ST. JOSEPH'S COLLEGE OF ARTS & SCIENCE (AUTONOMOUS) CUDDALORE-1

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE

M.SC.COMPUTER SCIENCE

SYLLABUS 2017-2018

ST.JOSEPH'S COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)

Cuddalore - 607001.

Name of the Department   : P.G. and Research Department of Computer Science

Name of the Course   : M.Sc Computer Science

Minutes:

The meeting of the Board of Studies for M.Sc Computer Science was held at P.G and Research Department of Computer Science, St. Joseph's College of Arts & Science(Autonomous), Cuddalore on 10th, March 2017 at 10:30 AM.

Details of the Expert Members in the Board of Studies

Chairman   Mr. M. Arumai Selvam

Head, P.G and Research Department of Computer Science

St.Joseph's College of Arts and Science (Autonomous)

Cuddalore – 607001.

University Nominee   Dr. K.Geetha

Head, Department of Computer Science

Periyar Arts College,

Cuddalore – 607001.

Subject Expert   Dr.A.Martin

Assitant Professor,

Dept. of Comp.Science, School of Mathematics & Computer

Science, Central University of Tamil Nadu,

Thiruvarur, Tamil Nadu-610 101

Subject Expert	Mr.V.Vigneshwara Raj,
(Industry /	Managing Partner and Founder,
Corporate Sector)	Viki Informatic School of Computing and Soft skills, Cuddalore.

Alumni	Mrs.G.Kalaiselvi,
Representative	Head,Department of Computer Science,
	Krishnasamy College Of Science,Arts and Management For Women,
	Cuddalore.

Board Members

Mrs. C.Christy M.C.A., M.Phil., SET.
Asst. Professor, St. Joseph's College of Arts and Science, Cud-1

Mr.J. Jayapal M..C.A.,D.M.E., M.Phil.,
Asst. Professor, St. Joseph's College of Arts and Science, Cud-1

Mr.S.Muthu Kumaran M.sc (IT),M.Phil.,
Asst. Professor, St. Joseph's College of Arts and Science, Cud-1

Mr.S.Antony Jones M.C.A., M.Phil., SET.
Asst. Professor, St. Joseph's College of Arts and Science, Cud-1

Mr..J.Antony Daniel Rex M.C.A., M.Phil.,
Asst. Professor, St. Joseph's College of Arts and Science, Cud-1

The meeting started with a prayer and the expert was formally introduced by the Chairman. The curriculum designed for M.Sc. Computer Science was taken for discussion .

- ✓ In the I semester, Instead of Linux Operating System, UNIX networking programming was Introduced.

- ✓ In the I semester, Instead of Linux Programming, Advanced Unix programming was Introduced.

- ✓ In the II semester, Instead of Multimedia and Virtual Reality , Multi Media and Web Graphics was Introduced.

- ✓ In the II semester, Ratification was made in Elective Paper Grid Computing

- ✓ In the III semester, Ratification was made in the Elective Paper Cloud Computing.

- ✓ In the II semester, Ratification was made in Internet Programming

- ✓ In the III semester, Instead of Elective Paper Web Graphics new Research Methods paper was introduced.

- ✓ In the III semester, Mini Project (System Programming) Renamed as Mini Project with Research Tools.

The changes were unanimously approved by all the members of the board and the restructured curriculum was framed successfully.

Finally Mrs.C.Christy gave the Vote of Thanks. The meeting was over by 11.30 P.M.

PROGRAMME

BOARD OF STUDIES FOR M.Sc Computer Science

1. Prayer song

2. Welcome Address by Head of the Department

3. Agenda-1

    Discussion of the Syllabus for M.Sc. Computer Science

 4. Vote of Thanks

4. Tea

M.Sc COMPUTER SCIENCE

CURRICULAM DESIGN TEMPLATE

ADMITTED IN THE YEAR 2017 - 2018

Sem	Subject Code	Subject Title	Hrs/Week	Credit
I	PCS701S	Mathematical Foundations for Computer Science	4	3
	PCS702S	Object Oriented Analysis and Design and UML	4	3
	PCS703S	Advanced Java Programming	4	4
	PCS704	Unix Network programming	4	4
		Elective – I	4	3
	EPCS705Q	(i)-Computer System Architecture*		
	EPCS705A	(ii)-Artificial Neural Networks		
	EPCS705C	(iii)- Modern Operating system		
	PCSP101T	Practical – 1: Advanced Java Programming	5	3
	PCSP102S	Practical – 2: Advanced Unix programming	5	3
	Total for Semester I		**30**	**23**
II	PCS806S	Software Testing	4	3
	PCS807S	Dot Net Technology	4	4
	PCS808S	Multimedia and Web Graphics	4	3
	PCS809S	Internet Programming	4	3
		Elective – II	4	3
	EPCS810A	(i) - Distributed Computing		
	EPCS810B	(ii) - Fuzzy Logic		
	EPCS810C	(iii)-Grid Computing*		
	PCSP203S	Practical – 3: Dot Net LAB	5	3
	PCSP204	Practical – 4: Internet Programming LAB	5	3
	Total for Semester II		**30**	**22**

