi. Fibonacci series for a particular limit.(Use for loop)

PHYTHON

Week-10

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-11

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-12

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
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MIDDLEWARE TECHNOLOGIES LAB

Course Code: GR14A4099 L:0 T:0 P:2 C:2
IV Year I Semester

List of Experiments

1. Create a distributed application to download various files from various servers using RMI.
2. Create a Java Bean to draw various graphical shapes and display it using or without using BDK.
3. Develop an Enterprise Java Bean for student Information System.
4. Develop an Enterprise Java Bean for Library operations.
5. Create an Active-X control for Timetable.
6. Develop a component for converting the currency values using COM/.NET.
7. Develop a component for encryption and decryption using COM/. NET.
8. Develop a component for retrieving information from message box using DCOM/ .NET
9. Develop a middleware component for retrieving Stock Market Exchange information Using CORBA.
10. Develop a middleware component for retrieving Bank Balance using CORBA.
11. Develop a middleware component for retrieving Weather Forecast information using CORBA.
12. Create an application for converting case conversion using IDL.

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ANIMATIONS LAB

Course Code: GR14A4100 L:0 T:0 P:2 C:2
IV Year I Semester

Week 1: An introduction of the various drawing and painting tools in Adobe Flash and their uses
Week 2: A clean up drawing from a provided pencil sketch using Adobe Flash.
Week 3: Design of a character displaying a pose from various perspectives.
Week 4: Clean up of various poses on multiple layers.
Week 5: Several short animations will be produced using a series of traditional animation procedures.
Week 6: Create a walk cycle in Adobe Flash.
Week 7: A study of traditional animation skills.
Week 8: Create a 360 degree turn around animation of a character's head using traditional pose-to-pose animation principles.
Week 9: Multi-plane and Shape Tweening
Week 10: Create a multi-plane scene with assets provided by the instructor
Week 11: Design assets and successfully create a shape tween.
Week 12: Instruction on the use of bones in Adobe Flash
Week 13: Introduction to various studio workflows used in the digital animation industry.
Week 14: Create a scene for animation using proper layout procedures.

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MOBILE APPLICATION DEVELOPMENT

Course Code: GR14A4082 L:2 T:1 P:0 C:3
IV Year II Semester

UNIT I

Java Concepts: OOPs Concepts, Inheritance in detail, Exception handling, Packages & interfaces o JVM & .jar file extension, Multi threading (Thread class & Runnable Interface), SQL-DML and DDL Queries.

Introduction to Android: What is Android? Setting up development environment, Dalvik Virtual Machine & .apk file extension, Fundamentals: a. Basic Building blocks - Activities, Services, Broadcast Receivers & Content providers b. UI Components - Views & notifications c. Components for communication -Intents & Intent Filters , Android API levels (versions & version names).

UNIT II

Application Structure(in detail): AndroidManifest.xml,uses-permission&uses-sdk, Resources & R.java , Assets , Layouts & Drawable Resources ,Activities and Activity lifecycle , First sample Application

Emulator-Android Virtual Device: Launching emulator , Editing emulator settings, Emulator shortcuts , Logcat usage , Introduction to DDMS, Basic UI design, Preferences, Menu, Intents, UI design, Tabs and Tab Activity, Styles & Themes , Examples.

UNIT III

Content Providers: SQLite Programming , SQLiteOpenHelper ,SQLiteDatabse ,Cursor , Reading and updating Contacts, Reading bookmarks, Examples.

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UNIT IV

Android Debug Bridge (adb) tool : Linkify- Web URLs, Email address, text, map address, phone numbers , MatchFilter & TransformFilter , Adapters and Widgtes- Adapters:-ArrayAdapters, BaseAdapters, ListView and ListActivity ,Custom listview GridView using adapters , Gallery using adapters ,Notifications,Examples.

Custom components: Custom Tabs, Custom animated popup panels, Other components, Examples.

UNIT V

Threads: Threads running on UI thread (runOnUiThread) , Worker thread , Handlers & Runnable ,AsynTask (in detail) ,Examples.

Advanced Concept: Live Folders ,Using sdcards , XML Parsing , JSON Parsing , Maps, GPS, Location based Services ,Accessing Phone services (Call, SMS, MMS) , Network connectivity services ,Sensors.

Text Books

1. Android How to Program with an Introduction to Java, Deitel, Deitel and Deitel, Prentice Hall, ISBN 978-0-13-299054-7.
2. Android for Programmers: An App-Driven Approach, Deitel, Deitel, Deitel, and Morgano, Prentice Hall, ISBN 978-0-13-2121361.

