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Department Of Computer Science

M.Sc. Program Specific Outcomes

- PSO1: Understand advanced concepts for handling runtime errors using stack unwinding, uncaught exception and automatic cleanup.
- PSO2: Understand applications of C++ like Smart Pointer , Generic Pointer , Object Validation and Reference Counting.
- PSO3: Design Turing Machines for various applications like emulator, function computer and universal turing machine.
- PSO4: Get familiar with Computability and complexity measures.
- PSO5: Master understanding of design issues associated with operating systems
- PSO6: Master concepts of memory management including virtual memory
- PSO7: Master issues related to file system interface and implementation, disk management
- PSO8: Examine various types of images, intensity transformations and spatial filtering.
- PSO9: Understand histogram processing and various image filtering algorithms.
- PSO10: Know about various noise models and transformation techniques.
- PSO11: Be aware of various morphological techniques and segmentation schemes.
- PSO12: Familiar with MATLAB environment.
- PSO13: Be familiar with a commercial relational database system (Oracle) by writing SQL using the system.
- PSO14: Be familiar with the relational database theory, and be able to write relational algebraexpressions for queries.
- PSO15: Master sound design principles for logical design of databases, including the E-R method and normalization approach.
- PSO16: Be familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B-tree, and hashing.
- PSO17: Understand mathematical models such as belief networks and Markov decision processes and apply them to a range of AI problems.
- PSO18: Learn different logic formalisms and decision taking in planning problems.
- PSO19: Master building symbol tables and generating intermediate code.
- PSO20: Be familiar with compiler architecture.
- PSO21: Be familiar with register allocation.
- PSO22: Design efficient algorithms using various algorithm designing techniques.
- PSO23: Be aware of various models required for software development.
- PSO24: Understand software quality and quality measures.
- PSO25: apply the methods of optimization in real life situation.
- PSO26: Take hold of linear programming problem solving techniques.
- PSO27: Distinguish web-related technologies

- PSO28: Explain and use of delegates and events for producing event-driven application
- PSO29: Produce and use specialized new GUI components
- PSO30: Understand languages and linguistic background
- PSO31: Grasp mathematical foundation related to NLP like probability, bays theorem and machine learning
- PSO32: Know about linguistics essentials and grammar as part of speech and parsing and differentiating them.
- PSO33: Understand network fundamentals with TCP/IP architecture.
- PSO34: Understating the mobile and advoc network programming.
- PSO35: Explore the concepts of data mining and data preprocessing.
- PSO36: Identify different cluster analysis techniques.
- PSO37: Know about advanced data mining techniques such as spatial data mining and

M.Sc. Course Outcomes

SEM-I

CS-101 Advance C++ Programming

Outcomes:

On completion of the course, students are able to:

- Understand advanced concepts for handling runtime errors using stack unwinding, uncaught exception and automatic cleanup.
- Study the Runtime Type Information of the member variables, functions and the multiple inheritance that are used in the program.
- Study advanced concepts of C++ by resolving ambiguities and duplicate sub object in virtual base classes.
- Understand applications of C++ like Smart Pointer , Generic Pointer , Object Validation and Reference Counting.
- Understand detail concepts of STL.

CS-102 Automata Theory and Computability

Outcomes:

On completion of the course, students are able to:

- Understand what is Push down Automata and its applications
- Design Turing Machines for various applications like emunerator, function computer and universal turing machine.
- Study Post correspondence problem, decidability of membership, emptiness and equivalence problems of natural languages.
- Get familiar with Computability and complexity measures.
- 5Understand what is DNA and Membrane Computing.

CS-103 Advanced Operating System

Outcomes:

- Master functions, structures and history of operating systems
- Master understanding of design issues associated with operating systems
- Master various process management concepts including scheduling, synchronization, deadlocks
- Be familiar with multithreading
- Master concepts of memory management including virtual memory
- Master system resources sharing among the users
- Master issues related to file system interface and implementation, disk management
- Be familiar with protection and security mechanisms
- Be familiar with various types of operating systems including Unix

CS-104 Digital Image Processing

Outcomes:

Students who complete this course will be able to: Analyze general terminology of digital image processing.

- Examine various types of images, intensity transformations and spatial filtering.
- Develop Fourier transform for image processing in frequency domain.
- Evaluate the methodologies for image segmentation, restoration etc.
- Implement image process and analysis algorithms.
- Apply image processing algorithms in practical applications.
- Understand the application of digital image processing.
- Explore knowledge about image processing fundamentals.
- Get aware about image sampling and quantization and operation on images
- Understand histogram processing and various image filtering algorithms.
- Know about various noise models and transformation techniques.
- Be aware of various morphological techniques and segmentation schemes.

CS-105- LAB - I Lab on Advanced OS and Digital Image Processing

Outcomes:

On completion of the course, students are able to:

- Get hands on various linux commands and shell script for different application.
- Familiar with MATLAB environment.
- Explore various algorithms for digital image processing using MATLAB.

CS -106-LAB - II Lab on Advanced C++ Programming

Outcomes:

On completion of the course, students are able to develop ROBUST, EXTENSIBLE and EFFICIENT programs using advanced concepts of STL in C++.

SEM II

CS-201- Advanced DBMS

Outcomes:

- Master the basic concepts and appreciate the applications of database systems.
- Master the basics of SQL and construct queries using SQL.
- Be familiar with a commercial relational database system (Oracle) by writing SQL using the system.
- Be familiar with the relational database theory, and be able to write relational algebra expressions for queries.
- Master sound design principles for logical design of databases, including the E-R method and normalization approach.
- Be familiar with basic database storage structures and access techniques: file and page

- organizations, indexing methods including B-tree, and hashing.
- Master the basics of query evaluation techniques and query optimization.
 - Be familiar with the basic issues of transaction processing and concurrency control.
 - (optional) Master working successfully on a team by design and development of a database application system as part of a team.