M.Sc COMPUTER SCIENCE

CURRICULAM DESIGN TEMPLATE

ADMITTED IN THE YEAR 2017 - 2018

Sem	Subject Code	Subject Title	Hrs/Week	Credit
III	PCS911	Data Mining and WareHousing	4	3
	PCS912T	Open Source Technology	4	4
	PCS913Q	Cloud Computing	4	3
	ECHR901S	Human Rights	2	1
		Elective – III	4	3
	EPCS914T	(i) - Principles of Compiler Design*		
	EPCS914S	(ii)- Mobile Computing		
	EPCS914A	(iii)-Digital Image Processing		
		Elective – IV	4	3
	EPCS915T	(i) – Web Graphics		
	EPCS915A	(ii) - Network Security		
	EPCS915B	(iii)-E-Commerce		
	PCSP305S	Lab 6: PHP & MYSQL Lab	5	3
	JPCS306	Mini Project	3	3
Total for Semester III			**30**	**23**
IV	JPCS1016	Main Project	30	22
Total for Semester IV			**30**	**22**

I-MSC (CS)	MATHEMATICAL FOUNDATIONS FOR	PCS701S
SEMESTER - I	COMPUTER SCIENCE	HRS/WK – 4
CORE – 1		CREDIT – 3

UNIT-I Set Theory :

Introduction-Sets-Notations and Descriptions of Sets-Subsets-Operations on Sets-Properties of Set Operations-Verification of the Basic Laws of Algebra-Cartesian product of two sets-Relations-Representation of a Relation-Operations on Relations-Equivalence Relations-Partition and Equivalence Classes-Functions-One-to-one and Onto Functions-Special types of Functions-Invertible Functions-Composition of Functions.

UNIT-II

Logic: Introduction-TF Statements- Connectives-Compound Statements-Truth Table of a Formula-Tautology-Tautology Implications and Equivalence of Formulae-Normal Forms-Principles of Normal Forms-Theory of Inference, simple problems .

UNIT-III

Finite Automata-Definition of an Automaton- Representation of Finite Automaton-Acceptability of a string by a Finite Automaton-Languages accepted by a Finite automaton – Nondeterministic Finite automata - Acceptability of a string by Nondeterministic Finite Automata.

UNIT-IV

Equivalence of FA and NFA- Procedure for finding an FA equivalent to a given NFA – Phase-structure Grammars .

UNIT-V

Pushdown Automata-Definition of a Pushdown Automaton – Instantaneous Descriptions of a PDA- Important properties of move relation - Acceptance by PDA – Equivalence of two types of a AcceptancebyPDA

Text Books:

Discrete Mathematics-Venkatraman M.K, ,Sridharan.N, Chandrasekaran.N , The National Publishing Company, Chennai, 2000.
Unit 1-Chapter 1: sec -1 to 4, 6 to 8, Chapter 2:sec -1 to 5, 7 , Chapter 3:sec -1 to 5,
Unit 2 - Chapter 9:sec 1 to 4, 6 to 8, 11 to 13
Unit 3- Chapter 12: sec -1 to 8
Unit 4 Chapter 12 sec -:9,10,16
Unit 5 - Chapter 12: sec -23 to 28

Reference Books:
1. Theory of Computer Science- K.L.P Mishra and N. Chandrasekaran ,Prentice Hall of India, Pvt Ltd
2. Discrete Mathematical Structures applications toComputerScience, Trembly &Manohar, Tata McGraw.
3. Introduction to Automata Theory, Languages and Computions, Hopcraft and Ullman, 2nd Edition, Pearson Education.
4. Discrete Mathematical Structures with Applications to Combinatorics,RamaswamyV, UnivPress, 2006.
5. Veerarajan T, "Discrete Mathematics with graph theory and combinatorics", TMG, 2007.

I M.Sc(CS)	OBJECT ORIENTED ANALYSIS AND DESIGN AND UML	PCS702S
SEMESTER – I		HRS/WK – 4
CORE – 2		CREDIT – 3

Objective:
To enable the students to learn the Software development methods and tools related with Object Oriented Technology.

UNIT – I: (12 Hrs)
OVERVIEW OF OOSD: Introduction – Methodology – OBJECT BASICS: Objects-Attributes- Encapsulation and Information Hiding – Class Hierarchy – Polymorphism-Object Relationships and Associations-OOSDLC – The Software Development Process.