Reference Books

1. Java JDK 6 or later, Eclipse 3.6.2 or later, Android SDK – latest version, Android ADT plugin for Eclipse.
2. Andriod Studio Development Essentials, CreateSpace Independent Publishing Platform; 1 edition - Neil Smyth.
3. Andriod Apps for Absolute Beginners, Aprèss, Wallace Jackson.
4. Andriod Apps with Eclipse,Apress,Onur Cinar.

GOKARAJU RANGARAJU
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SOFTWARE PROJECT MANAGEMENT

Course Code: GR14A4101 L:2 T:1 P:0 C:3
IV Year II Semester

UNIT - I
Conventional Software Management: The waterfall model, conventional software Management performance.
Evolution of Software Economics: Software Economics, pragmatic software cost estimation.
Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

UNIT - II
Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.
Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.
Model based software architectures : A Management perspective and technical perspective.

UNIT-III
Work Flows of the process : Software process workflows, Iteration workflows, Checkpoints of the process :Major mile stones, Minor Milestones, Periodic status assessments.

UNIT - IV
Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.
Project Organizations and Responsibilities :Line-of-Business Organizations, Project Organizations, evolution of Organizations.

UNIT-V
Process Automation :Automation Building blocks, The Project Environment.
Project Control and Process instrumentation :The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

TEXT BOOK

1. Software Project Management, Walker Royce: Pearson Education, 2005.

REFERENCES

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw- Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, PankajJalote, Pearson Education.2005.

GOKARAJU RANGARAJU
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E-COMMERCE

Course Code: GR14A4091 L:2 T:1 P:0 C:3
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.

GOKARAJU RANGARAJU
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AD-HOC AND SENSOR NETWORKS

Course Code: GR14A4102 L:2 T:1 P:0 C:3
IV Year II Semester

UNIT-I

ADHOC NETWORKS FUNDAMENTALS AND MAC PROTOCOLS: Fundamentals Of WLANS -IEEE 802.11 Architecture -Self Configuration And Auto Configuration-Issues In Ad-Hoc Wireless Networks –MAC Protocols For Ad-Hoc Wireless Networks – Contention Based Protocols -TCP Over Ad-Hoc Networks-TCP Protocol Overview -TCP And MANETs –Solutions For TCP Over Ad-Hoc Networks

UNIT-II

ADHOC NETWORK ROUTING AND MANAGEMENT: Routing in Ad-Hoc Networks-Introduction -Topology based versus Position based Approaches - Proactive, Reactive, Hybrid Routing Approach -Principles and issues –Location services -DREAM –Quorums based Location Service –Grid –Forwarding Strategies –Greedy Packet Forwarding –Restricted Directional Flooding-Hierarchical Routing-Other Routing Protocols.

UNIT- III

SENSOR NETWORK COMMUNICATION PROTOCOLS: Introduction – Architecture -Single Node Architecture –Sensor Network Design Considerations –Energy Efficient Design Principles for WSNs –Protocols for WSN –Physical Layer –Transceiver Design Considerations –MAC Layer Protocols – IEEE 802.15.4 Zigbee –Link Layer and Error Control Issues - Routing Protocols –Mobile Nodes and Mobile Robots -Data Centric &ContentionBased Networking –Transport Protocols &QoS –Congestion Control Issues – Application Layer Support.

UNIT-IV

SENSOR NETWORK MANAGEMENT AND PROGRAMMING: Sensor Management - Topology Control Protocols and Sensing Mode Selection Protocols –Time Synchronization -Localization and Positioning – Operating Systems and Sensor Network Programming –Sensor Network Simulators.

UNIT- V

ADHOC AND SENSOR NETWORK SECURITY: Security in Ad-Hoc and Sensor Networks – Key Distribution and Management –Software based AntitamperTechniques –Water Marking techniques –Defense against Routing Protocols –Broadcast Authentication WSN Protocols – TESLA –Biba – Sensor Network Security Protocols – SPINS

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VLSI DESIGN

Course Code: GR14A3043 L:2 T:1 P:0 C:3
IV Year II Semester

UNIT-I
Introduction: Introduction to IC Technology–MOS transistors, NMOS, CMOS & BiCMOS fabrication Technologies; fabrication processes: Oxidation, Lithography, Diffusion, Ion implantation, Metallization, Etching, Planarization, Encapsulation, Integrated Resistors and Capacitors, Manufacturing issues.

UNIT-II
Basic Electrical Properties: Basic Electrical Properties of MOS and BiCMOS Circuits: Ids-Vds relationships, MOS transistor threshold Voltage Vt, gm, gds, Figure of merit ωo; Pass transistor, NMOS Inverter, Various pull ups, CMOS Inverter-analysis and design, BiCMOS Inverters, Power, Sources of Power Dissipation, Dynamic Power, Static Power, Robustness, Variability, Reliability, Circuit simulation, SPICE tutorials, device models.

