I SEMESTER

MAT-511 COMPUTATIONAL METHODS AND STOCHASTIC PROCESSES
[3 1 0 4]

Probability and distribution, Stochastic processes and Queuing theory, Optimization Techniques. Numerical solutions to BVP’s by finite difference and finite element methods. Solution of parabolic, elliptic, hyperbolic PDEs: Linear Algebra, Eigen values, Eigen vectors, Matrix computation and SVD.

References:

CSE-501 ADVANCED CONCEPTS IN DATA BASE MANAGEMENT SYSTEMS
[3 1 0 4]


References:  
5. Relevant research papers from the journals

CSE-503 ADVANCED COMPUTER NETWORKS
[3 1 0 4]


References:

8. RFCs and Internet Drafts, available from Internet Engineering Task Force.
9. Articles in various journals and conference proceedings.
11. Relevant research papers from the journals.

CSE-505 OBJECT ORIENTED SYSTEM DEVELOPMENT

Introduction to information systems, Object Basics: encapsulation, Association and Aggregation, Inheritance, Dynamic and static type systems, Polymorphism, Dynamic Binding. Software development Methodologies, Requirements: Business perspective, Developer perspective. Introduction to OOAD with UML 2.0: structure diagrams, behavior diagrams, extension mechanisms Analyzing the problem: static and dynamic analysis, Designing the system architecture: priorities, system design, concurrency, security, Choosing technologies, typical front end configurations, back-end configurations. Designing subsystems: mapping the analysis class model into the design class model, handling persistence with a relational database, designing user interfaces, using patterns, frameworks and libraries, handling multiple activities. Reusable design patterns: patterns template, common design patterns. Specifying the interfaces of classes. Testing: automating tests, testing strategies, test driven development using JUnit.

References:

CSE-507 HIGH PERFORMANCE COMPUTER SYSTEMS


References:

6. Relevant research papers from the journals.

HSS-501 RESEARCH METHODOLOGIES AND TECHNICAL COMMUNICATION.


References:

1. Dr.Ranjit Kumar, “Research Methodology: A Step-by-Step Guide for Beginners”, SAGE,2005

CSE-511 COMPUTING LAB I
[0 0 6 2]


II SEMESTER

CSE-502 FORMAL METHODS IN COMPUTER SCIENCE
[3 1 0 4]


References:

3. Relevant research papers from the journals

CSE-504 ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING
[3 1 0 4]


References:

2. Li Min Fu, “Neural Networks in Computer Intelligence”, TMH, 2003.
7. Relevant research papers from the journals.

CSE-512 COMPUTING LAB-II

Experiments/mini project based on the syllabus specified in Elective I and Elective III.

CSE-514 SEMINAR (0 0 3 1)

Each student has to present a seminar individually, on any technical topic related to the subject, but not covered in the syllabus. The time duration for presentation is 45 minutes and 15 minutes is devoted for question and answer session. Slides have to be prepared for the presentation. A seminar report has to be submitted at least one week before the day of the presentation.


PROGRAM ELECTIVES

CSE-521 DISTRIBUTED COMPUTING SYSTEMS

References:

5. Relevant research papers from the journals

CSE-540 ADVANCED DATA STRUCTURES AND ALGORITHMS

[3 1 0 4]


References:

3. Relevant research papers from the journals.

CSE-542 DATA MINING AND BUSINESS ANALYTICS

[3 1 0 4]

Introduction to Business Intelligence, Basics of Data Integration ,Introduction to Multi-Dimensional Data Modeling, Basics of Enterprise Reporting, Data Mining functionalities Major issues in Data Mining, Applications and Trends in Data Mining, Association Rules Mining, Algorithms for discovering frequent itemsets, Mining various kinds of association rules, classification and Prediction , Clustering Analysis, Interactive Visual Data Analysis Sensing and Analyzing Univariate Data, Sensing and Analyzing Time Series Data

References:
1. Jiawei Han and Micheline Kamber, Data Mining: Concepts and Techniques, Second Edition, Elsevier
5. Fundamentals of Business Analytics by R.N Prasad, Seema Acharya
6. Business Intelligence by David Loshin
7. Business intelligence for the enterprise by Mike Biere
8. Business intelligence roadmap by Larissa Terpeluk Moss, Shaku Atre
9. An introduction to Building the Data Warehouse – IBM
10. Business Intelligence For Dummies – Swain Scheps
11. Successful Business Intelligence: Secrets to making Killer BI Applications by Cindi Howson
12. Information dashboard design by Stephen Few

CSE-544 COMPUTER VISION


References:

3. Relevant research papers from the journals.

CSE-546 SECURE E-COMMERCE

Language; E commerce and online publishing: Strategies, Approaches, Illustration, Digital copyright protection methods, Charting the online marketing process, Illustration with an example; Consumer search and resource discovery: Paradigms, Information filtering and retrieval; Mobile commerce: Wireless communication, WAP programming model; Customer effective web design: Illustration and Illustration with case study.

