KONGU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

ERODE – 638 107

PROGRAM NAME

B.C.A.

KONGU ARTS AND SCIENCE COLLEGE

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2017-2018

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SYLLABUS

SEM	Course Code	Core 1: Introduction to Office Automation	Total Marks: 100		Hours per Week	Credits
I	17UAJCT101		CIA: 25	ESE: 75	4	4

Objective: To enable the students to have in-depth knowledge in office automation packages. essentials of day to day office management.

UNIT-I: Unit 1: MS-Word: Starting Word – Creating Documents – Parts of Word Window – Formatting Features – Menus, Commands, Toolbars and their Icons. Operations on Text: Changing Font & Size - Alignment - Underline - Justify – Numbering – Bullets – Indenting - Spelling. Saving, Opening and Closing a Word Document.

UNIT-II: Table: Creating a Table - Inserting Rows and Columns - Centering a Text - Changing Font and Text Size - Borders. Inserting and Aligning the Picture. Mail Merge - Inserting Header and Footer.

UNIT-III: MS-Excel: Introduction - Menus, Commands, Toolbars and their Icons – Entering Text - Column Width - Row Height - Series Fill - Entering Formulas - Formatting Cells - Inserting Rows and Columns - Print, Save, Open a Excel Book - Creating a Chart.

UNIT-IV: MS-PowerPoint: Introduction – Menus – Toolbar – Navigating in PowerPoint – Moving the Frame and Inserting Clipart – Inserting Picture – Inserting New Slide - Organization Chart.

UNIT-V: MS-Outlook : Introduction – What can be Done with Outlook? – Outlook Windows – Menus and Toolbars – Working with Outlook.
MS-Publisher: Introduction – Menus – Toolbars – Creating And Saving Letterhead – Banners.

TEXT BOOK:

Ms Office 2000 For Everyone, Sanjay Saxena, Vikas Publishing House, 2006.

REFERENCE BOOKS:

1. Ms-Office C. Nellaikannan, Nels Publications, 2012.
2. Ms-Office Xp Step By Step, Phi, 2001.'

QUESTION PAPER PATTERN		
SECTION - A	SECTION - B	SECTION - C
10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three Questions) One Question from each unit

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SEM	Course Code	Core Lab 1: Office Automation Tools Lab	Total Marks: 100		Hours per Week	Credits
I	17UAJCP103		CIA: 40	ESE: 60	3	3

1. Create a Word Document with the list of fruits using bullets.
2. Create a Word Document with a paragraph and perform all formatting.
3. Create your class time table using Table command.
4. Illustrate the mail merge concept for at least 5 recipients.
5. Prepare a work sheet for an invoice.
6. Create a chart that showing the academic performance of 5 students.
7. Create a Power point presentation which describes your bio data.
8. Create a Power point presentation about generation of Computers (Minimum 5 slides, use clipart also).
9. Configure your e-mail using MS-Outlook.
10. Create a card for a birthday wish using MS-Publisher

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Sem	Course Code	Allied 1: Numerical and Statistical Methods	Total Marks :100		Hours Per Week	Credits
I	17UAJCT104		CIA : 25	ESE :75	5	4

Objective(s):

To enable the students to understand the concepts of numerical and statistical methods for Computer Science. (No Derivations, only problems)

UNIT I

The Solution of Numerical Algebraic and Transcendental Equations: The Bisection method – Regula Falsi Method – Newton - Raphson method.

Solution of Simultaneous Linear Algebraic Equations: Gauss-Elimination Method and Gauss-Seidel Method of Iteration.

UNIT II

Interpolation: Newton's Forward and Backward interpolation formulae.

Numerical Differentiation: Newton's Forward Difference – Newton's Backward Difference.

Numerical Integration: The Trapezoidal Rule – Simpson's one-third Rule.

UNIT III

Measures of Central Tendency: Mean, Median and Mode – Relationship among Mean, Median and Mode.

Measures of Dispersion: Range, Quartile Deviation and Standard Deviation – Coefficient of Variation.

UNIT IV

Correlation: Simple Correlation – Scatter Diagram – Karl Pearson's Coefficients of Correlation – Spearman's Rank Correlation Coefficient.

UNIT V

Regression: Regression Lines – Regression in two variables – Simple problems. Difference between Correlation and Regression.

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TEXT BOOKS:

1. Dr. P.Kandasamy, Dr.K.Thilagavathy and Dr.K.Gunavathi,"Numerical Methods", S.Chand, 2016.

UNIT I	:	Chapter 3	: Sections 3.1, 3.3, 3.4
		Chapter 4	: Sections 4.2, 4.9
UNIT II	:	Chapter 6	: Sections 6.2, 6.3
		Chapter 9	: Sections 9.2, 9.3, 9.9, 9.11, 9.13, 9.16

2. S.P. Gupta, "Statistical Methods", Sultan Chand &Sons, 2012.

UNIT III	:	Chapter 7	: Pages 181, 183, 184, 197-200, 212-216, 221,222
		Chapter 8	: Pages 278-280, 287-293, 298
UNIT IV	:	Chapter 10	: Pages 395-401, 418-423
UNIT V	:	Chapter 11	: Pages 454, 459, 464-467

BOOKS FOR REFERENCE:

1. E. Balagurusamy," Numerical methods", Tata MC Graw Hill Publishing Company Ltd,2008.

2. S.C Gupta, V.K.Kapoor,"Fundamental of Mathematical statistics", Sultan Chand and Sons, 2008.

3. Richard W.Hamming, "Numerical Methods for Scientists and Engineers", Dover Publications Inc., 1987.

4. R.S.N.Pillai & Bagavathi, "Statistics", Sultan Chand &Co, 2010.

5. PA. Navnitham, "Business Mathematics & Statistics", Jai Publishers, 2011.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**Section B**	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	**Section C**	3 x 10 = 30 Marks (Answer any three questions) One Question from each unit

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Sem	Course Code	Allied 2:	Total Marks :100		Hours Per Week	Credits
II	17UAJCT203	Discrete Mathematics	CIA : 25	ESE :75	5	4

Objective(s):

To enable the students to understand the concepts of Discrete Structures, relations, functions, lattices and Boolean algebra.