UNIT – II: (13 Hrs)
OBJECT ORIENTED METHODOLOGIES: Introduction – Rumbaugh et al.'s Object Modeling Technique – The Booch Technology – Jacobson et al. Methodologies – Patterns – Frameworks – The Unified Approach.

UNIT – III: (11 Hrs)
UNIFIED MODELING LANGUAGE: Introduction – UML Diagrams – UML Class Diagram – Use Case Diagram – UML Dynamic Modeling – UML Extensibility – UML Meta model.

UNIT – IV: (12 Hrs)
OBJECT ORIENTED ANALYSIS: Introduction – Use Case Model – Developing Effective Documentation
OBJECT ORIENTED DESIGN: Introduction – Axioms – Corollaries – Design Patterns.

UNIT – V: (12 Hrs)
SOFTWARE QUALITY ASSURANCE: Introduction-Quality Assurance tests – Testing Strategies – Impact of Object Orientation on Testing – Test Cases – Test Plan – Continuous Testing – Myer's Debugging Principles

Text Books:
1. Ali Bahrami - "Object Oriented Systems Development" - Irwin-McGraw Hill, New Delhi, International editions, 1999.

Reference Books:

1.Grady Booch - "Object –Oriented analysis and Design with Applications" - Pearson Education– Ninth Indian Reprint 2002, First Impression 2006.

2.Grady Booch, James Rumbaugh and Ivar Jacobson - "The Unified Modeling Languages User Guide" - Addison Wesley – Fourth Indian Reprinting 2000, Fifth Impression 2007.

I M.Sc(CS)	**ADVANCED JAVA PROGRAMMING**	PCS703S
SEMESTER – I		HRS/WK – 4
CORE – 3		CREDIT – 4

Objectives:
- ❖ This course provides an in-depth knowledge of Advanced Java language and programming.
- ❖ Implementing Java components
- ❖ Practicing RMI, JDBC, JSP
- ❖ Multithreading

UNIT I
INTRODUCTION TO JAVA : Introduction to Java – Features of Java - Data types – Variables –Operators - Arrays – Classes – Objects – Constructors - Overloading method - String class – Inheritance - Overriding Method – Using super - Abstract class - Packages – Access protection.

UNIT-II
MULTITHREADING: **PACKAGES**- Access protection- Importing packages – Interfaces – Exception handling –Throw and throws - Thread – Multithreading.

UNIT-III
JAVA DATABASE: Working with windows using AWT Classes – AWT Controls – Layout Managers and menus- Swing- Introduction to Swing- Swing Architecture- Examples for Swing- JDBC/ODBC driver-MSACCESS connection-A complete example.

UNIT-IV
NETWORKING: Sockets - Inet Address - IP Address - Port number - Client/Server computing - TCP/IP - TCP client – server handling multiple clients -UDP-UDP Server-UDP Client- Multithreaded clients.

UNIT V
SERVLETS AND RMI: Servlet architecture-HTML support - Servlet Installation - Servlet API Distributed computing – RMI architecture - parameter in RMI - RMI Client side callbacks - Installing RMI systems - serializing remote objects.

Text Books:
1. Jeffrey C. Rice, Irving Salisbury-"Advanced Java Programming"-McGraw Hill-1997.
2. Deitel & Deitel - "JAVA: How to program"- Third edition Prentice Hall of India, 1999.

I M.Sc (CS)		PCS704
SEMESTER – I	UNIX NETWORK PROGRAMMING	HRS/WK – 4
CORE – 4		CREDIT – 4

Objective:

❖ To make the student aware of all concepts related to Net Working and make them well versed in Unix networking programming.

UNIT-I (12 Hrs)

INTRODUCTION & FILE SYSTEM

Overview of UNIX OS - File I/O - File Descriptors - File sharing - Files and directories - Filetypes - File access permissions - File systems - Symbolic links - Standard I/O library - Streams and file objects - Buffering - System data files and information - Password file - Group file - Login accounting - system identification.

UNIT-II (12 Hrs)

PROCESSES

Environment of a UNIX process - Process termination - command line arguments - Process control - Process identifiers - Process relationships terminal logins - Signals -threads.

UNIT-III (12 Hrs)

INTERPROCESS COMMUNICATION

Introduction - Message passing (SVR4)- pipes - FIFO - message queues – Synchronization (SVR4) - Mutexes - condition variables - read - write locks – file locking - record locking -semaphores - Shared memory(SVR4).

UNIT-IV (10 Hrs)

SOCKETS

Introduction - transport layer - socket introduction - TCP sockets - UDP sockets - raw sockets - Socket options - I/O multiplexing - Name and address conversions.

