

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Software Engineering & TQM

Course Code: MCA401

L-T Scheme: 3-1

Course Credits: 3

Pre-requisite: Good Knowledge of Computer Programming

Post Course: Object Oriented Software Engineering, Software Quality Management

Objective: To engineer good quality software from its specification.

Learning Outcomes

1. Familiar with processes of Software Engineering
2. Awareness about handling the complexities that may arise in various stages of SDLC
3. Generating test cases for software testing
4. Computer Aided Software Engineering
5. Aspect of Quality in Software Development
6. The Rational method

Course Contents:

Unit I- Interactive Systems, Usability, Introduction to software engineering, Software process models, PSP, TSP, Requirement Engineering: Requirement Elicitation, Analysis, Specification, SRS, Formal system development techniques.

Unit II- Analysis and Modeling: Data modeling, Functional modeling Software Architecture and Design: Data design, Architectural Design Process, SADT, OOAD, function-oriented design, Design Patterns: Structural Patterns, Behavioral Patterns, and Creational Patterns.

Unit III- UML: Use case diagram, State diagram, Activity Diagram, Class Diagram, Sequence diagram, Collaboration diagram, Deployment Diagram, Event trace diagram.

Unit IV- Software Estimation: Estimating Size, Effort and Cost: Metric for Analysis, Metric for Design, COCOMO model, Putnam Model etc., Implementation and Integration: Coding standard and practices.

Unit V- Software Testing: Top-Down and Bottom-up Approach, Verification and Validation, Structural testing, functional Testing, Testing Strategies, Test Case design.

Unit VI- Software Maintenance: Types, Cost of Software, maintenance, Software Maintenance Models, CASE Tool Taxonomy: Business Process Engineering tool, Process modeling and management tool, project planning tool, requirement tracking tool, Metric and management tool, documentation tool, system software tool etc. Introduction to software engineering for web and mobile applications.

Text Books

1. Software Engineering: A practitioner's approach: Roger S. Pressman, McGraw- Hill Publications (Sixth Edition).
2. Fundamentals of Software Engineering: Mall, Rajib, Prentice Hall of India, New Delhi (2nd Edition).

References

1. Software Testing Techniques, B. Beizer.
2. Structured Systems Analysis: Tools and Techniques, Gane and Sarson.
3. Software Engineering, Sommerville, Addison Wesley.
4. Modern Structured Analysis, E. Yourdon.
5. An Integrated approach to Software Engineering: Pankaj Jalote, Narosa Publishing House.

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6. Structured design, E. Yourdon and L.Constantine.
7. Fundamentals of Software Engineering: Ghezzi, Jazayeri, Mandriol, PHI

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Course Description

Title of Course: Computer Graphics & Multimedia

Course Code: MCA402

L-T Scheme: 3-1

Course Credits: 4

Introduction:

Computer Graphics course presents an introduction to computer graphics designed to give the student an overview of fundamental principles. It covers the fundamental concepts in creating graphical images on the computer. Computer graphics uses ideas from Art, Mathematics, and Computer Science to create images. Course work stresses the reduction of concepts to practice in the form of numerous programming assignments. The course will include an overview of common graphics hardware, 2D and 3D transformations and viewing, and basic raster graphics concepts such as scan-conversion and clipping. Methods for modeling objects as polygonal meshes or smooth surfaces, and as rendering such as hidden-surface removal, shading, illumination, and shadows will be investigated.

Multimedia course provides mainstreaming the technological media within what is called "Multimedia" is the pattern which led to infinite applications of computer technologies. The concept of this technology came into being with the appearance of sound cards, then compact disks, then came the use of digital camera, then the video which made computer an essential educational tool. Nowadays, multimedia expanded to become a field on its own.

Objectives:

This course is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends. A thorough introduction to computer graphics techniques, focusing on 3D modelling, image synthesis, and rendering. We will look at raster scan graphics including line and circle drawing, polygon filling, anti-aliasing algorithms, clipping, hidden-line and hidden surface algorithms including ray tracing and, of course, rendering - the art of making photo realistic pictures with local and global illumination models. The interdisciplinary nature of computer graphics is emphasized in the wide variety of examples and applications. The purpose of multimedia study is to find out the impact of using multimedia on students' academic achievement in the College of Education at King Saud University. This study's effort is to answer the following questions like what is the impact of using multimedia on students' academic achievement in the "computer & its use in education" curriculum and are there any statistically-significant differences between the average marks of the experimental group & that of the control group in the pre & post measurements of students' academic achievement in the school of Education?