UNIT I

Connectives: Negation - Conjunction - Disjunction - Statement Formulas and Truth Tables - Conditional and Biconditional - Well-formed Formulas–Tautologies - Equivalence of formulas–Duality law–Tautological implications.

UNIT II

Normal Forms: Disjunctive Normal Form – Conjunctive Normal Form – Principle Disjunctive Normal Form – Principle Conjunctive Normal Form. Predicate Calculus: Predicates - The Statement Function, Variables and Quantifiers - Predicate Formulas - Free and Bound Variables. Inference Theory of the Predicate Calculus: Theory of Inference for the Predicate Calculus.

UNIT III

Relations and Ordering: Relations–Properties of Binary Relations in a Set–Relations Matrix and Graph of a Relation–Equivalence Relation–Composition of Binary Relations – Partial Ordering – Partially Ordered Set: Representation and Associated Terminology.

UNIT IV

Functions: Definition and Introduction–Composition of functions–Inverse functions. Grammar and Languages: Discussion of Grammars - Formal Definition of a Language.

UNIT V

Lattices: Definition and Examples – Some Properties of Lattices – Some Special Lattices. Boolean Algebra: Definition and Examples–Boolean Functions.

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TEXT BOOK:

J. P Tremblay and R Manohar, "Discrete Mathematics Structures with Applications to computer science", 32nd Reprint, Mc Graw Hill International, 2008.

UNIT I - Chapter 1 : Sections 1.2.1-1.2.4, 1.2.6-1.2.11

UNIT II - Chapter 1 : Sections 1.3.1-1.3.4, 1.5.1-1.5.4, 1.6.4

UNIT III - Chapter 2 : Sections 2.3.1-2.3.3, 2.3.5, 2.3.7-2.3.9

UNIT IV - Chapter 2 : Sections 2.4.1-2.4.3

Chapter 3 : Sections 3.3.1-3.3.2

UNIT V - Chapter 4 : Sections 4.1.1,4.1.2, 4.1.5, 4.2.1, 4.3.1,4.3.2

BOOKS FOR REFERENCE:

1. J.K.Sharma, "Discrete Mathematics", Second Edition, Macmillan India Ltd, 2005.

2. J. P Tremblay and R Manohar,"Discrete Mathematical Structures with Applications to Computer Science", 32nd Reprint, Tata McGraw-Hill Publishing Company Limited, 2008.

3. Dr.A.Singaravelu, Dr.M.P.Jeyaraman, "Discrete Mathematics", Meenakshi Agencies, 2012.

4. K. Balakrishnan, "Introductory Discrete Mathematics", Dover Publications Incs, October 2010.

5. A.Solairaju, M.Chadrasekhar, S.Ganesh and R.Krishnamoorthy, "Discrete Mathematics Structures", Anuradha Agencies, 2001.

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J. P Tremblay and R Manohar, "Discrete Mathematics Structures with Applications to computer science", 32nd Reprint, Mc Graw Hill International, 2008.

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UNIT II - Chapter 1 : Sections 1.3.1-1.3.4, 1.5.1-1.5.4, 1.6.4

UNIT III - Chapter 2 : Sections 2.3.1-2.3.3, 2.3.5, 2.3.7-2.3.9

UNIT IV - Chapter 2 : Sections 2.4.1-2.4.3

Chapter 3 : Sections 3.3.1-3.3.2

UNIT V - Chapter 4 : Sections 4.1.1,4.1.2, 4.1.5, 4.2.1, 4.3.1,4.3.2

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1. J.K.Sharma, "Discrete Mathematics", Second Edition, Macmillan India Ltd, 2005.

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SEMESTER - V

COURSE: Software Engineering | **Hours/Week** : 5
COURSE CODE : 15UAJCT501 | **Credits** : 4

Objectives: To enable the students to understand the phases in a software project and fundamental concepts of Software development and maintenance.

UNIT – I: Introduction to Software Engineering: Software – The Changing nature of Software – Legacy Software - Software myths. **Software Process:** The Process Framework – CMMI – Process Assessment – Personal and Team Process Models.

UNIT – II: Process Models: Prescriptive Models – The Waterfall Model – Incremental Process Model: the Incremental Model – The RAD Model – Evolutionary Process Models: Prototyping – The Spiral Model – The Concurrent Development Model – Specialized Process Models: Component based Models – Aspect Oriented software Development – The Unified Process.

UNIT – III: Software Engineering Practice: Essence of Practice – Core Principles – Communication Practices – Planning Practices – Modeling Practice – Construction Practice – Deployment. **Requirement Engineering:** Requirement Engineering Tasks – Eliciting Requirements – Developing Use Cases – Building the Analysis Model – Negotiating Requirements – Validating Requirements.

UNIT – IV: Design Engineering: Design within the context of Software Engineering – Design Concepts – The Design Model. **Performing User Interface Design:** The golden rules – User Interface Analysis and Design – Interface Analysis – Interface Design Steps – Design Evaluation.

UNIT V: Testing Strategies: A Strategic Approach to Software Testing – Strategic Issues – Test Strategies for Conventional Software – Test Strategy for Object – Oriented Software – Validation Testing – System Testing – Art of debugging. **Testing Tactics:** Fundamentals – White Box Testing – Basis Path Testing – Control Structure Testing – Black Box Testing – Object Oriented Testing Methods.

TEXT BOOK:

Roger S Pressman, "Software Engineering A Practitioner's Approach", McGraw – Hill International Edition, Sixth Edition 2005.

REFERENCE BOOKS:

1. "Software Engineering", Sommerville, Pearson Education, Eighth Edition 2007.
2. "Software Engineering Principles and Practice", Waman S Javadekar, Tata McGraw-Hill, Seventh reprint 2008.

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SEMESTER - V

COURSE: RDBMS — **Hours/Week** : 5

COURSE CODE : 15UAJCT502 — **Credits** : 4

Objectives: To enable the students to understand the fundamentals of database systems, Relational model, transaction processing and query processing, different types of databases and security issues.

UNIT – I: Database Concepts: What is Database? - What is DBMS? - What is RDBMS? - DBMS V/S RDBMS - Normalization – Introduction to Oracle – Software Development Tools of Oracle – Introduction to SQL : Features of SQL - Features of SQL * Plus - SQL V/S SQL * Plus – Rules for SQL – Components of SQL – SQL Delimiters – Examples of DDL,DML and DCL commands.