UNIT-V (14 Hrs)

APPLICATIONS - Debugging techniques - TCP echo client server - UDP echo client server - Ping - Trace route - Client server applications like file transfer and chat.

Text Books:

1. W.Richard Stevens, Advanced programming in the UNIX environment, Addison

   Wesley, 999.(Unit 1,2 & 3)

2. W. Stevens, Bill Fenner, Andrew Rudoff, "Unix Network Programming", Volume1,

   The Sockets Networking API,3rd Edition, Pearson education, Nov 2003.(unit 4 & 5)

Reference Books:

1. Meeta Gandhi,Tilak Shetty and Rajiv Shah – The 'C' Odyssey Unix –The open

   Boundless C,1st Edition ,BPB Publications 1992.

2. Stvens,"Unix network programming: INterprocess Communications", Vol2, 2nd ed.,PHI

I M.Sc(CS)	COMPUTER SYSTEM ARCHITECTURE	EPCS705Q
SEMESTER – I	For the students admitted from the year 2014	HRS/WK – 4
Elective – 1A		CREDIT – 3

Objectives:
To learn the advanced concepts of Computer Architecture.

UNIT-I: (10 Hrs)
Parallel Models: Multiprocessors and Multicomputers – Multivector and SIMD Computers – PRAM and VLSI Models – Conditions of Parallelism: Data and Resource Dependences.

UNIT-II: (13 Hrs)
Processors And Memory Hierarchy: Advanced Processor Technology: Instruction-Set Architecture, CISC, RISC Scalar Processor – Memory Hierarchy Technology: Hierarchical Memory Technology, Inclusion, Coherence and Locality – Virtual Memory Technology – Cache Memory Organization .

UNIT-III: (13 Hrs)
Pipelining And Superscalar Techniques: Linear Pipeline Processors – Non Linear Pipeline Processors – Instruction Pipeline Design – Arithmetic Pipeline Design.
UNIT-IV: (12 Hrs)
Parallel And Scalable Architecture: Multiprocessor System Interconnects – Vector Processing Principles – SIMD Computer Organizations: Implementation Models.

UNIT-V: (12 Hrs)
Scalable, Multithreaded: Latency Hiding Techniques: Shared Virtual Memory, Prefetching Techniques, Distributed Coherent Caches – Principles of Multithreading: Multithreading Issues and solutions, Multiple Context Processors.

Text Books:
1. Kai Hwang-"Advanced Computer Architecture- Parallelism, Scalability, Programmability"- McGraw Hill- 1993.
2. Kai Hwang-"Advanced Computer Architecture- Parallelism, Scalability, Programmability"- McGraw Hill- Second Edition-2000.

Reference Books:
1. M.M.Mano, "Computer System Architecture", 3rd Edition, PHI- 1994.
2. Hwang Briggs, "Computer Architecture and Parallel Processing"- McGraw Hill-1985.
3. William Stallings, "Computer Organization and Architecture - Designing for Performance", PHI, 2000.

I M.Sc(CS)		EPCS705A
SEMESTER – I	**ARTIFICIAL NEURAL NETWORKS**	HRS/WK – 4
ELECTIVE – 1B		CREDIT – 3

Objective:
- ❖ To enable the student to understand the concepts and principles of fuzzy and Neural Networks.
- ❖ Investigate some common models and their Applications.

Unit-1:   **[10 HRS]**
Introduction: Definition – fundamental concepts – applications – advantages and disadvantages – classifications – biological neural network – artificial neural structure – activation functions – adding bias – perception – MLP.

Unit-2:   **[10 HRS]**
Feed forward ANNs: Structure – delta rule – architecture and training – radial basis function – time delay NN.

Unit-3:   **[13 HRS]**
Attractor ANNs: Associative learning – attractor NN – linear associative memory – Hopfield network – content addressable memory – simulated annealing – Boltzmann machine – bidirectional associative memory.

Unit-4:   **[13 HRS]**
Unsupervised ANNs: Clustering procedures – C-Means algorithm – learning vector quantization – MAXNET – self-organizing feature maps – adaptive resonance architectures.

Unit-5:   **[14 HRS]**
ANN Simulation in MATLAB: Creating a custom neural network – initializations – setting weights and bias – using different transfer functions – using training parameters – simulating and plotting network – designing a complete FF neural network (supervised) – designing self organizing maps (unsupervised).