Learning Outcomes:

Knowledge:

1. To know and be able to understand the core concepts of computer graphics.
2. To know and be capable of using OpenGL to create interactive computer graphics.
3. To know and be able to understand a typical graphics pipeline.

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4. To know and be able to make interactive graphics applications in C++ using one or more graphics application programming interfaces.
5. To know and be able to demonstrate an understanding of the use of object hierarchy in graphics applications.
6. To know and be able to write program functions to implement visibility detection.
7. To know and be able to make pictures with their computer.
8. To know and be able to describe the general software architecture of programs that use 3D computer graphics
9. To know the pictorial representation of various points in a image

Application:

1. Know and be able to discuss hardware system architecture for computer graphics. This includes, but is not limited to: graphics pipeline, frame buffers, and graphic accelerators/co-processors.
2. Know and be able to use a current 3D graphics API (e.g., OpenGL or DirectX).
3. Know and be able to use the underlying algorithms, mathematical concepts, supporting computer graphics. These include but are not limited to:
 - Composite 3D homogeneous matrices for translation, rotation, and scaling transformations.
 - Plane, surface normals, cross and dot products.
 - Hidden surface detection / removal.
 - Scene graphs, display lists.
4. Know and be able to select among models for lighting/shading: Color, ambient light; distant and light with sources; Phong reflection model; and shading (flat, smooth, Gourand, Phong).
5. Know and be able to use and select among current models for surfaces (e.g., geometric; polygonal; hierarchical; mesh; curves, splines, and NURBS; particle.
6. Know and be able to design and implement model and viewing transformations, the graphics pipeline and an interactive render loop with a 3D graphics API.
7. Be able to design and implement models of surfaces, lights, sounds, and textures (with texture transformations) using a 3D graphics API.
8. Be able to discuss the application of computer graphics concepts in the development of computer games, information visualization, and business applications.
9. Be able to discuss future trends in computer graphics and quickly learn future computer graphics concepts and APIs.

Course Contents:

Unit 1: Introduction to computer graphics & graphics systems

Overview of computer graphics, representing pictures, preparing, presenting & interacting with pictures for presentations; Visualization & image processing; RGB color model, direct coding, lookup table; storage tube graphics display, Raster scan display, 3D viewing devices, Plotters, printers, digitizers, Light pens etc.; Active & Passive graphics devices; Computer graphics software.

Scan conversion

Points & lines, Line drawing algorithms; DDA algorithm, Bresenham's line algorithm, Circle generation algorithm; Ellipse generating algorithm; scan line polygon, fill algorithm, boundary fill algorithm, flood fill algorithm.

Unit 2: 2D transformation & viewing

Basic transformations: translation, rotation, scaling; Matrix representations & homogeneous coordinates, transformations between coordinate systems; reflection shear; Transformation of points, lines, parallel lines, intersecting lines. Viewing pipeline, Window to viewport co-ordinate transformation, clipping operations, point clipping, line clipping, clipping circles, polygons & ellipse.

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3D transformation & viewing

3D transformations: translation, rotation, scaling & other transformations. Rotation about an arbitrary axis in space, reflection through an arbitrary plane; general parallel projection transformation; clipping, viewport clipping, 3D viewing

Unit 3: Curves

Curve representation, surfaces, designs, Bezier curves, B-spline curves, end conditions for periodic B-spline curves, rational B-spline curves. Hidden surfaces, Depth comparison, Z-buffer algorithm, Back face detection, BSP tree method, the Painter's algorithm, scan-line algorithm; Hidden line elimination, wire frame methods, fractal - geometry. Color & shading models Light & color model; interpolative shading model; Texture.

Unit 4: Multimedia

Introduction to Multimedia: Concepts, uses of multimedia, hypertext and hypermedia; Image, video and audio standards. Audio: digital audio, MIDI, processing sound, sampling, compression. Video: MPEG compression standards, compression through spatial and temporal redundancy, inter-frame and intra-frame compression. Animation: types, techniques, key frame animation, utility, morphing. Virtual Reality concepts.