UNIT – II: Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

UNIT – III: Working with Table: Data Management and Retrieval: DML – Adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – Retrieving Data from Table – Arithmetic Operations – Restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

UNIT – IV: PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements.

UNIT – V: PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions. Named Blocks: Procedures – Functions – Packages –Triggers –Data Dictionary Views.

TEXT BOOKS:

1. Ivan Bayross "SQL,PL/SQL The Programming language of Oracle", III Revised Edition, BPB Publications, 2010. (UNIT-I: Chapter 1)
2. Nilesh Shah, "DATABASE SYSTEMS USING ORCLE", 2nd edition, PHI, 2007. (UNIT-II: Chapter 4, UNIT III: Chapters 5, 6 & 7, UNIT-IV: Chapters 10 & 11, UNIT-V: Chapters 12 & 14)

REFERENCE BOOKS:

1. "Database Management Systems", Arun Majumdar & Pritimoy Bhattacharya, 2007, TMH.
2. "Database Management Systems", Gerald V. Post, 3rd edition, 2009, TMH.

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SEMESTER - V

COURSE: XAMP Lab | **Hours/Week** : 6

COURSE CODE : 15UAJCP503 | **Credits** : 4

1. Write a Program to demonstrate the PHP Super global variables.
2. Write a Program to read data from webpage using forms and various data controls to implement client side validation using JavaScript.
3. Write a Program by implementing PHP server side validation.
4. Write a Program using PHP math/date function.
5. Write a Program to implement the concept of cookies.
6. Write a Program to implement the concept of sessions.
7. Write a Program to implement File uploads in PHP.
8. Write a PHP program to implement any five String and Array functions.
9. Write a Program to implement Database connectivity in PHP with MYSQL.
10. Write a Program to demonstrate DML operations in MYSQL tables.
11. Write a Program to Join MYSQL tables.
12. Write a Program to Search and sort of data by different criteria in MYSQL.

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SEMESTER - V

COURSE: System Specification & Designing Lab — **Hours/Week** : 5
COURSE CODE : 15UAJCP504 — **Credits** : 3

Prepare the following SDLC documents for your Project:

1. Software Requirement Specification (SRS)
2. System Planning
3. Software Design: UML Design
4. Software Design: Form Design
5. Software Design: Database Design
6. Software Design: Data Flow Diagram (DFD)
7. Implementation Plan
8. Software Testing: Test Case
9. Deployment
10. Maintenance

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SEMESTER - V

COURSE: PHP
COURSE CODE : 15UAJST508

Hours/Week : 4
Credits : 3

Objectives: To enable the students to understand the fundamentals of PHP and to develop their skill set in the web applications.

UNIT – I: PHP Basics: Introduction – Getting PHP – Development Environment – Creating and Running a PHP Page – Mixing HTML and PHP – Printing Some Text – Printing Some HTML – More Echo Power – Comments in PHP – Variables – Creating Variable Variables – Constants - Strings – PHP Data Types – String Operators - Execution Operators – Identical Operator - foreach loops.

Case Study: Math Operators.

Self Study: Operators: Assignment, Comparison, Logical, Bitwise, Increment and Decrement Operators. **Flow Control:** if, else, elseif, switch – for, while, do...while, break and continue.

UNIT – II: Strings and Arrays: Converting to and from Strings – Creating, Storing, Modifying and Deleting Arrays – Handling Arrays with Loop. **PHP Functions:** Creating Functions - Nesting Functions – Passing Arguments and Arrays to Functions – Returning Data and Arrays from Functions - Creating Include Files. **Object Oriented Programming:** Creating Classes – Creating Objects – Setting Access to Properties and Methods.

Case Study: PHP String Functions and Array Functions.

UNIT – III: Reading Data in Web Pages: Set Up web Page to Communicate with PHP – Handling Text Box, Text Areas, List Box, Check Box and Radio Button – Handling Password and Hidden Controls – Handling File Uploads – Handling Buttons. **Browser Handling:** Server Variables – HTTP Headers – Performing Server Side Data Validation – Performing Client Side Data Validation using Java Script.

Case Study:

1. Java Script Variables, Functions, Forms and Event Handling.
2. Create a Simple User Registration web Page and Validate with Java Script and PHP.

UNIT – IV: Cookies – Sessions – FTP – Sending Email – Sending Advanced Email – Adding Attachments to Email.

Case Study:

1. The usages of Session in PHP web Page.
2. Sending Email Using PHP.

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UNIT – V: Working with Database: What is a Database? – Creating a MySQL Database – Creating a New Tables – Inserting New Data Items into a Database – Accessing the Database in PHP – Updating Database – Deleting Records – Sorting data in Database.

Case Study: WAMP – XAMPP – LAMP

TEXT BOOKS:

1. Steven Holzner, "PHP: The Complete Reference", McGraw Hill Education Edition 2008.
2. Jim Keogh, "Java Script DeMYSTiFieD – A Self teaching Guide", Tata McGraw-Hill Edition 2005.

REFERENCE BOOK:

1. "PHP6 and MySQL Bible", Tim Converse, Joyce Park and Suehring Steve, Willy Publishing, Inc., 2010.

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SEMESTER - VI

COURSE: Visual Programming - .NET | **Hours/Week** : 6
COURSE CODE : 15UAJCT601 | **Credits** : 4

Objective: To Gather the Knowledge about .NET Programming and Windows Application Development.

UNIT – I: Event-driven Programming - What is .Net? - Visual Studio 2005 Integrated Development Environment –Keywords - Arithmetic Operators - Data types – Statements - Declaring variables - Constants - Data type Conversion - Control Statements and Loops – Arrays – Enumerations - Val and Str Functions.

UNIT – II: Creating Visual Basic Application - Member Access Modifiers - Defining class - creating Objects – constructors – Inheritance – Interfaces - Windows Forms - Label - TextBox - Button - ComboBox – ListBox – CheckBox – RadioButton - GroupBox Controls.

UNIT – III: Panel - PictureBox – ProgressBar – Timer - Menus - FolderBrowserDialog control - Open, Save, Font, Color, Print Dialog controls - TreeView control - Mouse Events - KeyBoard events. Handling Errors and Exceptions.