Text Books:
1. Robert J. Schalkoff. 1997. *Artificial Neural Networks*. New Delhi. McGraw Hill.
2. Satish Kumar. 2004. *Neural Networks: A Classroom approach*. New Delhi: McGraw Hill.
3. S. Rajasekaran, G. A. Vijayalakshmi Pai. 2003. *Neural Networks, Fuzzy Logic and Genetic Algorithms Synthesis and Applications*. India: Prentice Hall .
4. Laurene Fausett. 1994. *Fundamentals of Neural Networks*. Prentice Hall.
5. Limin Fu. 1994. *Neural Network in Computer Intelligence*. McGraw Hill International.

Reference Books:

1. Haykin Simon. 2001.*Neural Networks: A Comprehensive Foundation*. (2nd ed.) Singapore: Addison Wesley.

2. Freeman, A. James and Skapura, M. David. 2002. *Neural Networks: Algorithm, Applications and Programming Techniques*. California: Addison-Wesley Longman.

3. Fredric, M. Ham, Ivica Kostunica. *Principles of Neuro Computing for Science of Engineering*. Tata McGraw Hill.

I M.Sc (C.S)		EPCS705C
SEMESTER –I	**MODERN OPERATING SYSTEM**	HRS/WK-4
ELECTIVE-1C		CREDIT-3

AIM

To provide a clear description of the fundamental concepts in
an operating system and design principles that is applicable to a variety of
distributed operating system.

UNIT I   **12 Hrs**

INTRODUCTION: **COMPUTER SYSTEM STRUCTURES:**
Computer-System Operation – Storage Hierarchy – General System Architecture
– **OPERATING SYSTEM STRUCTURES:** System Components – System Calls
- VirtualMachines – System Generation.

UNIT II   **12 Hrs**

PROCESS MANAGEMENT: Processes – Process Concept – Operation on
Processes – Inter-Process Communication.**CPU SCHEDULING:** Basic Concepts –
Scheduling Algorithms – Real Time Scheduling - Process Synchronization –
Background – Crtical - Selection Problem – Semaphores - Deadlocks – System
Model – Methods for Handling Deadlocks – Deadlock Avoidance – Recovery from
Deadlock.

UNIT III   **12 Hrs**

DISRIBUTED COMPUTING SYSTEM: Evolution - Models -
Distributed Operating System - Issues in Designing DOS - Distributed Computing Env
ironment. **COMMUNICATION IN DISTRIBUTEDSYSTEM:** Protocols -
Features of Good Message Passing System - Issues in IPC by Message Passing -
Synchronization-Buffering - Process Addressing - Failure Handling - Group
Communication.

UNIT IV   **12 Hrs**

SYNCHRONIZATION: Clock Synchronization – EventOrdering -
Mutual Exclusion-Deadlock - Election Algorithms.**PROCESS
MANAGEMENT:** Process Migration - Threads.

UNIT V   **12 Hrs**

SECURITY: Potential Attacks to Computer Systems – Cryptography –
Authentication - Access Control - Digital Signatures- Design Principles.**INTER
PROCESS COMMUNICATION:** Process Tracing - System VIPC - Sockets.
MULTI PROCESSOR SYSTEMS: Problem of Multiprocessor Systems - Solution
with Master and Slave Processors - Solution with Semaphores.

Text Books:

1. Abraham Silberschatz and Peter Baer Galvin, "Operating System Concepts", 4th Ed., Addison Wesley., New York, 1999. Unit I & II

2. Pradeep K. Sinha, "Distributed Operating Systems Concepts and Design", Prentice Hall, New Delhi,2004.

   Unit III, IV & V

Reference Books:

Andrew S Tanaenbaum, "Modern Operating Systems", PHI, New Delhi, 1997.

I M.Sc(CS)		PCSP101T
SEMESTER – I	**ADVANCED JAVA PROGRAMMING**	**HRS/WK – 5**
CORE		
PRACTICAL - 1		**CREDIT – 3**

Objectives:

❖ This provides an in-depth knowledge of Advanced Java language and programming
❖ Gain an in-depth understanding of database programming in Java using JDBC.
❖ Learn how to do distributed programming in Java using RMI and CORBA.

1. Write a java program to find area perimeter using BufferedReader class.
2. Write a java program to implement Multithreading concepts.
3. Write a java program to implement an application for File Stream using Sequential file.
4. Write a program to print the port, protocol, host, and file name from the given URL.
5. Write a program to implement Client and Server application using TCP/IP.
6. Write a program to display the IP Address of a given Host Machine.
7. Write a program for Remote Command Execution using TCP/IP.
8. Write a program for Storing and Retrieving Email Addresses using JDBC.
9. Write a program to print student details using JDBC.
10. Working with Frames and Various Controls.
11. Incorporating Graphics
12. Font animation using Applets Interface.
13. Write a program to implement addition operation using RMI.