UNIT-III
VLSI Circuit Design Processes, Gate Level Design: VLSI Design Flow, MOS Layers, Stick Diagrams, Design Rules and Layout, 2μm CMOS Design rules for wires, contacts and Transistors, Layout Diagrams for NMOS and CMOS Inverters and Gates, Scaling of MOS circuits, CMOS Nano technology. Switch logic, Alternate gate circuits, Time delays, driving large capacitive loads, wiring capacitance, Fan–in, Fan–out, Choice of layers.

UNIT-IV
Data path Subsystems, Array Subsystems: Subsystem Design, Shifters, Adders, ALUs, Multipliers, Parity generators, Comparators, Zero/One Detectors, Counters. SRAM, DRAM, ROM, Serial Access Memories, Content Addressable Memory.

UNIT-V
Semicustom Integrated Circuit Design, IC Testing: PLAs, Programmable Array Logic, FPGAs, CPLDs, Standard cells design approach. Need for testing ICs, Test Principles, Wafer-level, Package- level testing, System-level Test Techniques, and Layout Design for improved Testability and Principles of Design for testability (DFT).

Text Books:

1. Essentials of VLSI circuits and systems – Kamran Eshraghian, Douglas A.Pucknell, Sholeh Eshraghian, PHI,2011,
2. CMOS VLSI Design–A circuits and systems perspective, Neil H.E Weste, David Harris, Fourth Edition, Addison Wesley, 2011.

Reference Books

1. CMOS logic circuit Design- John. P. Uyemura, Springer, 2013.
2. Modern VLSI Design - Wayne Wolf, Pearson Education, 3rdEdition, 1997.
3. VLSI Design–A. Albert Raj, Latha, PHI, 2008
4. Introduction to VLSI–Mead & Convey, BS Publications, 2010
5. VLSI Design– M. Micheal Vai, CRC Press, 2009.
6. Jan M RABAEY, Digital Integrated Circuits, 2nd Edition, Pearson Education, 2003.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DIGITAL IMAGE PROCESSING

Course Code: GR14A4069 L:2 T:1 P:0 C:3
IV Year II Semester

UNIT I
Digital image fundamentals: Digital Image through scanner, digital camera. Concept of graylevels. Gray level to binary image conversion. Sampling and quantization. Relationship between pixels. Imaging Geometry.

UNIT II
Image Transforms 2-D FFT, Properties. Walsh transform, Hadamard Transform, Discrete cosine Transform, Haar transform, Slant transform, Hoteling transform. Image enhancement Point processing. Histogram processing. Spatial filtering. Enhancement in frequency domain, Image smoothing, Image sharpening.

UNIT III
Color image processing: Pseudo color image processing, full color image processing. Image Restoration Degradation model, Algebraic approach to restoration, Inverse filtering, least mean square filters, Constrained Least Squares Restoration, Interactive Restoration.

UNIT IV
Image segmentation, Detection of discontinuities. Edge linking and boundary detection, Thresholding, Region oriented segmentation.

UNIT V
Image compression Redundancies and their removal methods, Fidelity criteria, Image compression models, Source encoder and decoder, Error free compression, Lossy compression.

Teaching Methodologies
1. Tutorial sheets uploaded in website.
2. NPTEL video lectures.
3. Power Point presentations

Text Book

1. Digital Image processing – R.C. Gonzalez & R.E. Woods, Addison Wesley/ Pearsoneducation, 2nd Education, 2002.

Reference Book

1. Fundamentals of Digital Image processing –A.K.Jain , PHI.
2. Digital Image processing using MAT LAB – Rafael C. Gonzalez, Richard E Woods and Steven L. Edition, PEA, 2004.
3. Digital Image Processing – William K. Pratt, John Wilely, 3rd Edition, 2004.
4. Fundamentals of Electronic Image Processing – Weeks Jr., SPIC/IEEE Series, PHI.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DESIGN PATTERNS

Course Code: GR14A4090 L:2 T:1 P:0 C:3
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.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ESSENTIALS OF BIG DATA ANALYTICS

Course Code: GR14A4097 L:2 T:1 P:0 C:3
IV Year II Semester

UNIT-I

INTRODUCTION TO BIG DATA AND HADOOP: 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

BM 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.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

STORAGE AREA NETWORKS

Course Code: GR14A4096 L:2 T:1 P:0 C:3
IV Year II Semester

UNIT-I
Introduction – Storage and networking concepts – SCSI bus architecture – Networking infront of he server – Networking behind the server – Network - attached Storage – Fibrechannel internals – Layers – Data encoding – Framing protocol – class of service – flowcontrol – Name and addressing conventions.

UNIT II
SAN topologies: Point-to Point – Arbitrated Loop – Loop Addressing-Loop Initialization-Port Login-Loop port state machine – Design considerations for Arbitrated Loop –Fabrics – Fabric login – Simple Name Server – State Change Notification – Private LoopSupport – Fabric Zoning – Building Extended SANs.