Text Books

1. Hearn, Baker – “ Computer Graphics (C version 2nd Ed.)” – Pearson education
2. Z. Xiang, R. Plastock – “ Schaum's outlines Computer Graphics (2nd Ed.)” – TMH
3. D. F. Rogers, J. A. Adams – “ Mathematical Elements for Computer Graphics (2nd Ed.)” – TMH
4. Mukherjee, Fundamentals of Computer graphics & Multimedia, PHI
5. Sanhker, Multimedia –A Practical Approach, Jaico
6. Buford J. K. – “Multimedia Systems” – Pearson Education
7. Andleigh & Thakrar, Multimedia, PHI
8. Mukherjee Arup, Introduction to Computer Graphics, Vikas
9. Hill, Computer Graphics using open GL, Pearson Education

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Course Description

Title of Course: Data Base Management System-II

Course Code: MCA303

L-T Scheme: 4-0

Course Credits: 4

Introduction

Database Management Systems (DBMS) consists of a set of interrelated data and a set of programs to access that data. They underpin any computer system and are therefore fundamental to any program of study in computer science. An understanding of DBMS is crucial in order to appreciate the limitations of data storage and application behavior and to identify why performance problems arise. Students who complete this course are expected to develop the ability to design, implement and manipulate databases. Students will apply and build databases for various day to day real life scenarios and real life applications. The course will by and large be structured but will introduce open-ended data base problems.

Course Objectives (Post-conditions)

Knowledge objectives:

- Ability to build normalized databases.
- Knowledge of storage and indexing, disks and files
- Familiarity with SQL, embedded SQL and PLSQL
- Familiarity with tree structured indexing
- Understanding of transaction processing and evaluating relational operators
- Ability to handle recovery and concurrency issues and typical relational query optimizer
- Familiarity with physical database design and tuning.

Outcomes:

- Develop the ability to design, implement and manipulate databases.
- Introduce students to build tree structured indexing.
- Apply DBMS concepts to recovery and concurrency issues and typical relational query optimizer.

Course Contents:

Unit 1: OVERVIEW OF STORAGE AND INDEXING, DISKS AND FILES: Data on external storage; File. Organizations and indexing; Index data structures; Comparison of file organizations; Indexes and Performance tuning. Memory hierarchy; RAID; Disk space management; Buffer manager; Files of records; Page formats and record formats.

Unit 2: TREE STRUCTURED INDEXING: Intuition for tree indexes; Indexed sequential access method; B+ trees, Search, Insert, Delete, Duplicates, B+ trees in practice.

Unit 3: HASH-BASED INDEXING: Static hashing; Extendible hashing, Linear hashing, comparisons.

Unit 4: OVERVIEW OF QUERY EVALUATION, EXTERNAL SORTING: The system catalog; Introduction to operator evaluation; Algorithms for relational operations; Introduction to query optimization; Alternative plans: A motivating example; what a typical optimizer does. When does a DBMS sort data? A simple two-way merge sort; External merge sort

Unit 5: EVALUATING RELATIONAL OPERATORS: The Selection operation; General selection conditions; The Projection operation; The Join operation; The Set operations; Aggregate operations; The impact of buffering; Concurrency control and recovery system: Lock based protocol, dead lock handling, time stamp based and validation based protocol, failure classification, storage, recovery algorithm, recovery and atomicity, backup.

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Unit 6: A TYPICAL RELATIONAL QUERY OPTIMIZER: Translating SQL queries in to Relational Algebra; Estimating the cost of a plan; Relational algebra equivalences; Enumeration of alternative plans; Nested subqueries; Other approaches to query optimization.

Unit 7: PHYSICAL DATABASE DESIGN AND TUNING: Introduction; Guidelines for index selection, examples; Clustering and indexing; Indexes that enable index-only plans; Tools to assist in index selection; Overview of database tuning; Choices in tuning the conceptual schema; Choices in tuning queries and views; Impact of concurrency; DBMS benchmarking.

Unit 8: MORE RECENT APPLICATIONS: Mobile databases; Multimedia databases; Geographical Information Systems; Genome data management.