I M.Sc(CS)		PCSP102S
SEMESTER – I	**ADVANCED UNIX PROGRAMMING**	HRS/WK – 5
CORE		CREDIT – 3
PRACTICAL – 2		

1. Write a shell script to copy, rename and print multiple files using choice menus.

2. Write a shell script to display logged in users who are using high CPU percentage.

3. Write a shell script to list processes based on CPU percentage and memory un usage.

4. Write a shell script to display total used and free memory space.

5. Write a shell script that takes as command-line input a number n and a word. The

program should then print the word n times, one word per line.

6. Write a shell scripts using the following statements.

        a) While-loop

        b) For-loop

        c) If-then-else

        d) Switch

7. Write a shell script using grep statement.

8. Write a shell script that can search all immediate sub-directories of the current directory

for a given file and then quit if it finds one.

I M.Sc(CS)		PCS806S
SEMESTER – II	SOFTWARE TESTING	HRS/WK – 4
CORE -5		CREDIT – 3

Objectives:
- ❖ To enable the students to learn the fundamentals of Software Planning and Testing.

UNIT-I: Introduction: Purpose of Software Testing- Is Complete Testing Possible- The Consequence of Bugs -Taxonomy of Bugs.

UNIT-II : Principles of Testing: Software Development Life Cycle Models-Phases of Software Project - Quality – Assurance – Control –Testing - Verification- Life Cycle Model - Waterfall Model - Rapid Application Development Models - Spiral Model-V Model.

UNIT- III: Types of Testing: White Box Testing-Static Testing-Structural Testing-Black Box Testing-Integration Testing- Phase of Testing- Scenario Testing-Defect Bash-System and Acceptance Testing –Functional System Testing-Non Functional Testing-Regression Testing-Internalization testing-Ad hoc testing.

UNIT-IV: Test of Object Oriented Systems: Usability and Accessibility Testing-Approach-Quality Factors-Tools for Usability-Test roles for usability-Common People issues-Comparison between Testing and Development Functions-Role of Echo system.

UNIT-V: Organizations Structures for Testing Teams: Dimension-Structure-Single Product Company - Multi product companies - Effects of Globalization - Testing service Organization-Test Management and Automation -Test planning -Test Process-Test Reporting-Best Practices.

Text Books:

1. Srinivasan Desikan , Gopalswamy Ramesh ,"Software Testing Principles and Practices"-2006 Edition, Pearson Education.

 2. Brain Marik ,"The Craft of Software testing including Object Based and Object-Oriented Testing", Prentice-Hall,1195.

 Reference Books:

   1. Cem Kaner, James Bach- "Lessons Learned in software testing".

I M.Sc(CS)		PCS807S
SEMESTER – II	DOT NET TECHNOLOGY	HRS/WK – 4
CORE – 6		CREDIT – 4

Objectives:
 ❖ To enable the students to learn the fundamentals of .NET, .Net Framework and C#.

UNIT - I: (10 Hrs)
Introduction to DotNet Technology – Dot Net Framework Overview – Activities of CLR –
DotNet Applications – Introduction to Visual Studio IDE – Types of Dotnet Languages.

UNIT - II: (12 Hrs)
INTRODUCTION TO C# : Introduction to C# - data types in C# - conditional statement,
if…else – looping statement, while…/for loop – properties in C# - namespaces in C#.

UNIT - III: (13 Hrs)
INTRODUCTION TO ASP.NET : Introduction to ASP.NET – architecture of ASP.NET –
difference between asp and ASP.NET – page events in ASP.NET – controls in ASP.NET(server
side controls and html controls) – the code behind web forms (separation of content & business
logic) – life cycle of a web forms page – stages in web forms page – web forms event model.

UNIT - IV: (12 Hrs)
INTRODUCTION TO ADO.NET : Introduction to ADO.net –ADO.net Architecture –
Connection – data reader – command Class.

UNIT - V: (13 Hrs)
DISCONNECTED ARCHITECTURE IN ADO.NET : Key components of ADO.net

disconnected –DataSet class– DataAdapter class – Working with data grids in ASP.NET - with

ADO.net

Text Books:
1. E. Balagurusamy, "Programming in C#"- Tata Mc Graw Hill, 2002.
2. Chris Ullman, John Kauffman – "Beginning ASP.NET 1.1 with VB.NET 2003"- Wrox
   Publication.
3. Alex Homer, Dave Sussman – "Professional ASP.NET 1.1" – Wrox Publication.
4. Crouch – "ASP.NET and VB.NET web programming" – Pearson Education.
5. Greg Buczek – "ASP.NET Developer's Guide" – Tata McGraw Hill 2002.

Reference Books:
1. Deitel and Deitel – "Internet & World Wide Web how to program" – PHI, 2003.
2. Andrew Troelsen – "C# and the .NET platform" – A Press, 2001.
3. Justin Couch, Daniel H. Steinberg – "J2EE Bible" – Wiley India (P) Ltd., New Delhi 2002.