UNIT – IV: Accessing Data using ADO.NET: What are Databases?-Basic SQL statements-Working with ADO.NET - ADO.NET objects-DataGridView Control-Accessing Data using server Explorer-Creating new Data connection-Accessing Data using Data Adapters and DataSets - Previewing Data from data Adapters-Connecting to an MS Jet Database. Data Binding: Simple data Binding-Complex Data Binding-Implementing Data Binding.

UNIT – V: Handling database in Code: OLEDB, Oracle and Sql Connection Class- OLEDB, Oracle & Sql Command Class– OLEDB, Oracle & Sql Adapter Class - DataSet – DataReader – DataTable - DataRow – DataColumn – DataRelation - Individual DataItems - Writing DataSets to XML - Reading DataSets from XML.

TEXT BOOKS:

1. Vikas Gupta & Kogent Solutions Inc, "Comdex .NET Course Kit", Dreamtech Press Publications-2008.(UNIT I,II,III,IV)
2. Steven Holzner, "Visual Basic .NET Programming Black Book", Dreamtech Press Publications-2013.(UNIT V-Chapter No. : 23)

REFERENCE BOOKS:

1. "Visual Basic.NET", Shirish Chavan , Pearson Education. ISBN 978-81-317-1391-4.
2. "Beginning Microsoft Visual Basic 2005", Thearon Willis and Bryan Newsome, Wrox Publication-2008.

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SEMESTER - VI

COURSE: Visual Programming Lab — **Hours/Week** : 5
COURSE CODE : 15UAJCP602 — **Credits** : 4

1. Write a VB.NET program to perform the following number conversion.
   1. Decimal to Binary 2.Decimal to Octal 3.Decimal to Hexadecimal
2. Write a program to prepare a Questionnaire using VB.NET
3. Write a VB.NET program to add the items to list box with user input and move the selected item to combo box one by one.
4. To create Student Registration Form for an Inter Collegiate meet using VB.NET.
5. Write a VB.NET program to implement Timer control.
6. Write a VB.NET program to implement Dialog Box control.
7. Write a VB.NET program to implement Tree View control.
8. Write a VB.NET program to implement Menu Editor Control.
9. To develop a simple VB.NET project for Student Personal Details using OLEDB Connection.
10. To design two forms for an organization and calculate the Employee salary and store the data in SQL.

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SEMESTER - VI

COURSE: Software Testing Lab | **Hours/Week** : 4

COURSE CODE : 15UAJSP610 | **Credits** : 3

White Box Testing

1. Demonstrate the Control Flow Testing with different test cases in a block of statements.
2. Demonstrate the Data Flow Testing one control structure with different test cases.
3. Demonstrate the Branch testing with different test cases.
4. Demonstrate the unit testing using a web application.
5. Demonstrate the Integration testing using different test cases.

Black Box Testing

6. Demonstrate the Boundary value analysis with different test cases.
7. Demonstrate the system testing through your project manually on par with SRS.
8. Test the System with possible test cases, which cannot be cope by the system using an application.
9. Demonstrate any one application from white box testing using the automated testing tool.
10. Demonstrate any one application from Black box testing using the automated testing tool.

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ELECTIVE COURSES

COURSE: Computer Networks | **Hours/Week** : 5
COURSE CODE : 15UAJET505 | **Credits** : 4

Objectives: To enable the students to understand the concepts of Computer Networks with various algorithms in data transfer.

UNIT – I: Network Hardware: Uses of Computer Networks: Business Applications – Home Applications – Mobile Users. Network Hardware: LAN – MAN – WAN – Wireless Networks – Home Networks – Internetworks. Network Software: Protocol Hierarchies – Design Issues of the Layers – Connection Oriented & Connectionless Services – Service Primitives.
Reference Models: OSI Reference Models – TCP/IP Reference Models – Comparison of OSI and TCP/IP Reference Models.

UNIT – II: Physical Layer: Guided Transmission Media – Wireless Transmission – Communication satellites. **Data Link Layer:** Design Issues – Error Detection and Correction – Elementary Data Link Protocols: Unrestricted Simplex Protocol – Simplex Stop and Wait Protocol. Sliding Window Protocols.

UNIT – III: MAC Sub Layer: Multiple Access Protocols – Ethernet: Cabling – Manchester Encoding – MAC Sub Layer Protocol – Switched Ethernet – Fast Ethernet – Wireless LANs – Bluetooth.

UNIT – IV: Network Layer: Design Issues – Routing Algorithms: The Optimality Principle – Shortest Path – Flooding – Distance Vector – Link State – Hierarchical– Broadcasting – Multicast Routing – Routing for Mobile Hosts. Congestion Control Algorithm: General Principles – Prevention Polices – Load Shedding – Jitter Control.

UNIT – V: Transport Layer: Elements of Transport Protocols – Internet Transport Protocols: UDP – TCP. **Application Layer:** DNS – Email.

TEXT BOOK:
Andrew S Tanenbaum, "Computer Networks", Pearson Education, Fourth Edition, 2003.

REFERENCE BOOK:
1. "Data Communication and Networks", Achyut Godbole, TMH, 2007.

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COURSE: Distributed Computing
COURSE CODE : 15UAJET506

Hours/Week : 5
Credits : 4

Objectives: To develop skills and knowledge in Distributed objects and to understand the concept of Distributed Computing, Distributed file system, Name services and Distributed transactions.