Text Books:

1. Silberschatz, Korth and Sudarshan, "Database System Concepts", 6th Edition, McGraw Hill, 2010
2. Elmasri and Navathe, "Fundamentals of Database Systems", 6th Edition, Pearson, Addison-Wesley, 2010

References:

1. C.J. Date, "An Introduction to Database Systems", 8th Edition, Addison-Wesley, 2003
2. Ramakrishnan & Gherke, Database Management Systems, 2nd Edn., McGraw
3. Connolly and Begg, "Database Systems", 4th Edn., Addison-Wesley, 2005
4. Toby, Lightstone and Jagadish, "Database Modeling and Design", 5th Edn, Elsevier, 2011
5. Coronel and Rob, "Database Systems", 9th Edn., Cengage, 2011
6. IEEE / ACM Transactions on Database Systems (TODS).
7. DBMS related Journals.

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Operation Research & Optimization Techniques

Course Code: MM401

L-T Scheme: 3-1

Course Credits: 4

Introduction:

The goal of this course is to provide a very common simple intuition enables one to make right decisions and especially show how mathematics is applied to solve fundamental engineering problems. The Topics to be covered (tentatively) include:

Linear programming problems

Transportation and Assignments problems

Network Analysis

Queue Theory

Non Linear Programming

Course Objectives:

It lays the required foundation and skills that can be repeatedly employed in subsequent courses at higher levels. Students will acquire the skills and techniques of:

1. Discuss about algebraic solution of the linear problem with certain constrains.
2. Obtain the optimal solution of Transportation and Assignment problems.
3. Discuss about Network Analysis problems.
4. Discuss about six main factor of waiting line.
5. Solve the Nonlinear Programming problems.

Learning Outcomes:

Knowledge:

1. Student completing the first unit of this course would be expected to find the solution of linear programming problems using Graphical method and simplex method.
2. At the end of second unit student will be able to assign different jobs to the different person to have the optimum efficiency of working and similar in transportation problems.
3. After the completion of the third unit, student will be able to calculate the shortest path of the graph by several methods and Algorithms.
4. At the end of fourth unit student will be able find the optimal no. of servers such that the sum of cost of service and waiting is minimized.
5. At Student completing the fifth unit of this course would be expected to find the solution of Nonlinear programming problems using several methods.

Application:

1. First unit of this course would be expected to formulate and solve the linear programming problems with the given constrains.

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2. Second unit student will be able to assign different jobs to the different person to have the optimum efficiency of working and similar in transportation problems.
3. Third unit student will be able to calculate the shortest path of the graph by several methods and Algorithms.
4. Forth unit student will be able find the optimal no. of servers such that the sum of cost of service and waiting is minimized.
5. Fifth unit of this course would be expected to find the solution of Nonlinear programming problems using several methods.

Course Contents:

Unit 1: Linear Programming (LP): Nature of LP problems through examples; Formulation of LP Problems; Graphical solution of two decision variable problems; Properties of a solution to LP problems: convex solution space and extreme points solution; General form of LP model; Simplex method and its meaning; Steps of simplex method in tabular form; Solving LP problems by Simplex Method; Sensitivity analysis.

Unit 2: Transportation & Assignment Problems: Nature of a transportation or distribution problem; Tabular representation of a transportation problem; North-West Corner initial solution; Stepping stone method; Concept of dummy source or destination; Vogel's approximation method. Nature of an Assignment problem; Tabular representation; Hungarian method for solving assignment problems.

Unit 3: Network Analysis: Network models and terminologies like arcs, nodes, paths, tree, Spanning tree; shortest path, route problem; The minimum spanning tree problem; The maximal flow problem.

Unit 4: Waiting Line Problems: Structure of a waiting line system: Single-channel waiting line, process of arrivals, distribution of service times, queue discipline, steady state operation; Single channel model with Poisson arrivals and exponential service time; Multiple channel model with Poisson arrival and exponential service times; Single channel model with Poisson arrivals and arbitrary service time (M/G/1); Economic analysis of waiting lines.

Unit 5: Non-Linear Programming: Graphical illustration of a non-linear programming problem; Unconstrained optimization by (i) direct search method, (ii) steepest decent method; Constrained optimization by Lagrange multipliers; Integer linear programming by branch & bound technique; Dynamic programming problems and their characteristics; Bellman's principle of optimality; solving (i) Stage coach problem, (ii) Knapsack problem.

