ACADEMIC REGULATIONS
PROGRAM STRUCTURE
and
DETAILED SYLLABUS

Master of Technology
(Software Engineering)

(Applicable for the Batches admitted from 2014-15)

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Autonomous)

Gokaraju Rangaraju
Institute of Engineering and Technology, Hyderabad
M. Tech. GR14 Regulations

Gokaraju Rangaraju Institute of Engineering & 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 M.Tech in Software Engineering, a two-year regular programme.

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

3. **Admissions:** Admission to the M.Tech in Software Engineering Programme shall be made subject to the eligibility, qualifications and specialization prescribed by the Institute/University from time to time. Admissions shall be made either on the basis of the merit rank obtained by the student in PGECET conducted by the APSCHE for M. Tech Programmes or on the basis of any other order of merit approved by the University, subject to reservations as prescribed by the Government 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 88.
   d) All the registered credits will be considered for the calculation of the final percentage of marks.

5. **Award of M.Tech Degree:** A student will be declared eligible for the award of the M. Tech Degree if he/she fulfills the following academic requirements:
   a) A student shall be declared eligible for the award of M.Tech degree, if he/she pursues the course of study and completes it successfully in not less than two academic years and not more than four academic years.
   b) A Student, who fails to fulfill all the academic requirements for the award of the degree within four academic years from the date of admission, shall forfeit his/her seat in M.Tech course.
   c) The Degree of M.Tech in Software Engineering shall be conferred by Jawaharlal Nehru Technological University Hyderabad (JNTUH), Hyderabad, on the students who are admitted to the programme and fulfill all the requirements for the award of the degree.

6. Attendance Requirements

a) A student shall be eligible to appear for the end semester 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 and below 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) A candidate shall get minimum required attendance at least in three (3) theory subjects in the semester to get promoted to the next semester. In order to qualify for the award of M.Tech Degree, the candidate shall complete all the academic requirements of the subjects, as per the course structure.

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 of the College from time to time.

b) The following is the division of marks between internal and external evaluations.

Particulars	Internal	External	Total
Theory	40	60	100
Practical	40	60	100
Comprehensive Viva	--	100	100
Seminar	50	----	50
Project Work	Grade	-----	----
Project work & dissertation (Grading System)	------	Grade	----

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	40	Internal Exams & Continuous Evaluation	1. Mid-examinations: … 30 Marks (Two mid-semester examinations shall be conducted for 30 marks each for duration of 2 hours. Average of the two mid semester examinations shall be considered) 2. Tutorial: … … 5 Marks 3. Attendance: .. 5 Marks
		60	Semester-end examination	The semester-end examination is for a duration of 3 hours
2	Practical	40	Internal Exams & Continuous Evaluation	1) Lab Internal :15 marks 2) Record : 5 marks 3) Continuous Assessment : 15 marks 4) Attendance : 5 marks
		60	Semester-end examination	The semester-end examination is for a duration of 3 hours.

d) Comprehensive Viva: There shall be a Comprehensive Viva-Voce in II year I semester. The Comprehensive Viva-Voce will be conducted by the committee consisting of Head of the Department and two senior faculty members of the Department. The Comprehensive Viva-Voce is aimed to assess the student's understanding in various subjects he/she studies during the M.Tech course of study. The Comprehensive Viva-Voce is valued for 100 marks by the committee. There are no internal marks for the Comprehensive Viva-voce.

e) Seminar: There shall be three Seminar Presentations by the student, one each in the I,II and III semesters. For the seminar, the student shall collect the information on a specialized topic other than his/her project and prepare a technical report, showing his understanding over the topic, and

submit to the department, which shall be evaluated by a Departmental committee consisting of the Head of the department, seminar Supervisor and a senior faculty member. The seminar report shall be evaluated for 50 marks. There shall be no external examination for seminar.

f) Project: The work on the project shall be initiated in the beginning of the second year and the duration of the project is for two semesters (III & IV). Every candidate shall be required to submit thesis or dissertation after taking up a topic approved by the Project Review Committee (PRC).
   i) PRC shall be constituted with HOD as chair person, two senior faculty members and project supervisor.
   ii) Registration of Project Work: A candidate is permitted to register for the project work after satisfying the attendance requirement of all the subjects (theory and practical subjects).
   iii) A candidate has to submit, in consultation with his project supervisor, the title, objective and plan of action of his project work to the PRC for its approval. Only after obtaining the approval of PRC the student can initiate the Project work.
   iv) If a candidate wishes to change his supervisor or topic of the project he/she can do so with approval of PRC. However, the PRC shall examine whether the change of topic/supervisor leads to a major change of his initial plans of project proposal. If so, his date of registration for the project work starts from the date of change of supervisor or topic as the case may be.
   v) Project Work: The candidate should be continuously observed by the project supervisor. His performance is assessed by the PRC through a seminar and interim report. Full credits are awarded 'SAT' on satisfactory performance of the student. 'US' grade is given on unsatisfactory performance. If the performance is unsatisfactory, the PRC should redefined the project and the candidate is allowed to appear for the evaluation only after six months.
   vi) Project Work & Dissertation: A candidate shall submit status report (in a bound-form) in two stages at least with a gap of 3 months between them to the project supervisor.
   vii) A candidate is permitted to submit Project dissertation only after successful completion of theory and practical course with the approval of PRC not earlier than 40 weeks from the date of registration of the project work. For the approval of PRC the candidate shall submit the draft copy of dissertation to the Head of the Department and shall make an oral presentation before the PRC along with project supervisor.
   viii) Student has to submit to the department three copies of the Project dissertation along with a soft copy on CD certified by the supervisor.
   ix) The dissertation shall be adjudicated by one examiner selected by the Controller of examination from the panel of 3 examiners as suggested

by Head of the Department, who are eminent in that field with the help of the concerned guide and head of the department.

x) If the report of the Examiner is not favorable, the candidate shall revise and resubmit the dissertation, in the time frame as described by PRC. If the report of the examiner is unfavorable again, the thesis shall be summarily rejected.

xi) If the report of the examiner is favorable, viva-voce examination shall be conducted by a board consisting of the supervisor, Head of the Department and the examiner who adjudicated the dissertation. The Board shall jointly report candidates work as:

A. Excellent
B. Good
C. Satisfactory
D. Unsatisfactory.

Head of the Department shall coordinate and make arrangements for the conduct of viva-voce examination.

If the report of the viva-voce is unsatisfactory, the candidate will retake the viva-voce examination after three months. If he/she fails to get a satisfactory report at the second viva-voce examination, he/she will not be eligible for the award of the degree.