UNIT – I: Introduction to Distributed Systems: Introduction --What is a Distributed System? – Goals – (Advantages of Distributed Systems over Centralized Systems, Advantages of Distributed System over Independent PCs, Disadvantages of Distributed Systems) – Hardware Concepts – (Bus - Based Multiprocessors, Switched Multiprocessors, Bus - Based Multicomputer, Switched Multicomputers) – Software Concepts – (Network Operating Systems, True Distributed Systems, Multiprocessor Timesharing Systems) – Design Issues – (Transparency, Flexibility, Reliability, Performance, Scalability)

UNIT – II: Communication in Distributed Systems: Introduction Asynchronous Transfer Mode Network – (What is Asynchronous Transfer Mode? ATM Physical Layer, ATM Layer, ATN Adaptation Layer, ATM Switching) – The Client - Server Model – (Client and Servers, Addressing, Block versus Non blocking Primitives, Buffered versus Unreliable Primitives) Remote Procedure Call – (Basic RPC Operation, Parameter Passing, Dynamic Binding, RPC Semantics in the Presence of Failures) Distributed objects and remote invocation : Introduction, Communication between distributed objects, Java RMI case study

UNIT – III: Synchronization in Distributed Systems: Introduction -- Clock Synchronization – (Logical Clocks, Physical Clocks, Clock Synchronization Algorithms) – Mutual Exclusion –(A Centralized Algorithm, A Distributed Algorithm, A Token Ring Algorithm) –Election Algorithms – (The Bully Algorithm, A Ring Algorithm) – Atomic Transactions – (Introduction to Atomic Transactions, The Transaction Model. Implementation, Concurrency Control) – Deadlocks in Distributed Systems (Distributed Deadlock Detection & Prevention)

UNIT – IV: Processes and Processors in Distributed Systems: Introduction –Threads –(Introduction to Threads, Threads Usage, Design Issues for Threads Packages) System Models –(The Workstation Model, Using Idle Workstations, The Processor Pool Model, A hybrid Model) –Processor Allocation –(Allocation Models, Design Issues for Processor Allocation Algorithms, Implementation Issues for Processor Allocation Algorithms, Example Processor Allocation Algorithms) –Scheduling in Distributed Systems – Fault Tolerance – (Component Fault, System Failures, Synchronous versus Asynchronous Systems, Use of Redundancy, Fault Tolerance Using Active Replication, Agreement in Fault Systems) Distributed File Systems: Introduction –Distributed File System Design – (The File Service Interface, The Directory Server Interface, Semantics of File Sharing)

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UNIT – V: Distributed File System Implementation – (File Usage, System Structure, Caching, Replication, An Example: Sun's Network File System).Distributed Shared Memory: Introduction, What is Shared Memory? , Consistency Models. Page -Based Distributed Shared Memory.

TEXT BOOK:

Tanenbaum S Andrew, "Distributed Operating Systems", Pearson Eduction Asia, 2001

REFERENCE BOOKS:

1. "Advanced Concepts in Operating Systems Distributed Data Base, And Multiprocessor Operating Systems", Singhal Mukesh, Shivaratri G Niranjan, , McGraw- Hill, Inc., 2002.

2. "Distributed systems-Concepts and Design", George Colulouris , Jean Dollimore, Tim Kindberg, Second edition, Addison_Wesely.

3. "Distributed Operating Systems Concepts and Design", Sinha K Pradeep, , Eastern Publications.

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COURSE: Mobile Computing | **Hours/Week** : 5
COURSE CODE : 15UAJET507 | **Credits** : 4

Objectives: The student should be made to understand the basic concepts of mobile computing and be exposed to Ad-Hoc networks, gain knowledge about different mobile platforms and applications.

UNIT – I : Introduction: Mobile Computing – Mobile Computing Vs wireless Networking – Mobile Computing Applications – Characteristics of Mobile computing – Structure of Mobile Computing Application. MAC Protocols – Wireless MAC Issues – Fixed Assignment Schemes – Random Assignment Schemes – Reservation Based Schemes.

UNIT – II: Mobile Internet Protocol and Transport Layer: Overview of Mobile IP – Features of Mobile IP – Key Mechanism in Mobile IP – route optimization. Overview of TCP/IP – Architecture of TCP/IP- Adaptation of TCP Window – Improvement in TCP Performance.

UNIT – III: Mobile Telecommunication System: Global System for Mobile Communication (GSM) – General Packet Radio Service (GPRS) – Universal Mobile Telecommunication System (UMTS).

UNIT – IV: Mobile Ad-Hoc Networks: Ad-Hoc Basic Concepts – Characteristics – Applications – Design Issues – Routing – Essential of Traditional Routing Protocols –Popular Routing Protocols – Vehicular Ad Hoc networks (VANET) – MANET Vs VANET – Security.

UNIT – V: Mobile Platforms and Applications: Mobile Device Operating Systems – Special Constrains & Requirements – Commercial Mobile Operating Systems – Software Development Kit: iOS, Android, BlackBerry, Windows Phone – M Commerce – Structure – Pros & Cons – Mobile Payment System – Security Issues.

TEXT BOOK:

Prasant Kumar Pattnaik, Rajib Mall, "Fundamentals of Mobile Computing", PHI Learning Pvt. Ltd, New Delhi – 2012.

REFERENCE BOOKS:

1. "Mobile Communications", Jochen H. Schller, , Second Edition, Pearson Education, New Delhi 2007.
2. Dharma Prakash Agarval, Qing and An Zeng, "Introduction to Wireless and Mobile systems", Thomson Asia Pvt Ltd, 2005.

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COURSE: E - Commerce | **Hours/Week** : 5

COURSE CODE : 15UAJET603 | **Credits** : 4

Objectives: To inculcate knowledge on E-Commerce concepts in the present IT world.

Unit – I: Introduction: Definition of E-Commerce – Evolution of E-Commerce – E-Commerce Technologies – E – Commerce From Different Perspective – E-Commerce Applications- Incentives for Engaging In E – Commerce – Needs of E – Commerce – Drivers of E-Commerce – Advantages and Disadvantages of E – Commerce – E – Commerce Frame Work.
E-Commerce: Architecture to Models: Architecture of E-Commerce - E-Commerce Models - Inter organizational E-Commerce Intra organizational E-Commerce - Impacts of E-Commerce on Business - Impacts of E-Commerce on organizations - Success Factors of E-Commerce

Unit – II: Mobile Commerce: What is M-Commerce? – Feature of M-Commerce – Industries Affected by M-Commerce – History And Applications of M-Commerce – WAP – WAP Architecture – Advantages of WAP – Mobile Computing Devices.
E-Commerce: Web And Network Security: overview of a Web – Security Issues on Web – Categories of Security Threads / Attacks – Security Concerns – Threads to Servers – Some More Security Threads – Network Security.

Unit – III: Firewalls: Introduction – Working of Firewall- Importance of Firewall for E-Commerce Systems - Types of Firewall- Components of Firewall - Factors to Consider in Firewall Design – Firewall Architectures – Limitations of Firewall.
Virtual Private Network: Introduction – Types of VPN – Authentication Mechanism – VPN Protocol – Need of VPN – Working of VPN - Advantages and Disadvantages of VPN – Firewalls and VPN.