UNIT-III
Fibre Channel Products: Gigabit Interface Converters (GBICs) – host Bus Adapters –Fibre channel RAID – Fibre channel JBODs – Arbitrated Loop Hubs – hub Architecture– Unmanaged Hubs – Managed Hubs – Switching Hubs – Fabric Switches – FibreChannel-to-SCSI Bridges – SAN software Products – Problem isolation in SANs –Isolation Techniques – Fibre channel Analyzers.

UNIT-IV
Management Studies: Storage Network Management – In-Band management– Out-of-Band Management-SNMP-HTTP-TELNET – Storage Network ManagementIssues – Storage Resource Management – Storage Management – Storage, Systems,and Enterprise Management Integration.

UNIT-V
Application Studies: Full-motion video – LAN free and Server free Tape Backup –server clustering – Internet Service Providers – Campus storage networks – Disasterrecovery. Fiber Channel futures – Bandwidth – Fiber channel over Wide AreaNetworking – Coexistence within Enterprise Networks – Total SAN solutions.

TEXT BOOK
1. Tom Clark, “Designing Storage Area Networks”, Addison-Wesley Professional, 1stedition, 1999
2. Alex Goldman, “Storage Area Networks Fundamentals”, Cisco Press 2002

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MOBILE APPLICATION DEVELOPMENT LAB

Course Code: GR14A4105 L:0 T:0 P:2 C:2
IV Year II Semester

Week-1
Installation of Andriod SDK.

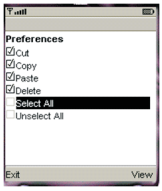
1. Installing jdk1.6 above version.
2. Installing the Eclipse IDE.
3. Installing Andriod SDK.
4. Installing Android Development Tools
5. Choosing which Android version to use

Week-2
Working with the Following.

1. Text controls
2. Button controls

2.1 Write a program which creates to following kind of menu.
* cut
* copy
* past
* delete
* select all
* unselect all

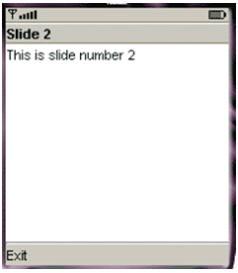
2.2 Event Handling.
Create a menu which has the following options:
* cut - can be on/off
* copy - can be on/off * paste - can be on/off
* delete - can be on/off
* select all - put all 4 options on
* unselect all - put all 4 options off



2.3. Validations
Let us create an layout xml file with two EditText field one for entering email-id and other for password.

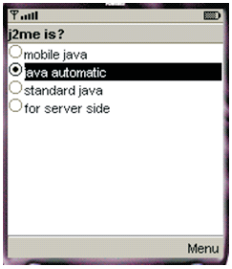
Week - 3 Threads & High Level UI:

3.1. Create a slide show which has three slides, which includes only text. Program should change to the new slide after 5 seconds. After the third slide program returns to the first slide.

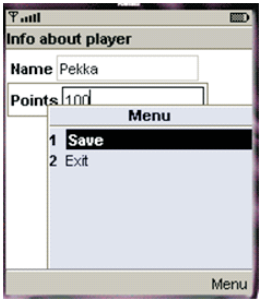


3.2 High-level UI

Create aAndriod application, which show to the user 5-10 quiz questions. All questions have 4 possible options and one right option exactly. Application counts and shows to the user how many right answers were right and shows them to user.



3.3 Create a Andriod application, where the user can enter player name and points. The program saves the information to the record using SQLITE at ANDRIOD device. Program should also print out the top 10 player list to the end user. You can use this class in your game if you made own class for saving and reading record sets.



Week- 4

Working on Drawing and Images

4.1 Create a slide show which has three slides, which includes pictures at PNG format. Program should change to the new slide other 5 seconds.

4.2 Create aAndriod application for colour views using toggle buttons.

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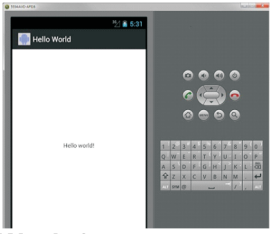
Week-5

Write aAndriod application for display of HELLOWORLD



Week-6

Client Server Interaction in Android

In order to establish Connection with the server from android project include a connection class for Interacting with server

Week-7

Create an android application for any one of the following.

- Students Marks Enquiry
- Town/City Movie Enquiry
- Railway/Road/Air (For example PNR) Enquiry/Status
- Sports (say, Cricket) Update
- Town/City Weather Update
- Public Exams (say Intermediate or SSC)/ Entrance (Say EAMCET) Results Enquiry

Week-8

Show the output in the mobile phone by installing .apk file for the above applications.