BOOKS

1. [Kanti Swarup, P.K. Gupta and Manmohan](#), Operations Research, Sultan Chand & Sons.
2. I.A. Taha, Operations Research: An Introduction, Pearson Publication
3. C.K. Musatfi, Operations Research, New Age International Publishers

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4. S.S.Rao, Engineering Optimization, New Age International Publishers
5. R.Panneerselvam, Operations Research, Prentice Hall of India
6. F.S.Hillier and G.J. Lieberman, Introduction to Operations Research, TMH.

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Course Description

Title of Course: Basic Environment & Ecology

Course Code: HU401

L-T Scheme: 2-1

Course Credits: 3

Introduction:

This course introduces the basic principles behind the environmental phenomena and how anthropogenic activities are affecting those environmental processes. The different administrative measures taken to safeguard our environment are also discussed in this course. The Topics to be covered (tentatively) include:

- Ecology
- Air pollution and control
- Water Pollution and Control
- Land Pollution
- Noise Pollution
- Environmental Management

Objectives:

In this course we will study about the pattern of growing human population and its effect on the planet. We will be familiarizing with the consequences of anthropogenic activities and measures to mitigate their harmful effects. We will learn about the mechanism behind the global issues like global warming, acid rain, water pollution, etc.

Learning Outcomes:

Knowledge:

1. To introduce the patterns of population growth and associated problems.
2. To familiarise with the cause, effect and control measures of various human made degrading processes.
3. To enable the students to know the mechanism behind the devices to control pollution.
4. To familiarise with administrative laws to mitigate various environmental problems.

Application:

1. To understand the problems associated with pollution
2. To familiarise with the global environmental issues.
3. To understand the principles behind various control devices.
4. To understand and comply with the various government environmental laws.

Course Contents:

Unit 1: Introduction, Ecology, Air pollution and control

Unit 2: Water Pollution and Control

Unit 3: Land Pollution, Noise Pollution

Unit 4: Environmental Management

Text Books

1. Gourkrishna Damohapatra, Basic Environmental Engineering and Elementary Biology, Vikas publishing.

References

1. A.K. De, Environmental Chemistry, New Age International.

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Course Description

Title of Course: Software Project Management Lab

Course Code: MCA491

L-T-P scheme: 0-0-3

Course Credit: 2

Prerequisite: Students must have already registered for the course, “Software Engineering”.

Objectives: Students will be capable to acquire the generic software development skill through various stages of software life cycle. He will also be able to ensure the quality of software through software development with various protocol based environment.

Learning Outcomes: After completion of course student will be able to generate test cases for software testing. Students will also be able to handle software development models through rational method.

Course Contents:

Unit I- Introduction to software engineering: Code comprehension.

Unit II- Requirement engineering: Requirement Elicitation, specification, IEEE standard template for SRS, Requirement Engineering tools.

Unit III- UML Modeling: Use case diagram , State diagram, Activity Diagram, Class Diagram, Sequence diagram, Collaboration diagram, Deployment Diagram, Component Diagram, Event trace diagram , c++ code generation, Introduction to Sec UML.

Unit IV- Software Metrics: Product, process and project metrics.

Unit V- Software Testing: Structural testing, functional Testing, Testing Strategies and Tactics, Test Case design.

List of Experiments

1. Identifying the Requirements from Problem Statements Requirements, Characteristics of Requirements, Categorization of Requirements, Functional Requirements, Identifying Functional Requirements
2. E-R Modeling from the Problem Statements, Entity Relationship Model, Entity Set and Relationship Set, Attributes of Entity, Keys, Weak Entity, Entity Generalization and Specialization, Mapping Cardinalities, ER Diagram, Graphical Notations for ER Diagram Importance of ER modeling
3. Identifying Domain Classes from the Problem Statements, Domain Class, Traditional Techniques for Identification of Classes, Grammatical Approach Using Nouns, Advantages, Disadvantages, Using Generalization, Using Subclasses, Steps to Identify Domain Classes from Problem Statement, Advanced Concepts
4. Modeling UML Use Case Diagrams and Capturing Use Case Scenarios, Use case diagrams, Actor, Use Case, Subject, Graphical Representation, Association between Actors and Use Cases, Use Case Relationships, Include
5. Modeling UML Class Diagrams and Sequence diagrams, Structural and Behavioral aspects, Class diagram, Elements in class diagram, Class Relationships, Sequence diagram, Elements in sequence diagram, Object, Life-line bar, Messages.
6. Modeling Data Flow Diagrams, Data Flow Diagram, Graphical notations for Data Flow Diagram, Explanation of Symbols used in DFD, Context diagram and leveling DFD
7. Statechart and Activity Modeling Statechart Diagrams, Building Blocks of a Statechart Diagram State, Transition, Action, Guidelines for drawing Statechart Diagrams, Activity Diagrams, Components of an Activity Diagram, Activity, Flow Decision, Merge, Fork, Join, Note, Partition, A Simple Example, Guidelines for drawing an Activity Diagram
8. Estimation of Project Metrics Project Estimation Techniques, COCOMO, Basic COCOMO Model, Intermediate COCOMO Model, Complete COCOMO Model, Advantages of COCOMO, Drawbacks of COCOMO, Halstead's Complexity Metrics.
9. Estimation of Test Coverage Metrics and Structural Complexity, Control Flow Graph, Terminologies, McCabe's Cyclomatic Complexity, Computing Cyclomatic Complexity, Optimum Value of Cyclomatic Complexity, Merits, Demerits