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 secured the minimum academic requirements in a subject if he / she secures a minimum of 40% of marks in the Semester-end Examination and a minimum aggregate of 50% of the total marks in the Semester-end examination and Internal Evaluation taken together.

b) In order to qualify for the award of M.Tech Degree, the student shall Complete the academic requirements of passing in all the Courses as per the course structure including Seminars and Project if any.

c) In case a Student does not secure the minimum academic requirements in any course, he/she has to reappear for the Semester-end Examination in the course, or re-register for the same course when next offered or re-register for any other specified course, as may be required. However, one more additional chance may be provided for each student, for improving the internal marks provided the internal marks secured by a student are less than 50% and he/she failed finally in the course concerned. In the event of taking another chance for re-registration, both the internal and external marks obtained in the previous attempt are nullified. In case of re-registration, the student has to pay the re-registration fee for each course, when next offered.

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 M. Tech Degree by JNTUH, he/she shall be placed in one of the following three classes:

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

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/she 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-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 Institute/ University.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
M.TECH (Software Engineering)

SE - M.Tech - I Year, I Semester

Group	Sub-Code	Subject	Credits	Int	Ext	Marks
PC	GR14D5023	Software Requirements and Estimation	3	40	60	100
PC	GR14D5002	Object Oriented Modeling	3	40	60	100
PC	GR14D5024	Software Process and Project Management	3	40	60	100
PC	GR14D5025	Component Oriented Programming Languages	3	40	60	100
		Elective I	3	40	60	100
PE	GR14D5026	Data Mining and Applications				
	GR14D5015	Advanced Computer Networks				
	GR14D5009	Soft Computing				
		Elective II	3	40	60	100
PE	GR14D5017	Information Retrieval Systems				
	GR14D5004	Distributed Databases				
	GR14D5027	Software Engineering Process Models				
LAB	GR14D5028	Component Oriented Programming Languages Lab	2	40	60	100
SPW	GR14D5175	Seminar-I	2	—	—	—
		Total	**22**	**280**	**420**	**700**

SE - M.Tech- I Year, II Semester

Group	Sub-Code	Subject	Credits	Int	Ext	Marks
PC	GR14D5012	Distributed Computing	3	40	60	100
PC	GR14D5029	Software Quality Assurance and Testing	3	40	60	100
PC	GR14D5030	Server side Scripting Languages	3	40	60	100
PC	GR14D5021	Service Oriented Architecture	3	40	60	100
		Elective III	3	40	60	100
PE	GR14D5007	Software Architecture and Design Patterns				
	GR14D5031	Multimedia and Rich Internet Development				
	GR14D5032	Enterprise Resource Planning				
		Elective IV	3	40	60	100
PE	GR14D5008	Image Processing and Pattern Recognition				
	GR14D5033	Formal Methods in Software Engineering				
	GR14D5034	Software Agents				
LAB	GR14D5035	Server Side Scripting Languages Lab	2	40	60	100
SPW	GR14D5176	Seminar-II	2	—	—	—
		Total	**22**	**280**	**420**	**700**

SE - M.Tech - II Year, I Semester

Group	Sub-Code	Subject	Credits	Int	Ext	Marks
SPW	GR14D5178	Comprehensive Viva	2	—	100	100
SPW	GR14D5177	Seminar-III	2	50	—	50
SPW	GR14D5179	Project work	18	Grade		
		Total	**22**	**50**	**100**	**150**

SE - M.Tech - II Year, II Semester

Group	Sub-Code	Subject	Credits	Int	Ext	Marks
SPW	GR14D5180	Project work and Dissertation	22	Grade		

I-Year

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SOFTWARE REQUIREMENTS AND ESTIMATION

Course Code: GR14D5023 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I
Software Requirements: What and Why Essential Software requirement, Good practices for requirements engineering, Improving requirements processes, Software requirements and risk management

Unit-II
Software Requirements Engineering Requirements elicitation, requirements analysis documentation, review, elicitation techniques, analysis models, Software quality attributes, risk reduction through prototyping, setting requirements priorities, verifying requirements quality, Software Requirements Modeling- Use Case Modeling, Analysis Models, Dataflow diagram, state transition diagram, class diagrams, Object analysis, Problem Frames

Unit-III
Software Requirements Management Requirements management Principles and practices, Requirements attributes, Change Management Process, Requirements Traceability Matrix, Links in requirements chain Requirements Management Tools: Benefits of using a requirements management tool, commercial requirements management tool, Rational Requisite pro, Caliber – RM, implementing requirements management automation,

Unit-IV
Software Estimation Components of Software Estimations, Estimation methods, Problems associated with estimation, Key project factors that influence estimation. Size Estimation-Two views of sizing, Function Point Analysis, Mark II FPA, Full Function Points, LOC Estimation, Conversion between size measures,

Unit- V
Effort, Schedule and Cost Estimation What is Productivity? Estimation Factors, Approaches to Effort and Schedule Estimation, COCOMO II, Putnam Estimation Model, Algorithmic models, Cost Estimation
Software Estimation Tools: Desirable features in software estimation tools, IFPUG, USC's COCOMO II, SLIM (Software Life Cycle Management) Tools

Text Books

1. Software Requirements and Estimation by Rajesh Naik and Swapna Kishore, Tata Mc Graw Hill
2. Software Requirements by Karl E. Weigers,Microsoft Press.

Reference Books

1. Managing Software Requirements, Dean Leffingwell & Don Widrig, Pearson Education,2003.
2. Mastering the requirements process, second edition, Suzanne Robertson & James Robertson, Pearson Education, 2006.
3. Estimating Software Costs, Second edition, Capers Jones, Tata McGraw-Hill, 2007.
4. Practical Software Estimation, M.A. Parthasarathy, Pearson Education, 2007.
5. Measuring the software process, William A. Florac & Anita D. Carleton, Pearson Education,1999.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

OBJECT ORIENTED MODELING

Course Code: GR14D5002 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I

UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture.

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams. Collaboration Diagrams& Sequence Diagrams.

Basic Behavioral Modeling: Use cases, Use case Diagrams, Activity Diagrams.

Advanced Behavioral Modeling: State chart diagrams.

Architectural Modeling: Component diagrams and Deployment diagrams.

Unit-II

The Unified Process: Use case driven, architecture centric, iterative, and incremental

The Four Ps: People, project, product, and process.

Use case driven Process: Why use case, capturing use cases, analysis, design, and implementation to realize the use cases, testing the use cases.

Unit-III

Architecture-centric Process: Architecture in brief, why we need architecture, use cases and architecture, the steps to architecture, an architecture description.

Iterative Incremental Process: Iterative incremental in brief, why iterative incremental development? The iterative approach is risk driven, the generic iteration.

Unit-IV

The Generic Iteration workflow: Phases are the first division workflow, planning proceeds doing, risks affect project planning, use case prioritization, resource needed, assess the iteration and phases.