Unit – IV: Electronic Payment System : Introduction – Need for EPS – Conventional Vs Electronic Payment System – Process of EPS – Electronic Payment Protection Protocols – Payment Gateways – Certificates – Digital Tokens – Types of EPS – Critical Success Factors of E-Commerce Payment System - Risks And Security – Disadvantage of Electronic Currency Payment System - On-Line Banking.

Unit – V: EDI and E-Commerce Laws: Overview of EDI – VAN - EDI in Business- E-Commerce Law.

TEXT BOOK:

S.K.Mourya, Shalu Gupta," E-Commerce", Narosa Publishing House, First Edition, 2015.

REFERENCE BOOKS:

1. "Introduction to E-commerce ", Nidhi Dhawan, International Book House P.Ltd, First Edition, 2010.
2. "Electronic Commerce Framework, Technologies & Applications", Bharat Bhasker, Tata Mc-Graw Hill, Second Edition.

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COURSE: Android and Its Applications
COURSE CODE : 15UAJET604

Hours/Week : 5
Credits : 4

Objective: To set up environment and create application, design and UI based application, to acquire knowledge in resources and services, access database and to develop a hybrid application for android.

UNIT I: Introduction: Introduction to Android-History-Android Platform Architecture-Android SDK-Configuring Development Environment- Android Emulator-Application Components-Creating Android Application- Application Directory Hierarchy-Manifest File-Toast-DDMS.

UNIT II: Activity and UI: Activities-Lifecycle of an Android Activity- Intenets-Layouts-Grid View-Scroll View-User Interface:Text View-Edit Text,Button,Checkbox,Radio button, Radio Group.Spinner, Date and Time Picker, Progress Bar, Rating Bar-List View-Array Adapter-Event Handlings.

UNIT III: Resources and Services: Resources: Image,Color,Vlaues,Strings,Menu-Basic Animatioons-Fragments-Services: Bounded and Unbounded Services-Media Player-Broadcast Recivers-Alert Dialog-Notifications-Phone Calls-Sending SMS.

UNIT IV: Database and Network: SQLite: Database Creating, Updating, and Deleting Records - Introduction to Network APIs- Location based service - Async Tasks - HttpURLConnection – JSON Parsing – Case Study: Application to Access MySQL using PHP.

UNIT V: Hybrid Application Development: Introduction to PhoneGap and Apache Cordova - Environment Setup- Creating first App using Simple HTML - Plugin APIs: Events – File - File Transfer- Network Information – Contacts – Battery.

TEXT BOOKS:

1. Joseph Annuzzi Jr., Lauren Darcey and Shane Conder, "Android Wireless Application Development: Android Essentials, 5th Edition, Pearson Education, 2015.
2. Reto Meier, —Professional Android 4 Application Development, 1st Edition, Wiley India Pvt. Ltd., 2012.

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COURSE: Data Mining | **Hours/Week** : 5
COURSE CODE : 15UAJET605 | **Credits** : 4

Objectives: To enable the students to be familiar with the concepts of data warehouse and data mining and be acquainted with the tools and techniques used for Knowledge Discovery in Databases.

UNIT – I: Introduction: What Motivated Data Mining – Important – What is Data Mining? – Data Mining – Kind of data: Relational database – Data warehouse – Transactional database – Data Mining Functionalities – Classification of data mining systems – Data mining task primitives – Integration data mining system – Major Issues.

UNIT – II: Data Preprocessing: Why preprocess the data? – Data cleaning – Data reduction – what is data warehouse? – Multidimensional data model: From Tables and Spreadsheets to Data cubes – Stars, snowflakes and fact constellations – OLAP operations – Data warehouse architecture – Data warehouse implementation – Data warehouse to Data Mining.

UNIT – III: Classification and Prediction: Classification – Prediction – Issues – Decision Tree induction – Tree pruning – Scalability and Decision tree induction – Multi layer feed-forward neural network – Defining a Network topology – Other classification methods.

UNIT – IV: Cluster analysis: What is cluster Analysis? – Types of data in cluster analysis – Categorization of Major clustering methods – Grid-Based Methods – Social Network analysis.

UNIT – V: Data mining applications – Data mining system products and research prototypes – Additional themes of data mining – Social impacts on data mining – Trends in data mining.

TEXT BOOK:

Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann Publishers, Second Edition, 2008.

REFERENCE BOOKS:

1. "Data Mining", Richard J. Roiger, Michael W. Geatz, Pearson Education, First Edition, 2007.
2. "Data Mining", Pieter Adriaans, Dolf Zantinge, Pearson Education, First Edition, 2007.

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COURSE: Computer Graphics
COURSE CODE : 15UAJET606

Hours/Week : 5
Credits : 4

Objectives: Gain knowledge about graphics hardware devices and software and also provide knowledge to Understand the two dimensional graphics and their transformations.

UNIT – I: Overview of graphics systems : Survey of computer graphics, Video display devices, Raster scan systems, Random scan systems, Graphics monitors and Workstations, Output primitives – points and lines, line drawing algorithms, loading the frame buffer, line function; circle and ellipse generating algorithms; Pixel addressing and object geometry, filled area primitives. **Self study:** Input devices, Hard copy Devices, Graphics Software

UNIT – II: Two dimensional geometric transformations: Matrix representations and homogeneous coordinates, composite transformations; Two dimensional viewing – viewing pipeline, viewing coordinate reference frame; widow-to-viewport coordinate transformation, Two dimensional viewing functions; clipping operations – point, line, and polygon clipping algorithms.

UNIT – III: Three dimensional concepts: Three dimensional object representations – Polygon surfaces- Polygon tables- Plane equations – Polygon meshes; Curved Lines and surfaces, Quadratic surfaces; Blobby objects; Spline representations – Bezier curves and surfaces -B-Spline curves and surfaces.

UNIT – IV: Transformation And Viewing: Three dimensional geometric and modeling transformations – Translation, Rotation, Scaling, composite transformations; Three dimensional viewing – viewing pipeline, viewing coordinates, Projections, Clipping; Visible surface detection methods.