References

1. R.S. Pressman, "Software Engineering: A Practitioner's Approach", 7Edition, McGraw Hill, 2010
2. 2. Fundamentals of Software Engineering: Mall, Rajib, Prentice Hall of India, New Delhi (2nd Edition).
3. 2. Sommerville, "Introduction to Software Engineering", 8Edition, Addison-Wesley, 2007
4. Ghezzi, Jazayeri and Mandrioli, "Fundamentals of Software Engineering", 2Edition, Prentice-Hall, 2003
5. Peters and Pedrycz, "Software Engineering: An Engineering Approach, John Wiley, 2004
6. Len Bass, "Software Architecture in Practice", 2Edn. Addison Wesley, 2003
7. Allamaraju, "Professional Java Server Programming", Apress, 2004

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Course Description

Title of Course: Computer Graphics Lab

Course Code: MCA492

L-T Scheme: 0-0-3

Course Credits:2

Introduction:

This course presents an introduction to computer graphics designed to give the student an overview of fundamental principles. It covers the fundamental concepts in creating graphical images on the computer. Computer graphics uses ideas from Art, Mathematics, and Computer Science to create images. Course work stresses the reduction of concepts to practice in the form of numerous programming assignments. The course will include an overview of common graphics hardware, 2D and 3D transformations and viewing, and basic raster graphics concepts such as scan-conversion and clipping. Methods for modeling objects as polygonal meshes or smooth surfaces, and as rendering such as hidden-surface removal, shading, illumination, and shadows will be investigated.

Objectives:

This course is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends. A thorough introduction to computer graphics techniques, focusing on 3D modelling, image synthesis, and rendering. We will look at raster scan graphics including line and circle drawing, polygon filling, anti-aliasing algorithms, clipping, hidden-line and hidden surface algorithms including ray tracing and, of course, rendering - the art of making photo realistic pictures with local and global illumination models. The interdisciplinary nature of computer graphics is emphasized in the wide variety of examples and applications.

Learning Outcomes:

Knowledge:

1. To know and be able to understand the core concepts of computer graphics.
2. To know and be capable of using OpenGL to create interactive computer graphics.
3. To know and be able to understand a typical graphics pipeline.
4. To know and be able to make interactive graphics applications in C++ using one or more graphics application programming interfaces.
5. To know and be able to demonstrate an understanding of the use of object hierarchy in graphics applications.
6. To know and be able to write program functions to implement visibility detection.
7. To know and be able to make pictures with their computer.
8. To know and be able to describe the general software architecture of programs that use 3D computer graphics

Experiments:

1. Study of basic graphics functions defined in "graphics.h"
2. Write a program to draw a any geometrical figure.
3. Write a program to draw a line using Bresenham's algorithm
4. Write a program to draw a line using DDA algorithm
5. Write a program to draw a line using Mid point algorithm

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6. Write a program to draw a circle using Midpoint algorithm
7. Write a program to draw a Ellipse using Midpoint algorithm

Recommended Systems/Software Requirements:

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space.
2. Turbo C or TC3 complier in Windows XP or Linux Operating System.