Inception Phase: Early in the inception phase, the archetypal inception iteration workflow, execute the core workflows, requirements to test.

Unit-V

Elaboration Phase: Elaboration phase in brief, early in the elaboration phase, the architectural elaboration iteration workflow, execute the core workflows-Requirements to test.

Construction Phase: Early in the construction phase, the archetypal construction iteration workflow, execute the core workflow.

Transition Phase: early in the transition phase, activities in transition phase.

Text Books

1. The Unified Modeling Language User Guide By Grady Booch, James Rumbaugh, Ivar Jacobson 2nd Edition, Pearson Education.
2. UML 2 Toolkit By Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado WILEY-Dreamtech India Pvt. Ltd.
3. The Unified Software Development Process By Ivar Jacobson, Grady Booch, James Rumbaugh, Pearson Education

Reference Books

1. Fundamentals of Object Oriented Design in UML By Meilir Page-Jones, Pearson Education
2. Object Oriented Analysis & Design By Atul Kahate, The McGraw-Hill.
3. Practical Object-Oriented Design with UML By Mark Priestley, TATA McGrawHill
4. Object Oriented Analysis & Design By Brett D McLaughlin, Gary Pollice and David West, O'REILY .
5. Object-Oriented Analysis and Design using UML By Simon Bennet, Steve McRobb and Ray Farmer, 2nd Edition, TATA McGrawHill.
6. Object-Oriented Analysis and Design with the Unified Process By John W. Satzinger, Robert B Jackson and Stephen D Burd, THOMSON Course Technology.
7. UML and C++,R.C.Lee, and W.M.Tepfenhart,PHI

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SOFTWARE PROCESS AND PROJECT MANAGEMENT

Course Code: GR14D5024 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I
Software Process Maturity: Software maturity Framework, Principles of Software Process Change, Software Process Assessment, Introduction to the Initial Process, the Repeatable Process, the Defined Process, the Managed Process, The Optimizing Process. [Book 1]

Unit-II
Project management Framework: Introduction, Project life cycle and organization Project Management Processes for a project, project Integration Management, project scope management [Book 2]

Unit-III
Project Planning: understanding the work, estimating, scheduling and resourcing, monitoring progress, Reporting Progress [Book 3]
Unit IV Delivering Success: Managing quality, Managing risk, selling the project, Managing the stakeholders, Managing the change. [Book 3]

Unit-V
Project Human Resource management: leadership and performance, Managing the team, the project manager [Book3]

Text Books

1. Managing the Software Process, Watts S. Humphrey, Pearson Education,1999
2. A Guide to the Project Management Body of Knowledge, Project Management Institute, 2008.
3. Cadle, J., Yeates, D., Project Management for Information Systems, Prentice Hall, 2006.

Reference Books

1. An Introduction to the Team Software Process, Watts S. Humphrey, Pearson Education,2000
2. Process Improvement essentials, James R. Persse, O'Reilly,2006
3. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition,Tata Mc-Graw Hill,2006
4. Applied Software Project Management, Andrew Stellman & Jennifer Greene, O'Reilly, 2006.
5. Head First PMP, Jennifer Greene & Andrew Stellman, O'Reilly,2007
6. Software Engineering Project Managent, Richard H. Thayer & Edward Yourdon, second edition, Wiley India, 2004.
7. Agile Project Management, Jim Highsmith, Pearson education, 2004.
8. Quality Software Project Management, R.F.Futrell , D.F.Shafer, L.I.Shafer, Pearson.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPONENT ORIENTED PROGRAMMING LANGUAGES T

Course Code: GR14D5054 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I
Introduction: To C# Introducing C#, Understanding .NET, Features of .Net, Overview of C#, Literals, Variables, Data Types, Operators, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations.

Unit-II
Object Oriented Aspects Of C#: Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exceptions

Unit-III
Application Development On .NET: Building Windows Applications, Web browser controls, Accessing Data with ADO.NET.

Unit-IV
ADO.NET- LINQ: History and background, From DAO to ADO.NET, ADO.NET LINQ, ADO.NET design goals, The ADO.NET architecture and its components, ADO.NET in relation to the other .NET tools (Windows azure)

Unit-V
Web Based Application Development On .NET: Programming Web Applications with Web Forms, Windows forms library – WinForms, Layout Enhancements, Forms and controls – Hierarchy, Creating simple GUI by hand, Event handling, Basic controls, Windows forms – buttons, check boxes, radio buttons, panels, group boxes, list boxes, picture boxes, Programming Web Services.

Text Books
1. E.Balagurusamy,"Programming in C#", Tata McGraw-Hill, 2004.
2. J. Liberty, "Programming C#", 2nd ed., O'Reilly, 2002.
3. Jennifer Greene, Andrew Stellman O'Reilly MediaHead First C#, 3rd Edition

Reference Books
1. Herbert Schildt, "The Complete Reference: C#", Tata McGraw-Hill, 2004.
2. Robinson et al, "Professional C#", 2nd ed., Wrox Press, 2002.
3. Andrew Troelsen, "C# and the .NET Platform", A! Press, 2003.
4. S. Thamarai Selvi, R. Murugesan, "A Textbook on C#", Pearson Education, 2003

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE I
DATA MINING AND APPLICATIONS

Course Code: GR14D5026 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I

Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems,Data Mining Primitives Major issues in Data Mining. (TextBook 1)

Data Mining Versus Knowledge Discovery in Databases, Data Mining from Database Perspective, Statistical measures for Data Mining (TextBook 2)

Unit-II

Mining Association Rules in Large Databases: Frequent Patterns, Efficient and scalable frequent itemset mining methods, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases, From Association Mining to Correlation Analysis, Constraint-Based Association Mining, Parallel and Distributed Algorithms, (TextBook 1, 2).

Unit-III

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Backpropagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy.(TextBook 1, 2)

Cluster Analysis Introduction: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis. (TextBook 1, 2)

Unit-IV

Web Mining: Introduction to web mining techniques, Web content mining, Web Structure Mining (TextBook 2)

Spatial Mining: Introduction, Spatial data overview, Spatial data mining primitives, Spatial rules, Spatial classification algorithms like ID3 extension and Spatial decision tree, Spatial Clustering using CLARANS, DBCLASD, WaveCluster and approximation. (TextBook 2)

Unit-V

Temporal Mining: Introduction, Modeling temporal events, Pattern detection, Temporal association rules. (TextBook 2)

MiningComplex Types of Data:Mining Data Streams, Mining Time-Series data,Mining Sequence Patterns in transactional databases. (TextBook 1)

Text Books

1. Data Mining – Concepts and Techniques - JIAWEI HAN & MICHELINE KAMBER Harcourt India.
2. Data Mining – Introductory and advanced topics – Margaret H. Dunham & S.Sridhar, Pearson Education.