UNIT V: illumination and color models Light sources – basic illumination models – halftone patterns and dithering techniques; Properties of light – Standard primaries and chromaticity diagram; Intuitive color concepts – RGB color model – YIQ color model – CMY color model – HSV color model – HLS color model; Color selection. **Animation Graphics:** Design of Animation sequences – animation function – raster animation – key frame systems – motion specification –morphing.

TEXT BOOK:

Donald Hearn & M. Pauline Baker, "Computer Graphics", Pearson Education, Second Edition, 1994.

REFERENCE BOOKS:

"Introduction to Computer Graphics", Anirban Mukhopadhyay & Arup Chattopadhyay, First Edition, 2003.

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KASC BCA 2015 - 2016

COURSE: Client Server Computing
COURSE CODE : 15UAJET607

Hours/Week : 5
Credits : 4

Objective: To inculcate knowledge on Client / Server concepts

UNIT – I: Introduction To Client/Server: The Client/Server Computing Era - What is Client / Server? – File Server – Database Server – Transaction Server – Groupware Server – Object Server – Web Server – What is Middleware – Fat Server – Fat Client – 2-Tier Vs. 3-Tire. Client / Server Building Blocks.

UNIT – II: Clients, Servers And Operating System: Anatomy of a Server Program – What Does a Server Need From an OS? - Server Scalability – Client Anatomy - What Does a Client Need From an OS? Client / Server Hybrids. Client OS Trends - Client OS – Server OS Trends – Server OS.

UNIT – III: Base Middleware: Stacks And NOS: NOS Middleware, RPC, Messaging and Peer to Peer – Remote Procedure Call – Messaging and Queuing – MOM Versus RPC.

UNIT – IV: The Magic Of Transactions: The ACID Properties – Transaction Models. **TP Monitors**: What is a TP Monitor? TP Monitors and OS – Funneling Act Performance - TP Monitors and Transaction Management - TP Monitors Client/Server Interaction Types – Transactional RPCs, Queues and Conversations. **Transaction Management Standards**: The X/Open DTP Reference Model – Vintage 1991 – Vintage 1994 – What the Transaction Standards Do Not Address? – Alternate to the Standards - The Need of TP Monitor.

UNIT – V: Distributed Objects And Components: What is Distributed Object? – From Distributed Objects to Components – 3 Tier Client / Server Objects Style. CORBA: Distributed Object, CORBA Style – OMG's Object Management Architecture. **Compound Documents**: Compound Documents – The Compound Document Framework.

TEXT BOOK:

Robert Orfali, Dan Harkey, Jeri Edwards "The Essential Client/Server Survival Guide" , Second Edition, 2001.

REFERENCE BOOKS:

1. "Client / Server Computing" – Patrick Smith, Steve Guenferich , 2nd edition, PHI, 2003.
2. "Client/ Server Computing" — Dewire and Dawana Travis ,TMH, First Edition, 2008.
3. "Client/ Server" Unleashed- Techmedia, First Edition, 1998.

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COURSE: Analysis and Design of Information System | **Hours/Week** : 5
COURSE CODE : 15UAJET608 | **Credits** : 4

Objectives: To enable the students to understand the concept of information systems and data flow diagrams.

UNIT – I: Information and Management: Types of information – Why do we need a Computer based information system? – Management structure – Management and information requirements – qualities of information.

UNIT – II : Information Systems Analysis Overview: Overview of Design of an Information system – The Role and Tasks of a System Analyst - Attributes of a Systems Analyst – Tools used by Systems Analyst. Information Gathering: Strategy to gather information – Information Sources– Methods of Searching for Information – Interviewing Techniques – Questionnaires.

UNIT – III: System Requirement Specification: Data Dictionary – Steps in systems Analysis – Modularizing requirements specification. Feasibility Analysis: Deciding on project goals – Examining alternative solutions – Evaluating proposed system – Cost-benefit analysis – Payback period – Feasibility report- system proposal. Data flow diagram: Symbols used in DFDs – Describing a system with a DFD – Good conventions in developing DFDs – Logical and Physical DFDs.

UNIT – IV: Process specification: Process specification methods – Structured English. Decision Tables: Decision table Terminology and Development - Extended Entry Decision table.

UNIT – V: Data input methods: Data input – Coding Techniques – Detection of Error in Codes – Validating Input data – Interactive Data input. Designing outputs: Output Devices – Objectives of Output design – Design of Output Reports – Design of screens – Use of Business Graphics.

TEXT BOOK:

V. Rajaraman, "Analysis and Design of Information Systems", Second Edition, Prentice-Hall of India, July 2001.

REFERENCE BOOK:

"Analysis & Design of Information Systems", James A Senn, Second Edition, Tata McGraw –Hill, 2009.

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ADVANCED LEARNERS COURSE

COURSE: Introduction to Bootstrap

COURSE CODE : 15UAJAL509 **Credits** : 2

Objective: To learn about the fundamentals of Bootstrap and develop the web designing skill.

UNIT I: The Evolution of CSS and Bootstrap: The mobile-first philosophy -Responsive design basics - Introducing Bootstrap: What Bootstrap includes - CSS - Components - JavaScript – Customization - Getting Started with Bootstrap: Get Bootstrap - The Bootstrap file structure - A precompiled bundle - A source code bundle.

UNIT II: CSS preprocessors - Variables - Mixins - Operations - Nesting - How to use Bootstrap - The application folder structure. Creating Responsive Layouts Using Bootstrap CSS: Basic HTML structure for Bootstrap - Basic HTML elements.

UNIT III: Responsive classes - Rendering images - The grid system - Constructing data entry forms - Other utility classes - Encapsulating everything - Packaged Components in Bootstrap: The page header – Glyphicons - The navigation bar - Badges - Alerts - Toolbars and button groups - Panels – Jumbotron – Breadcrumbs – Paginations.

UNIT IV: The JavaScript Add-ons in Bootstrap: Basic concepts - Modal windows - Tabs - Collapse and accordions - Tooltips and popovers - This dropdown - Alerts – Carousels - The final preview - Design a simple registration page using bootsrap.

UNIT IV: Compiling and Building Bootstrap: Required tools - Installing Bootstrap - Compiling and building Bootstrap - Customizing Bootstrap - Extending Bootstrap: Theme extension – Bootswatch - A tree-view control - WYSIWYG editor and Font Awesome.