Text Books

1. Hearn, Baker – “Computer Graphics (C version 2nd Ed.)” – Pearson education
2. Z. Xiang, R. Plastock – “Schaum’s outlines Computer Graphics (2nd Ed.)” – TMH
3. D. F. Rogers, J. A. Adams – “Mathematical Elements for Computer Graphics (2nd Ed.)” –TMH

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Course Description

Title of Course: Multimedia Lab

Course Code: MCA492

L-T-P scheme: 0-0-3

Course Credit: 2

Objectives:

1. This course is designed to maximize learning through the use of strategies such as outcome based instruction, collaborative learning,
2. Contextual application and performance based assessment. Lecture material will consist of discussion, diagrams, multimedia, and other
3. Educationally sound practices. Other activities will include hands-on utilization of multimedia software. Demonstration and handout materials will be provided.
4. Students will be required to interact in class discussions, perform effective internet searches, and prepare a simple interactive multimedia project.

Learning Outcomes: The students will have a detailed knowledge of the concepts of image editing by adobe Photoshop, Creation of Animation by Macromedia Flash, Sound Editing by Sound Forge, Video Editing by Premier and Web designing by HTML, DHTML etc.

Upon the completion of Operating Systems practical course, the student will be able to:

- **Define** multimedia to potential clients.
- **Identify** and describe the function of the general skill sets in the multimedia industry.
- **Identify** the basic components of a multimedia project
- **Identify** the basic hardware and software requirements for multimedia development and playback

Course Contents:

Exercises that must be done in this course are listed below:

Exercise No.1: ImageeditingusingtoolslikeAdobePhotoshop

Exercise No. 2: Soundcapturing&editingusingtoolslikeSOUNDFORGE

Exercise No. 3: Creating/editinganimation usingtoolslike FLASH

Exercise No. 4: Creating/editingmotionvideo usingtoolslike PREMIER

Exercise No. 6: Creation of Content using HTML (basic tags, table form, frame, link to other Image)

Exercise No. 7: Creating Style Sheet using DHTML

Exercise No. 8: Home page creation using DHTML and HTML

Text Book:

1. Adobe, AdobePhotoshop6.0: Classroominabook PearsonEd.
2. Anushka Wirasinha, Flash inaFlash-WebDevelopment, PHI
3. MacromediaFlash5fastandeasyWebDevelopment, Design, PHI
4. Castro, HTML4fortheWorldWideWeb, PearsonEd.
5. Schurman&Purdi, DynamicHTMLinAction, SecondEdition, PHI
6. Lozano,Multimedia- Sound&Video, PHI

Recommended Systems/Software Requirements:

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space.
2. Adobe Photoshop 6.0
3. Adobe Macromedia Flash.
4. Premier CS5.
5. Sound Forge 7.0
6. Web Browser (Internet Explorer / Mozilla/ Google Chrome)

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Advanced Database Lab

Course Code: MCA493

L-T-P Scheme: 0-0-3

Course Credits: 2

Objective:

- To get familiar with basic EER concepts (generalization and specialization)
- Study of ODL schema.
- Implement Abstract data type.
- To study varying array.
- Implement object Table.
- To study implementation of nested tables.
- To understand use of objects in member procedure.
- To study horizontal Partitioning
- To study horizontal Partitioning.
- To study semistructured data.

Learning Outcomes:

- Ability to build normalized databases.
- Knowledge of Entity Relationship Modelling.
- Familiarity with SQL, embedded SQL and PLSQL, ODL schema.
- Familiarity with query processing and query optimization techniques.
- Understanding of Member procedure., Partitioning on the tables.
- Ability to handle recovery and concurrency issues.
- Familiarity with XML commands.

Course Contents:

Exercises that must be done in this course are listed below:

Exercise No.1: Study of EER diagram.

Exercise No. 2: Study of ODL schema.

Exercise No. 3: Implement Abstract data type.

Exercise No. 4: Implement Varrays.

Exercise No. 5: Implement object Table.

Exercise No. 6: Implement Nested table.

Exercise No. 7: Implement Member procedure.

Exercise No. 8: Implement Member Function.

Exercise No. 9: Implement Partitioning on the tables.

Exercise No. 10: Study of XML commands.

References

1. "Database Systems: A Practical Approach to design, Implementation and Management". Thomas Connolly, Carolyn Begg; Third Edition, Pearson Education.
2. "Fundamentals of Database Systems" Elmasri, Navathe, Pearson Education.
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4. "An Introduction to Database Systems", C.J.Date, Pearson Education.
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