II-MSC (CS)	MULTIMEDIA AND WEB GRAPHICS	PCS808T
SEMESTER – II		HRS/WK – 4
CORE-7		CREDIT – 3

Objectives:
- ❖ The purpose of the course is to learn the basic concepts on graphics in Web
- ❖ To understand the application of graphics in Web and Multimedia
- ❖ To know the needs and various types of web graphics tools

Unit – I   **(10 Hrs)**
Introduction: HTML Coding – Definition and Introduction to Multimedia – Introduction to Making Multimedia: Need of Multimedia - Basic Web Graphics – Web Page Design – Site building – Image Maps – Adding Multimedia to the Web.

Unit – II   **(12 Hrs)**
Print Sharp Pro/Photoshop: Making still Images – Color –Image Basics – Image file formats – File Formats – GIF – JPEG – Color Palette – Layers – Creating new Images – Brushes – Grids – Scaling Images – Moving and Merging layer – Tool Pality – Skin Capturing – Gray – Using Style Palette – Animation.

Unit – III   **(13 Hrs)**
Image Handling: Scanning images – adding text to the images – Designing icons – Creating background images – Color models – Color Depths – Color Calibration – Creating Gradians – Oil paint effect.

Unit – IV   **(13 Hrs)**
Animation: Creating Clipping- Animation with sound effect – audio or video – Window's M.P activates control – Agent Control – Embedding VRML in a web page – Real player activates control.

Unit – V   **(12 Hrs)**
Planning and Costing: Project planning – Estimating – RFPs and Bid Proposals - Designing – Producing.**Applications:** Creating Website with a particular theme using all the utilities-Graphics – Animations and Interactions.

Text Books:
1. Tay Vaughan – "Multimedia Making it Work" - McGraw Hill, 1994,Sixth Edition-2004,Seventh Edition-2008.
2. Photoshop 6 Visual jump start, Adobe +2000 – Richard Schrand.
   Flash 5.0 graphics, Animation and Interaction, Macrome

I M.Sc(CS)		PCS809S
SEMESTER – II	**INTERNET PROGRAMMING**	HRS/WK – 4
CORE – 8		CREDIT – 3

Objectives:
- ❖ To enable the students to learn the principles of Internet programming.
- ❖ To Gain knowledge in Internet basics and XML
- ❖ To Understand Java Script and PHP programming.

UNIT – I: (12 Hrs)
BASICS OF INTERNET COMMUNICATION : Hardware elements associated with internet - Internet Services - Internet Protocols – TCP/IP, UDP, HTTP – Other Protocols – Telnet - Gopher- Mail and its types- FTP - Remote access - Web Indices – Search Engines.

UNIT – II: (12 Hrs)
INTRODUCTION TO HTML : Tags and Documents - Link documents using Anchor Tags – Images and Pictures – Tables – HTML Forms - Frames – Framesets.

UNIT – III: (12 Hrs)
INTRODUCTION TO SCRIPTING : Java Script – Data types – Operators – Variables – Conditional Statements – Functions – Objects – Document object– Window Object – Event Handling .

UNIT – IV: (11 Hrs)
INTRODUCTION TO XML : Well formed XML – CSS – XSL - Valid XML – DTD – XSD - Introduction to DOM and SAX Parsers.

UNIT – V: (13 Hrs)
INTRODUCTION TO DYNAMIC WEB APPLICATIONS: Server Side Scripting basics – Server Side Scripting Languages – PHP Scripting - General Syntactic Characteristics – Primitives, operations and expressions – Control Statement – Arrays – Functions – Pattern Matching – Form Handling – Files – Cookies – Session Tracking – Database access with PHP and MYSQL.

Text Books:
1. Deitel & Deitel - "Internet and WWW – How to program? Pearson Education, 2005 (Units I, II and III)
2. Robert W Sebesta – "Programming the WWW" -Pearson Education (Unit V)
3. David Hunter Et al – "Beginning XML" - Wrox Publications 2000. (Unit IV)

Reference Books:
1. Daniel C. Lynch, Marshall T. Rose -"Internet Systems Handbook", Addison Wesley 1993.
2. Peter Kent - "10 Minute Guide to the Internet" - Prentice Hall of India, 1996.
3. Scott Mitchell and James Atkinson - "Teach Yourself XML in 21 days"- Sams Publishing, 1999.

4. Douglas E.Comer, David L.Stevens-"Internetworking with TCP/IP"-Second Edition-2007.

I M.Sc(CS)		EPCS810A
SEMESTER – II	**DISTRIBUTED COMPUTING**	HRS/WK – 4
ELECTIVE – 2A		CREDIT – 3

Objective:
- ❖ To enable the student to be familiar with distributed system s and client server computing.
- ❖ To provide a clear description of the fundamental concepts and design principles that is applicable to a variety of distributed operating systems.