TEXT BOOK:

"Snig Bhaumik", Bootstrap Essential, PACKET Publishing.

WEB REFERENCE:

1. www.w3schools.com
2. www.getbootstrap.com

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ADVANCED LEARNERS COURSE

COURSE: Cryptography and Network Security

COURSE CODE : 15UAJAL510 **Credits** : 2

Objective: To enable the students to understand the fundamentals of cryptography and network security.

UNIT I: BLOCK CIPHERS & PUBLIC KEY CRYPTOGRAPHY: Cryptography: Introduction – Substitution ciphers – Transposition Ciphers – One Time Pad – Principles - Data Encryption Standard-Block cipher principles-block cipher modes of operation-Advanced Encryption Standard (AES)-Triple DES-Blowfish-RC5 algorithm.

UNIT II: Public key cryptography: Principles of public key cryptosystems-The RSA algorithm-Key management – Diffie Hellman Key exchange-Elliptic curve arithmetic-Elliptic curve cryptography. Authentication applications – Kerberos – X.509 Authentication services

UNIT III: SECURITY PRACTICE & SYSTEM SECURITY: Internet Firewalls for Trusted System: Roles of Firewalls – Firewall related terminology- Types of Firewalls – Firewall designs – SET for E-Commerce Transactions. Intruder – Intrusion detection system – Virus and related threats – Countermeasures – Firewalls design principles – Trusted systems – Practical implementation of cryptography and security.

UNIT IV: E-MAIL, IP & WEB SECURITY: E-mail Security: Security Services for E-mail-attacks possible through E-mail – establishing keys privacy-authentication of the source-Message Integrity-Non-repudiation-Pretty Good Privacy-S/MIME.

UNIT V: IPSecurity: Overview of IPSec – IP and IPv6-Authentication Header-Encapsulation Security Payload (ESP)-Internet Key Exchange (Phases of IKE, ISAKMP/IKE Encoding).Web Security: SSL/TLS Basic Protocol-computing the keys- client authentication-PKI as deployed by SSLAttacks fixed in v3- Exportability-Encoding-Secure Electronic Transaction (SET).

TEXT BOOKS:

1. William Stallings, "Cryptography and Network Security", 6th Edition, Pearson Education, March 2013. (UNIT I,II,III,IV).
2. Charlie Kaufman, Radia Perlman and Mike Speciner, "Network Security ", Prentice Hall of India, 2002. (UNIT V).
3. Andrew S. Tanenbaum. "Computer Networks", Fourth Edition, Pearson Education, 2003.

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ACTIVITIES

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DEPARTMENT OF COMPUTER APPLICATIONS

Seminar on Software Project Management on 19.06.2017

The Seminar on Software Project Management for final year students was organized by Department of Computer Applications on 19.06.2017. The session was handled by Mr.S.Vijayakumar, Assistant Professor, Department of Computer Applications (PG), Kongu Arts and Science College (Autonomous), Erode. He discussed about the importance of software projects in recent scenario. He also discussed about the various principles in software project management such as design, development, analyze and evaluate. He also mentioned that students should have a good knowledge in programming languages to develop the software projects.

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DEPARTMENT OF COMPUTER APPLICATIONS

Seminar on Multimedia & Animation on 22.06.2017

A Seminar on Multimedia and Animation for II & III year B.C.A students was organized by Department of Computer Applications on 22.06.2017. The seminar was addressed by Mr.V.Prabhu, VK Creative Designing Service, Salem. The aim of the seminar is to know the importance of multimedia and animation in various industries across the world. The resource person also discussed about the various job opportunities in multimedia field such as 3D animation, 2D animation and graphical designer. He cleared the various doubts of the students.

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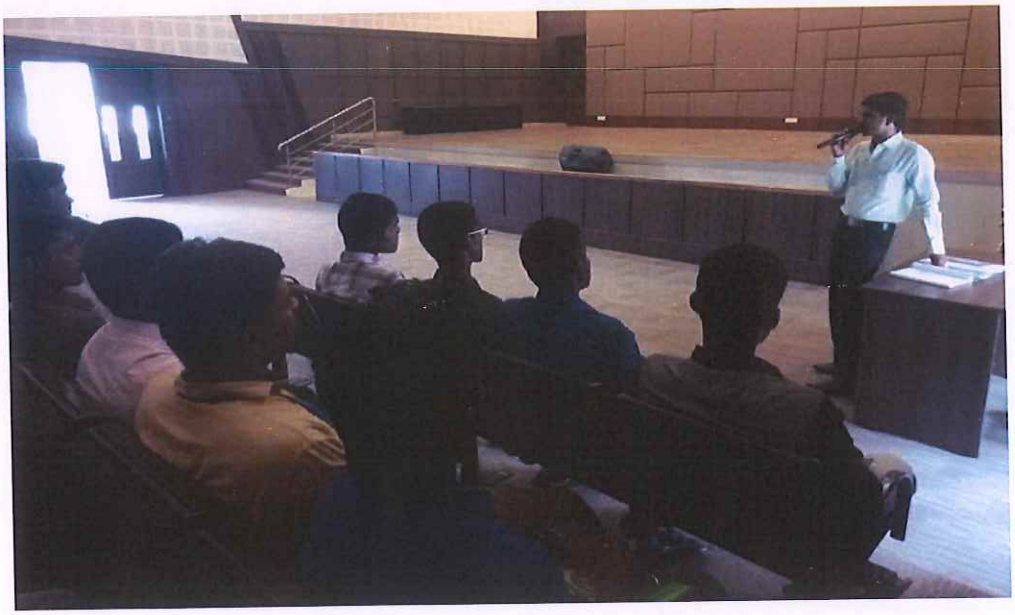
DEPARTMENT OF COMPUTER APPLICATIONS

Seminar on Project Documentation on 21.06.2017

A seminar on Project Documentation for final year students was organized by Department of Computer Applications on 21.06.2017. The session was handled by Mr.R.Gopalakrishnan, Assistant Professor & Head, Department of Computer Applications, Kongu Arts and Science College, Erode. The aim of the programme is to give guidance to the students regarding their final year projects. The students are instructed to document their various stages of their development process carefully. He asked to follow the project plan and schedule properly.



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