References:

4. Relevant research papers from the journals

CSE-548 MOBILE COMMUNICATION AND NETWORKS


References:

6. Relevant research papers from the journals.

CSE-550 ADVANCED COMPUTER GRAPHICS

Basic Raster Graphics Algorithms: Scan conversion of lines, circles and ellipses; Filling, clipping, antialiasing. Graphics Hardware: Raster and Random scan display systems; Interactive input devices. Geometric transformations: 2-D transformations, composition of transformations, window to viewport transformations, 3D transformations. 3-D Viewing: Projections – parallel and perspective Curves and Surfaces: Hermite, Bezier and B-Spline curves; surface representations
Solid Modeling: Representation of solids; operations on solids Light: Achromatic light – halftone approximations; Coloured light – XYZ, RGB, CMY models Visible surface determination: Visible line and surface determination algorithms Illumination and shading: Illumination models, Polygon rendering techniques. Animation: Methods of controlling Animation; Rules of animation

References:
4. Relevant research papers from the journals.

CSE-552 SOFTWARE ARCHITECTURE [3 1 0 4]


References:
5. Shaw Mary, Garlan David, Software architecture perspectives on an emerging discipline, PHI publications 1996
8. Relevant research papers from the journals
CSE-554 NETWORK SECURITY


References:

5. Relevant research papers from the journals

CSE-556 EMBEDDED SYSTEMS


References:

5. Relevant research papers from the journals.

CSE-558 DIGITAL IMAGE ANALYSIS


References:

4. Relevant research papers from the journals.
CSE-560 LINUX INTERNALS


References:
4. Relevant research papers from the journals.

CSE-562 WEB SERVICES

References
4. XML: How to Program, by Deitel, Deitel, Nieto, Lin and Sadhu, Prentice Hall. (new edition is still not out)
5. Web Services: A Program, by Deitel, Deitel, DuWaldt, and Trees, Prentice Hall. (gives a good perspective of web services)
6. Essential XML Quick Reference: A Programmer's Reference to XML, XPath, XSLT, XML Schema,
7. SOAP, and More by Aaron Skonnard, Martin Gudgin (Paperback)
12. Relevant research papers from the journals

CSE-564 SOFTWARE TESTING AND ANALYSIS

Software Test and Analysis in a nut shell, A Framework for Test and Analysis – Validation and verification, Basic Principles, Test and Analysis Activities Within a Software Process, Finite models, Dependence and data flow models, Test case selection and adequacy, Test specification and cases, adequacy criteria, comparing criteria, Structural testing, Data flow testing, Model-based testing, Testing object-oriented software, Fault based testing, Program analysis, automating analysis and test

References:
9. Relevant research papers from the journals
CSE-536 MULTICORE PROGRAM OPTIMIZATION

Introduction to parallel computers; Instruction Level Parallelism (ILP); Multiprocessors and thread level parallelism; Shared Memory Multiprocessors; Cache coherence problems; Snoopy protocols: invalidate vs. update; Memory consistency models; Hyper threading technology architecture, multi-core architecture; Multi-threading on single core versus multi-core platforms; Amdahl’s law; Power consumption; Synchronization; Introduction to Basic optimization; Hot Spot, Faster Algorithms, Data Dependency, Branching, Memory, Loops, Slow Operations; Introduction to Performance Tools (Intel Software Tools); Introduction to Multi-core Optimization; ILP vs TLP, Data vs Task Parallelism, Threading and Parallel programming constructs, Threading APIs, Multi Threading with OpenMP, Threading Goals and Issues; Multithreaded and Parallel Applications Case studies; Some applications in Integer Programming, Digital Signal Processing (Video Codec)

References:

2. Shameem Akhter, Jason Roberts. Multi-Core Programming: Increasing Performance through Software Multi-threading
5. Relevant papers from Intel, IEEE and other journals
7. www.llnl.gov/computing/tutorials/openMP/

CSE-538 INFORMATION STORAGE AND MANAGEMENT

Considerations, Backup Methods, Backup Process, Backup and Restore Operations, Backup Topologies, Backup in NAS Environments, Backup Technologies, EMC NetWorker, Local Replication, Remote Replication.

References:
6. Relevant research papers from the journals

III/IV SEMESTER

CSE-699 DISSERTATION/THESIS/PROJECT [-----40]

The duration of this major project is one year. Students are required to undertake innovative and research oriented projects, which not only reflect their knowledge gained in the previous two semesters but also additional knowledge gained from their own effort. They must show the phase wise development of their project submitting the appropriate documents at the end of each phase.