Reference Books

1. Data Mining Techniques – ARUN K PUJARI, University Press.
2. Adriaans, "Data Mining", Pearson Education.
3. K.P. Soman, ShyamDiwakar and V. Ajay “Insight into Data mining Theory andPractice”, Easter Economy Edition, Prentice Hall of India, 2006.
4. G. K. Gupta “Introduction to Data Mining with Case Studies”, Easter EconomyEdition, Prentice Hall of India, 2006.
5. Pang-Ning Tan, Michael Steinbach and Vipin Kumar “Introduction to DataMining”, Pearson Education, 2007.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE I
ADVANCED COMPUTER NETWORKS

Course Code: GR14D5015 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I

Computer Networks and the Internet: What is the Internet, The Network edge, The Network core, Access Networks and Physical media, ISPs and Internet Backbones, Delay and Loss in Packet-Switched Networks, History of Computer Networking and the Internet, Foundation of Networking Protocols: 5-layer TCP/IP model, 7-layer OSI model, Internet Protocols and addressing, Equal-sized Packets model: ATM, Networking Devices: Multiplexers, Modems and Internet Access Devices, Switching and Routing Devices, Router Structure.

Unit-II

The Link Layer and Local Area Networks: Introduction and Services, Error-Detection and Error-Correction techniques, Multiple access protocols, Link layer addressing, Ethernet, Interconnections: Hubs and Switches, The Point-to-Point protocol(PPP), Link Virtualization, Routing and Internetworking: Network layer routing, Least-cost-Path algorithms, Non-least-cost-path algorithms

Unit-III

Logical Addressing: IPv4 addressing, IPv6 addressing Internet Protocol: Internetworking, IPv4, IPv6,Transition from IPv4 to IPv6, Multicasting Techniques and Protocols: Basic definitions and techniques, Intra-domain multicast protocols, Inter-domain multicast protocols, Node-level multicast algorithms, Transport and end-to-end protocols: Transport layer, TCP, UDP, Mobile Transport Protocol, TCP Congestion control Application Layer: Principles of Network applications, the web and HTTP, File transfer:FTP, Electronic Mail in the Internet. DNS, P2P File sharing, Socket programming with TCP and UDP, Building a Simple Web-server.

Unit-IV

Wireless Networks and Mobile IP: Infrastructure of wireless Networks, Wireless LAN technologies, IEEE 802.11 wireless standard, Cellular Networks, Mobile IP, Wireless mesh networks (WMNs). Optical Networks and WDM Systems: Overview of Optical Networks, Basic optical networking devics, Large-Scale Optical Switches, Optical Router, Wavelength Allocation in Networks, Case study- An all Optical switch.

Unit-V

VPNs, Tunneling and Overlay Networks: Virtual Private Netwoks (VPNs), Multiportocol Label switching (MPLS), Overlay Networks, VoIP and Multimedia Networking: Overview of IP Telephony, VoIP Signaling Protocols, Real-time transport protocols, Distributed multimedia networking, Stream control Transmission protocol.

Mobile Ad-Hoc Networks: Overview of wireless Ad-Hoc Networks, Routing in Ad-Hoc Networks, Routing protocols for Ad-Hoc Networks. Wireless sensor networks: Sensor Networks and Protocol structures, Communication Energy Model, Clustering Protocols, Routing Protocols.

Text Books

1. Computer Networking: A Top-Down Approach Featuring the Internet, James F. Kuros, Third Edition, Pearson Education, 2007.
2. Computer and Communication Networks, Nader F Mir, Pearson Education, 2007

Reference Books

1. Data Communications and Networking, Behrouz A. Forouzan, Fourth Edition, Tata McGrawhill.
2. An Engineering Approach to Computer Networking, S. Keshave, Pearson Education
3. Computer Networks, Andrew S. Tanenbaum, Fourth Edition, PEARSON, Prentice Hall

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE I
SOFT COMPUTING

Course Code: GR14D5009 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I

Introduction to Soft Computing and Neural Networks: Evolution of Computing, Soft Computing Constituents, From Conventional AI to Computational Intelligence, Machine Learning Basics.

Unit-II

Genetic Algorithms: Introduction to Genetic Algorithms (GA), Applications of GA in Machine Learning, Machine Learning Approach to Knowledge Acquisition.

Unit-III

Neural Networks: Machine Learning Using Neural Network, Adaptive Networks, Feed forward Networks, Supervised Learning Neural Networks, Radial Basis Function Networks, Reinforcement Learning, Unsupervised Learning Neural Networks, Adaptive Resonance architectures, Advances in Neural networks.

Unit-IV

Fuzzy Logic: Fuzzy Sets, Operations on Fuzzy Sets, Fuzzy Relations, Membership Functions, Fuzzy Rules and Fuzzy Reasoning, Fuzzy Inference Systems, Fuzzy Expert Systems, Fuzzy Decision Making.

Unit-V

Neuro-Fuzzy Modeling: Aaptive Neuro, Fuzzy Inference Systems, Coactive Neuro-Fuzzy Modeling, Classification and Regression Trees, Data Clustering Algorithms, Rulebase Structure Identification, Neuro-Fuzzy Control, Case studies.

Text Books

1. Jyh-Shing Roger Jang, Chuen-Tsai Sun, Eiji Mizutani, “Neuro-Fuzzy and Soft Computing”, Prentice-Hall of India, 2003.
2. George J. Klir and Bo Yuan, “Fuzzy Sets and Fuzzy Logic-Theory and Applications”,Prentice Hall, 1995.
3. James A. Freeman and David M. Skapura, “Neural Networks Algorithms, Applications, and Programming Techniques”, Pearson Edn., 2003.

Reference Books

1. Mitchell Melanie, “An Introduction to Genetic Algorithm”, Prentice Hall, 1998.
2. David E. Goldberg, “Genetic Algorithms in Search, Optimization and Machine Learning”, Addison Wesley, 1997.
3. S. N. Sivanandam, S. Sumathi and S. N. Deepa, “Introduction to Fuzzy Logic using MATLAB”, Springer, 2007.
4. S.N.Sivanandam, S.N.Deepa, “ Introduction to Genetic Algorithms”, Springer, 2007.
5. Jacek M. Zurada, “Introduction to Artificial Neural Systems”, PWS Publishers, 1992.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE II
INFORMATION RETRIEVAL SYSTEMS

Course Code: GR14D5017 L:3 T:0 P:0 C:3
I 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
Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages

Unit-III
Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters
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-IV
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.

Unit-V
Multimedia Information Retrieval: Models and Languages – Data Modeling, Query Languages, Indexing and Searching Libraries and Bibliographical Systems: Online IR Systems, OPACs, Digital Libraries.