CS-202 Machine Intelligence

Outcomes:

Upon Completion of this course the student will be able to:

- List the objectives and functions of modern Artificial Intelligence
- Categorize an AI problem based on its characteristics and its constraints.
- Understand and implement search and adversarial (game) algorithms.
- Understand mathematical models such as belief networks and Markov decision processes and apply them to a range of AI problems.
- Have a glance at machine learning algorithms and extracting knowledge models from data.
- Learn different logic formalisms and decision taking in planning problems.
- Learn how to analyze the complexity of a given problem and come with suitable optimizations.
- Demonstrate practical experience by implementing and experimenting with the learnt algorithms.

CS-203 Compiler Construction

Outcomes:

Master using lexical analyzer and parser generator tools.

- Master building symbol tables and generating intermediate code.
- Master generating assembly code for a RISC machine.
- Master programming in Java.
- Be familiar with compiler architecture.
- Be familiar with register allocation.
- Be exposed to compiler optimization.

CS-204 Design and Analysis of Algorithms

Outcomes:

On completion of the course, students are able to:

- Design efficient algorithms using various algorithm designing techniques.
- Comprehend dynamic programming using control abstraction and longest common subsequence.
- Classifying any problem as NP complete and NP hard

CS-205- LAB - III Lab on DAA and MI

Outcomes:

On completion of the course, students are able to build the program that can solve the problems which requires intelligence to solve them. They can build programs which can generate output in less time and execute in less space.

CS -206-LAB - IV Lab on Advanced DBMS

Outcomes:

On completion of the course, students are able to build and maintain the databases handling real life applications and daily needs.

SEM III

CS-301 Software Engineering

Outcomes:

On completion of the course, students are able to:

- Know the requirements of developing software.
- Be aware of various models required for software development.
- Test the developed software for its functionality and performance.
- Understand software quality and quality measures.
- Grasp the software configuration management and project planning.

CS-302 Optimization of Algorithm

Outcomes:

- Upon successful completion of this course, students will be able to
- formulate optimization problems;
- understand and apply the concept of optimality criteria for various type of optimization problems;
- solve various constrained and unconstrained problems in single variable as well as multivariable;
- apply the methods of optimization in real life situation.
- Understanding classification and limitation of quantitative techniques.
- Take hold of linear programming problem solving techniques.
- Solve various kinds of transportation problems using different techniques.
- Explore concepts in game theory

CS-303 -Internet Computing

Outcomes:

- Upon successful completion of the course, the student will demonstrate the ability to:
Understand the major areas and challenges of web programming.
- Distinguish web-related technologies.
- Use advanced topics in HTML5, CSS3, JavaScript
- Use a server-side scripting language, PHP
- Use a relational DBMS, MySQL
- Use PHP to access a MySQL database
- Design and implement
 - typical static web pages and interactive web applications.
 - dynamic web applications.
 - web applications that use asynchronous communication.
 - secure 3-tier data-driven web applications.

CS-304 Windows and Visual C++ Programming

Outcomes:

- The students who succeeded in this course;
- Demonstrate fundamental skills in utilizing the tools of a visual environment in terms of the set of available command menus and toolbars
 - Explain and use of delegates and events for producing event-driven application
 - Implement SDI and MDI applications while using forms, dialogs, and other types of GUI components
 - Produce and use specialized new GUI components
 - Explain message passing mechanism between components and threads using messaging
 - Apply visual programming to software development by designing projects with menus and submenus
 - Use visual programming environment to create simple visual applications Course Content Review of object-oriented programming,

CS-305-LAB – V Lab on Windows Programming and VC++

Outcomes:

On completion of the course, students are able to develop program having graphical user interface for various applications.

CS -306-LAB –VI Lab on Internet Computing

Outcomes:

- On completion of the course students should be able to:
- Create PHP scripts that:
 - display static and dynamic content
 - send e-mail
 - read and write data files

- connect to various databases
- create and populate database tables
- provide user authentication
- track users
- manage sessions and
- provide simple web-based database administration.
- Create a web-based system (such as a shopping system).
- Test and debug PHP scripts.

SEM IV

CS-401 Natural Language Processing

Outcomes:

On completion of the course, students are able to:

- Understand languages and linguistic background
- Be familiar with applications and research background in NLP.
- Grasp mathematical foundation related to NLP like probability, bays theorem and machine learning.
- Know about linguistics essentials and grammar as part of speech and parsing and differentiating them.
- Aware about word morphology and N-Gram Models.

CS-402 Advance Network Programming

Outcomes:

On completion of the course, students are able to:

- Understand network fundamentals with TCP/IP architecture.
- Aware with client server programming and its application using socket interface.
- Understand IGMP ICMP and IP datagrams
- Understating the mobile and advoc network programming.

CS-403 -Data Mining

Outcomes:

On completion of the course, students are able to:

- Understand data warehousing for business analysis using OLAP, OLTP, MOLAP and ROLAP.
- Explore the concepts of data mining and data preprocessing.
- Understand concept of association rule mining.
- Grasp classification and prediction and analyze different issues related to them.
- Identify different cluster analysis techniques.
- Know about advanced data mining techniques such as spatial data mining and
- understand the concept of big data analysis.

CS -405 Mini Project (200 marks)

Outcomes:

On completion of the course, students are able to:

- Deal with real world data.
- Familiar about real time IT industry environment.
- Experience about applying the knowledge they got until now.
- Build a whole real time working system which will satisfy all customer's needs.