Text Books

1. Information Storage and Retrieval Systems: Theory and Implementation By Kowalski, Gerald, Mark T Maybury Kluwer Academic Press, 2000.
2. Modern Information Retrival By Ricardo Baeza-Yates, Pearson Education, 2007.
3. Information Retrieval: Algorithms and Heuristics By David A Grossman and Ophir Frieder, 2nd Edition, Springer International Edition, 2004.

Reference Books

1. Information Retrieval Data Structures and Algorithms By William B Frakes, Ricardo Baeza-Yates, Pearson Education, 1992.
2. Information Storage & Retieval By Robert Korfhage – John Wiley & Sons.
3. Introduction to Information Retrieval By Christopher D. Manning and Prabhakar Raghavan, Cambridge University Press, 2008.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE-II
DISTRIBUTED DATABASES

Course Code: GR14D5004 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I
Features of Distributed versus Centralized Databases, Principles of Distributed Databases, Levels Of Distribution Transparency, Reference Architecture for Distributed Databases, Types of Data Fragmentation, Integrity Constraints in Distributed Databases, Distributed Database Design

Unit-II
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.
Optimization of Access Strategies, A Framework for Query Optimization, Join Queries, General Queries

Unit-III
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-IV
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, Catalog Management in Distributed Databases, Authorization and Protection

Unit-V
Architectural Issues, Alternative Client/Server Architectures, Cache Consistency, Object Management, Object Identifier Management, Pointer Swizzling, Object Migration, Distributed Object Storage, Object Query Processing, Object Query Processor Architectures, Query Processing Issues, Query Execution, Transaction Management, Transaction Management in Object DBMSs, Transactions as Objects

Database Integration, Scheme Translation, Scheme Integration, Query Processing Query Processing Layers in Distributed Multi-DBMSs, Query Optimization Issues Transaction Management Transaction and Computation Model, Multidatabase Concurrency Control, Multidatabase Recovery, Object Orientation and Interoperability, Object Management Architecture CORBA and Database interoperability, Distributed Component Object Model, COM/OLE and Database Interoperability, PUSH-Based Technologies

Text Books

1. Distributed Databases Principles & Systems, Stefano Ceri, Giuseppe Pelagatti,TMH.
2. Principles of Distributed Database Systems, M. Tamer Ozsu, Patrick Valduriez, Pearson Education, 2nd Edition.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE-II
SOFTWARE ENGINEERING PROCESS MODELS

Course Code: GR14D5027 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I
Process and Basic Process Models: Process Definition, Process for Software Development and Maintenance, Process Models, Waterfall Model.
Prototypes: Throwaway, Evolutionary, Incremental.

Unit-II
Advanced Process Models: Spiral, Rapid Application Development, Unified Process Models.

Unit-III
Advanced Process Models-II: Agile, Extreme Programming (XP), Adaptive Software Development (ASD), DSDM, Scrum, Crystal, Feature Driven Development (FDD) , Comparison of Different Models.

Unit-IV
Process Improvement Models-I: Need for Process Improvement, ISO 9000: 2000, SPICE.

Unit-V
Process Improvement Models- II: Six Sigma – CMMI.

Text Books

1. Pankaj Jalote , “An Integrated Approach to Software Engineering”, Second Edition, Springer Verlag, 1997.
2. Roger S. Pressman, “Software Engineering: A Practitioner’s Approach”, Fifth Edition, McGraw Hill, 2001.
3. Ian Sommerville, “Software Engineering”, Sixth Edition, Addison Wesley, 2000.

Reference Books

1. Jim Highsmith , "Agile Software Development Ecosystems”, First Edition, Addison Wesley, Latest Edition.
2. Alistair Cockburn , "Agile Software Development”, First Edition, Pearson Education Asia, Latest Edition.
3. Kent Beck, “eXtreme Programming eXplained : EMBRACE CHANGE”, First Edition, Pearson Education Asia, Latest Edition
4. Philippe Kruchten, “The Rational Unified Process, an introduction”, Second Edition, Addison Wesley, 2000.
5. Humphrey Watts S, “Managing the Software Process”, Addison Wesley, Latest Edition
6. Alan C. Gillies, “Software Quality - Theory and Management”, Second Edition, International Thomson Computer Press, 1999.
7. David Hoyle, “ISO 9000 Quality Systems Handbook”, Fourth Edition, Butterworth – Heinemann, 2001.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPONENT ORIENTED PROGRAMMING LANGUAGES LAB

Course Code: GR14D5028 L:3 T:0 P:0 C:3
I Year I Semester

1. Program to display the addition, subtraction, multiplication and division of two number using console applications.
2. Simple application using web controls
   a) Finding factorial Value
   b) Money Conversion
   c) Quadratic Equation
   d) Temperature Conversion
   e) Login control
3. Program to display the first 10 natural numbers and their sum using console application.
4. Program in C# to demonstrate Boxing and unBoxing.
5. Program to find the sum of all the elements present in a jagged array of 3 inner arrays.
6. Program to display the addition using the windows application.
7. Write a program to convert input string from lower to upper and upper to lower case.
8. Write a Program to illustrate the use of different properties in C#.
9. Implement Linked Lists in C# using the existing collections name space.
10. Write a program to simple calculator using windows application.
11. Write a program for Treeview control
    a)Treeview control and datalist
    b)Treeview operations
12. Write a program for Validation controls
13. Write a program to connectivity with Oracle database.
14. Write a program to access data source through ADO.NET.
15. Write a program to manage the session.

Text Books

1. E. Balagurusamy, "Programming in C#", Tata McGraw-Hill, 2004.
2. J. Liberty, "Programming C#", 2nd ed., O'Reilly, 2002.
3. Jennifer Greene, Andrew Stellman O'Reilly MediaHead First C#, 3rd Edition

Reference Books

1. Herbert Schildt, "The Complete Reference: C#", Tata McGraw-Hill, 2004.
2. Robinson et al, "Professional C#", 2nd ed., Wrox Press, 2002.
3. Andrew Troelsen, "C# and the .NET Platform", A! Press, 2003.
4. S. Thamarai Selvi, R. Murugesan, "A Textbook on C#", Pearson Education, 2003

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

DISTRIBUTED COMPUTING

Course Code: GR14D5012 L:3 T:0 P:0 C:3
I Year II Semester

Unit-I
Introduction: The different forms of computing, monolithical, distributed, parallel and cooperative computing, meaning of distributed computing, operating system concepts relevant to distributed computing, the architecture of distributed applications.

Unit-I
Distributed Computing Paradigms: 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- RMI, ORB, the object space paradigm, the mobile agent paradigm, the network service paradigm, the collaborative application, choosing a paradigm for an application.

Unit-III
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, The CORBA object interface, Inter-ORB protocols, object servers and object clients, CORBA object references, CORBA Naming Service, CORBA object services, object Adapters, Java IDL, An example CORBA application. Steps and methods used in implementing a CORBA object-based application.

Unit-IV
Distributed Document-based System: WWW and Lotus Notes, Distributed Coordination based System- Introduction to coordination system models, TIB, JINI, comparison of TIB and JINI, Software agents, agents technology, mobile agents. Distributed Multimedia Systems: Characteristics of Multimedia data, QOS of services management, Resource management, stream adaptation.

Unit-V

Grid Computing: Definition of Grid, grid types – computational grid, data grid, grid benefits and applications drawbacks of grid computing, grid components, grid architecture and its relation with various distributed technologies.

Cluster Computing: Parallel computing overview, cluster computing – Introduction, Cluster architecture, parallel programming models and paradigms, applications of clusters.

Text Books

1. Distributed computing principles and applications, M.L.Liu, Pearson Edition.
2. Distributed computing principles and applications A.S Tanenbaum.
3. Client/ Server programming with java and CORBA, second edition, R.Orfali and Dan Harkey, john white and sons.
4. Grid Computing, J.Joseph & C.Fellenstein, Pearson education.
5. High Performance Cluster Computing, Rajkumar Buyya, Pearson education.

Reference Books

1. A networking approach to grid computing, D.Minoli, wiley.
2. Java programming with CORBA 3 rd edition.
3. Java Network Programming:E.R.Harold,2nd edition, O'Reilly,SPD
4. Distributed Systems, Concepts and Design, 3rd Edition G.Colouris, J.Dollimore, Pearson .Education
5. Java Programming with CORBA,3rd edition , Brose, Vogel,Duddy, Wiley DreamTech

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SOFTWARE QUALITY ASSURANCE AND TESTING

Course Code: GR14D5029 L:3 T:0 P:0 C:3
I Year II Semester

Unit-I

Software Quality Assurance Framework and Standards SQA Framework: What is quality? Software Quality Assurance, Components of software quality Assurance- software quality Assurance Plan: steps to develop and Implement a software assurance Plan- Quality standards: ISO 9000 and companion ISO standards, CMM, CMMI, PCMM, Malcolm Balridge, 3 sigma, 6 sigma.

Unit-II

Software Quality Assurance Metrics and Measurement Software Quality Metrics: Product quality metrics, In-process quality metrics, Metrics for software maintenance, example of metric programs

Software Quality Metrics Methodology: Establish quality requirement, identify software quality metrics, implement the software quality metrics, analyze software metric results, and validate the software quality metrics- software quality indicators- Fundamentals in Measurement theory.

Unit-III

Software Testing Strategy and Environment: Establishing testing policy, structured approach to testing, test factors, economics of system development life cycle(SDLC) Testing.

Software Testing Methodology: Defects hard to find, verification and validation, functional and structural testing, work bench concept, eight considerations in developing testing methodologies, testing tactics checklist.

Unit-IV

Software Testing Techniques: Black box, Boundary value, bottom-up, Branch coverage, cause-effect graphing, CRUD, Database, Exception, Gray-Box, Histograms, Inspections, JAD's, Pareto analysis, prototyping, Random Testing, Risk-based Testing, Regression testing, structured walkthroughs, Thread testing, Performance testing, White-box testing. Software testing tools: Taxonomy of testing tools, Methodology to evaluate automated testing tools, Load Runner, win Runner and Rational Testing tools, Silk test, Java testing tools, JMetra, JUnit and Cactus.

Unit-V

Testing Process & Eleven Step Testing Process: Asses project management development estimate and status, Develop test plan, Requirements phase testing, design phase testing, program phase testing, Execute test and Record results, acceptance test, Report test results, testing software installation, Test software changes, evaluate test effectiveness.

Testing Specialized Systems and Applications: Testing client/server – web applications, testing off the shelf components, testing security, Testing a Data warehouse.

Text Books

1. Effective Methods for Software testing, 2nd Edition, William E.Perry, Second Edition, Wiley India, 2006.
2. Software Quality by Mordechai Ben-Menachem/Garry S. Marliss, by Thomson Learning publication,1997

Reference Books

1. Testing and Quality Assurance for Component-based Software, by Gao, Tsao and Wu, Artech House Publisher
2. Software Testing Techniques, by Bories Beizer, Second Edition, DreamTech Press
3. Managing the Testing Process, by Rex Black, Wiley
4. Handbook of Software Quality Assurance, by G. Gordon Schulmeyer, James I.McManus, Second Edition, International Thomson Computer Press
5. Software Testing and continuous Quality Improvement, by William E.Lewis, Gunasekaran Veerapillai, Second Edition, Auerbach Publications
6. Metrics and Models for Software Quality Engineering, by Stephen H. Kan, by Pearson EducationPublication

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SERVER SIDE SCRIPTING LANGUAGES

Course Code: GR14D5030 L:3 T:0 P:0 C:3
I 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, Datatypes, 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, Installing and Configuring MySQL, Working with Data bases and Tables- Working with databases, tables, Database Queries, Stored Routines, Securing MySQL, SQL Injection.

Unit-III

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

Unit-IV

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

Unit-V

Python Introduction to Python language, 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. Beginning PHP and MySQL, 3rd Edition , Jason Gilmore, Apress Publications (Dream tech.).
2. The World of Scripting Languages, David Barron,Wiley India.
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

SERVICE ORIENTED ARCHITECTURE

Course Code: GR14D5021 L:3 T:0 P:0 C:3
I Year II Semester

Unit-I

SOA and Web Services Fundamentals: Introducing SOA-Fundamental SOA, Common characteristics of Contemporary SOA, Common tangible benefits of SOA, Common pitfalls of adopting SOA. Evolution of SOA- an SOA timeline, the continuing evolution of SOA, The roots of SOA. Web Services and primitive SOA-the Web Services frame work, Services, Service descriptions, messaging.

Unit-II

Web Services Extensions: Web Services and Contemporary SOA-- Message exchange patterns, Service Activity, Coordination, Atomic transactions, Business Activities, Orchestration, Choreography, Addressing, Reliable messaging, Correlation, Policies, Metadata exchange and Security.

Unit-III

SOA and Services-Orientation: Principles of Service Orientation -- Anatomy of SOA, Common Principles of Service-Orientation, interrelation between Principles of Service-Orientation, Service-Orientation and Object Orientation, Native Web Services support for Principles of Service-Orientation.
Service Layers - Service-Orientation and Contemporary SOA, Service Layer abstraction, Application Service Layer, Business Service Layer, Orchestration Service Layer, Agnostic Services, Service Layer Configuration Scenarios.

Unit IV

Building SOA (Planning and Analysis): SOA Delivery Strategies-- SOA delivery lifecycle phases, the top-down strategy, The bottom-up strategy, The agile strategy. Service Oriented Analysis-- Introduction to Service Oriented Analysis, Benefits of a Business Centric SOA, Deriving Business Service, Service Modeling, Service Modeling guidelines, Classifying Service model logic, Contrasting Service modeling approaches.

Unit-V

Building SOA (Technology and Design): Service Oriented Design--Introduction to Service-Oriented design, WSDL related XML schema language basics, WSDL language basics, SOAP language basics, Service interface design tools.Service Design--Service Design overview, Entity-centric business Service Design, Application Service Design, Task-centric business Service Design,

Service Design guidelines. SOA Platforms--SOA Platform basics, SOA support in J2EE and .NET, Integration Considerations.

Text Books

1. Service-Oriented Architecture-Concepts, Technology, and Design, Thomas Erl, Pearson Education.
2. Understanding SOA with Web Services, Eric Newcomer, Greg Lomow, Pearson Education.

Reference Books

1. The Definitive guide to SOA, Jeff Devies& others, Apress, Dreamtech.
2. Java SOA Cook book, E.H Hewitt,SPD.
3. SOA in practice, N.M.Josuttis,SPD.
4. SOA for Enterprise Applications, Shankar.K, Wiley India Edition.
5. SOA-Based Enterprise Integration, W.Roshen, TMH.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE III
SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

Course Code: GR14D5007 L:3 T:0 P:0 C:3
I Year II Semester

Unit-I
Envisioning Architecture: The Architecture Business Cycle, What is Software Architecture, Architectural patterns, reference models, reference architectures, architectures, architectural structures and views.

Unit-II
Creating an Architecture: Quality Attributes, Achieving qualities, Architectural styles and patterns, designing the Architecture, Documenting software architectures, Reconstructing Software Architecture.

Unit-III
Analyzing Architectures: Architecture Evaluation, Architecture design decision making, ATAM, CBAM.

Unit-IV
Moving from One System to Many: Software Product Lines, Building systems from off the shelf components, Software architecture in future.

Unit-V
Patterns: Pattern Description, Organizing catalogs, role in solving design problems, Selection and usage. Creational and Structural patterns: Abstract factory, builder, factory method, prototype, singleton, adaptor, bridge, composite, façade, flyweight, proxy. Behavioral Patterns: Chain of responsibility, command, interpreter, iterator, mediator, memento, observer, state, strategy, template, method, visitor.

Text Books

1. Software Architecture in Practice, second edition, Len Bass Paul Clements & Rick Kazman, Pearson Education, 2003.
2. Design Patterns, Erich Gamma, Pearson Education, 1995.

Reference Books

1. Beyond Software architecture, Luke Hohmann, Addison wesley, 2003.
2. Software architecture, David M.Dikel, David Kane and James R. Wilson, Prentice Hall PTR, 2001.
3. Pattern Oriented Software Architecture, F. Buschmann & others, John Wiley & Sons.
4. Head First Design Patterns, Eric Freeman & Elisabeth Freeman, O'REILLY, 2007.
5. Design Patterns in java, Steven John Metsker & William C. Wake, Pearson Education.
6. J2EE Patterns, Deepak Alur, John Crupi & Dan Malks, Pearson Education, 2004.
7. Design Patterns in C#, Steven John Metsker, Pearson Education, 2003.
8. Software Design, David Budgen, second edition, Pearson Education, 2003.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE III
MULTIMEDIA AND RICH INTERNET DEVELOPMENT

Course Code: GR14D5031 L:3 T:0 P:0 C:3
I Year II Semester

Unit-I

Introduction to Multimedia: Internet and Multimedia communications, Multimedia Networks, Multimedia Applications, Multimedia Information representation-Digitization Principles, Text, Images, Audio and Video, Compression Methods-Basic Coding Methods-Run Length coding, Huffman coding, Arithmetic coding, Discrete Cosine Transform, Differential PCM, Motion Compensated Prediction, Video Compression- JPEG, H.261, MPEG-1 Video, MPEG 2 and 3 Video, H.263, Wavelet and Fractal Image Compression, Audio Compression.

Unit-II

Multimedia Applications in Networks: Introduction, Application Level Framing, Audio/Video Conferencing-Session Directories, Audio/Video Conferencing, Adaptive Applications, Receiver Heterogeneities, Real Time Application with Resource Reservation, Video Server, Applications requiring reliable multicast-White Board, Network Text Editor for Shared Text Editing, Multi Talk, Multicast file transfer, Multimedia Applications on the World Wide Web-Multicast web Page sharing, Audio/Video Streams in the www, Interactive Multiplayer Games.

Unit-III

Web 2.0: What is Web 2.0, Search , Content Networks, User Generated Content, Blogging, Social Networking, Social Media, Tagging, Social Marking, Rich Internet Applications, Web Services, Mashups, Location Based Services, XML, RSS, ATOM , JSON, and VoIP, Web 2.0 Monetization and Business Models, Future of the Web.

Unit-IV

Rich Internet Applications (RIAs) with Adobe Flash and Flex: Adobe Flash-Introduction, Flash Movie Development, Learning Flash with Hands-on Examples, Publish your Flash Movie, Creating Special Effects with Flash, Creating a website splash screen, action script, Web Sources. Adobe Flex 2-Introduction, Flex Platform Overview, Creating a Simple User Interface, Accessing XML data from your Application, Interacting with server side Applications, Customizing your User Interface, Creating Charts and Graphs, Connection Independent RIAs on the Desktop-Adobe Integrated Run Time(AIR), Flex 3 Beta.

Unit-V

Ajax-enabled Rich Internet Application: Introduction, Traditional Web Applications vs Ajax Applications, Rich Internet Application with Ajax, History of Ajax, Raw Ajax example using xmlhttprequest object, Using XML, Creating a full scale Ajax Enabled application, Dojo Toolkit.

Text Books

1. Multimedia Communications :Protocols and Applications, Franklin F Kuo, JJoaquin Garcia, Wolf gang Effelsberg, Prentice Hall Publications.
2. Multimedia Communications: Applications, Networks, Protocols and Standards, Fred Halsall, Addison Wesley Publications.
3. Ajax, Rich Internet Applications, and Web Development for Programmmers,Paul J Dietel and Harvey M Deitel, Deitel Developer Series, Pearson education.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE III
ENTERPRISE RESOURCE PLANNING

Course Code: GR14D5032 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I
Introduction: Overview – Benefits of ERP – ERP and Related Technologies – Business Process Reengineering – Data Warehousing – Data Mining – On–line Analytical Processing –Supply Chain Management.

Unit-II
Implementation: Implementation Life Cycle – Implementation Methodology – Hidden Costs – Organizing Implementation – Vendors, Consultants and Users – Contracts – Project Management and Monitoring.

Unit-III
Business Modules: Business Modules in an ERP Package – Finance – Manufacturing – Human Resource –Plant Maintenance – Materials Management – Quality Management – Sales and Distribution.

Unit-IV
ERP Market: ERP Market Place – SAP AG – PeopleSoft – Baan Company – JD Edwards World Solutions Company – Oracle Corporation – QAD – System Software Associates.

Unit-V
ERP-present and future: Turbo Charge the ERP System – EIA – ERP and E-Commerce- ERP and Internet – Future Directions in ERP.

Text Books

1. Alexis Leon, “ERP Demystified”, Tata McGraw Hill, 1999.
2. Joseph A. Brady, Ellen F. Monk, Bret J. Wangner, “Concepts in Enterprise Resource Planning” , Thomson Learning, 2001.
3. Vinod Kumar Garg and N.K .Venkata Krishnan, “Enterprise Resource Planning – concepts and Planning”, Prentice Hall, 1998.
4. Jose Antonio Fernandz, “ The SAP R /3 Hand book”, Tata McGraw Hill

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE IV
IMAGE PROCESSING AND PATTERN RECOGNITION

Course Code: GR14D5008 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I
Fundamental steps of image processing, components of an image processing system. The image model and image Acquisition, sampling and quantization, relationship between pixels, distance functions, scanner.

Unit-II
Statistical and spatial operations, Intensity functions Transformations, histogram processing, smoothing & sharpening-spatial filters, Frequency domain filters, homomorphic filtering, image filtering & restoration. Inverse and weiner filtering, FIR weiner filter, Filtering using image transforms, smoothing splines and interpolation. Morphological and other area operations, basic morphological operations, opening and closing operations, dilation erosion, Hit or Miss transform, morphological algorithms, extension to grey scale images.

Unit-III
Segmentation and Edge detection region operations, basic edge detection, second order detection, crack edge detection, gradient operators, compass and laplace operators, edge linking and boundary detection, thresholding, region based segmentation, segmentation by morphological watersheds. Image Compression, Types and requirements, statistical compression, contour coding, quantizing compression, image data compression-predictive technique, pixel coding, transfer coding theory, lossy and lossless predictive type coding, Digital Image Water making.

Unit-IV
Representation and Description chain codes, polygonal approximation, Signature boundary systems, Skeletons, Boundary Descriptors, Relational Descriptors, Principal components for Description, Relational Description.

Unit-V
Pattern Recognition Fundamentals, Basic concepts of Pattern Recognition, Fundamental problems in Pattern Recognition system, design concepts and methodologies, example of automatic Pattern Recognition systems, a simple automatic Pattern Recognition model.

Pattern classification by distance function, Measure of similarity, Clustering criteria, K-means algorithm, pattern classification by likelihood function: Pattern classification as a statistical decision problem, Bayes classifier for normal.

Text Books

1. Digital Processing 3rd edition, pearson edition, Rafeal C.Gonzalez, Richard e. Wood.
2. Pattern recognition principles: Julus T.Tou and Rafel C.Gonzalez.

Reference Books

1. Image processing , analysis and machine vision, second edition.
2. Fundamentals of digital image processing- by A.K Jain.PH.
3. Pettern recognition, R.Shinghal, Oxford university press.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE IV
FORMAL METHODS IN SOFTWARE ENGINEERING

Course Code: GR14D5033 L:3 T:0 P:0 C:3
I Year II Semester

Unit-I
Introduction: Need for Formal methods, Problems in Natural Language Specifications, Formal Versus Informal Programming, Advantages of Formal Methods, Requirements of Formal System, Types, Prepositional Logic, Predicate Logic, Relationships and Functions.

Unit-II
Formal Specification Style: Model-Oriented, Specifications, Concurrency-Based Specifications, Example Specification Languages.

Unit- II
VDM: Introduction to VDM, Basic Types, Quote Types, Compound Types, Optional Types, Functions, and Operations, Additional Constructs, Modules.

Unit-IV The Z Notation: The Interchange Language, User-Defined Identifiers, Data Types, Basic Types, Compound Types, Schemas, Additional Constructs.

Unit-V Formal Semantics And Tools: Operational Semantics, Denotational Semantics, Axiomatic Semantics Proof Editors. Proof Analysers, Symbolic Simulators, Translators. Test Generation Tools.

Text Books

1. Andrew Harry, " Formal Methods: Fact File VDM and Z", John Wiley and Sons, 1996.
2. Jim Woodcock, Jim Davies, "Using Z Specification, Refinement and Proof", Prentice Hall International, 1996.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ELECTIVE IV
SOFTWARE AGENTS

Course Code: GR14D5034 L:3 T:0 P:0 C:3
I Year I Semester

Unit-I

The agent landscape: The smart agent framework: Introduction-Initial concepts– Entities-Objects-Agents-Autonomy-Tropistic agent – Specification structure of SMART. – Agent relationships – An operational analysis of Agent relationships.

Unit-II

Sociological Agents - Autonomous Interaction - Contract Net as a global directed system – Computational Architecture for BDI agents – Evaluating social dependence networks – Normative agents.

Unit-III

Intelligent Agents –Deductive Reasoning Agents – Practical reasoning agents - Reactive agents – Hybrid Agents – Understanding Each other – Communicating –Methodologies

Unit-IV

Modeling multi agent system with AML – JADE:Java Agent development frame work –wireless sensor networks and software Agents – Multi agent Planning Security and anonymity in agent systems.

Unit-V

Multi Agent system: Theory approaches and NASA applications – Agent based control for multi-UAV information collection- Agent based decision support system for Glider pilots – Multi agent system in E- Health Territorial Emergencies – Software Agents for computer network security- Multi-Agent Systems, Ontologies and Negotiation for Dynamic Service Composition in Multi-Organizational Environmental Management.

Text Books

1. Mohammad Essaaidi, Maria Ganzha, and Marcin Paprzycki, “Software Agents, Agent Systems and Their Applications”, IOS Press, 2012.
2. Mark d Inverno and Michael Luck, “Understanding Agent Systems”, Springer,2010.

Reference Books

1. Michael Wooldridge, “An Introduction to Multi Agent Systems”, John Wiley & Sons Ltd., 2009.
2. Lin Padgham, Michael Winikoff, “Developing Intelligent Agent Systems: A
3. Practical Guide”, John Wiley & Sons Ltd., 2004.
4. Bradshaw , “Software Agents” , MIT Press, 1997.
5. Richard Murch, Tony Johnson, “Intelligent Software Agents”, Prentice Hall,2000

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

SERVER SIDE SCRIPTING LANGUAGES LAB

Course Code: GR14D5035 L:0 T:0 P:3 C:2
I Year II 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)

PYTHON

Week 10

Write a Python script using basic data types. a. Find the biggest of 3 numbers.