UNIT - I: (10 Hrs)
INTRODUCTION TO DISTRIBUTED SYSTEMS: Introduction – Goals - Hardware concept – Software Concepts – Design Issues: Transparency – Flexibility – Reliability – Performance – Scalability.

UNIT - II: (12 Hrs)
COMMUNICATION IN DISTRIBUTED SYSTEMS: The client –server model –Addressing – Types of Primitives – Implementation – Group communication – Introduction –Design Issues – Group communication in ISIS.

UNIT - III: (14 Hrs)
SYNCHRONIZATION IN DISTRIBUTED SYSTEMS: Clock Synchronization – Mutual Exclusion -Election Algorithms –Atomic Transactions- Deadlocks.

UNIT - IV: (12 Hrs)
PROCESSES AND PROCESSORS : Processes and Processors in Distributed Systems – Threads – Processor Allocation – scheduling – Fault Tolerance. Distributed File system – Design – Implementation – Trends in Distributed File systems.

UNIT - V: (12 Hrs)
DISTRIBUTED SHARED MEMORY : Introduction – shared memory – consistency models – page – based distributed shared memory.

Text Book(s):
1. Andrew S. Tanenbaum – "Modern Operating Systems" - Prentice Hall of India Pvt. Limited.
2. John A. Sharp - "An Introduction to Distributed and Parallel Processing" - Blackwell Scientific Publications, 1987.

Reference Book(s):
 1. Stefans Ceri, Ginseppe Pelagatti - "Distributed Databases Principles and systems" - McGraw Hill Book Co., New York, 1985.
2. George Coulouries & others - "Distributed systems :concepts & Design" ,Fourth edition(2009),Second Edition(2000),Pearson education Pvt. ltd.,

I M.Sc(CS)		EPCS810B
SEMESTER – II	**FUZZY LOGIC**	HRS/WK – 4
ELECTIVE – 2B		CREDIT – 3

Objective:
- ❖ This course presents a detailed knowledge of Fuzzy logic principles, systems and its applications.
- ❖ Fuzzy sets and representations.
- ❖ Fuzzy relations and logic.
- ❖ Fuzzy systems and applications.

UNIT - I   **(12 Hrs)**
INTRODUCTION: Crisp sets: an overview - Basic types of fuzzy sets - Basic Concepts of fuzzy sets-Characteristics and Significance - Fuzzy sets Vs Crisp sets - Additional properties of Alpha Cuts - Representation of Fuzzy sets - Extension principle for Fuzzy sets - Operations on Fuzzy Sets - types of operations- Fuzzy compliments, Union, Intersection - Combination of Operations - Aggregation Operations- Fuzzy Arithmetic - Fuzzy numbers - Linguistic variables - Arithmetic Operation on Intervals And Fuzzy numbers - Lattice of Fuzzy numbers - Fuzzy Equation.

UNIT – II   **(12 Hrs)**
FUZZY RELATION: Fuzzy Relation - Crisp & Fuzzy Relations - Projections & Cylindric Extensions - Binary Fuzzy Relations - Binary Relations on a Single Set - Fuzzy Equivalence Relations - Fuzzy Compatibility Relations - Fuzzy Ordering Relations - Fuzzy Morphisms - Compositions of Fuzzy Relation - Fuzzy Relation Equations - General Discussion - Problem Partitioning - Solution Method - Fuzzy Relation Equation Based on Sup_i&Inf_i Completions - Approximate Solutions - The use of Neural Networks - Possibility Theory - Fuzzy Measures - Evidence Theory - Possibility Theory - Fuzzy Sets & Possibility Theory - Possibility Theory Vs Probability Theory.

UNIT – III   **(13 Hrs)**
FUZZY LOGIC: Fuzzy Logic - Classical logic - Multi valued Logic - Fuzzy Propositions & Quantifiers - Linguistic Hedges - Inference from Conditional Fuzzy Propositions - Inference from Conditional & Qualified Propositions - Inference from Quantified Propositions - Uncertainty Based Information - Information & Uncertainty - Non specificity of Crisp Sets & Fuzzy sets- Fuzziness of Fuzzy sets - Uncertainty in Evidence Theory - Uncertainty Measures - Principles of Uncertainty - Approximate Reasoning - Fuzzy Expert Systems - Fuzzy Implication & Its selections - Multi conditional Approximate Reasoning - The Role of Fuzzy Relation Equations - Interval Valued Approximate Reasoning.

UNIT – IV   **(12 Hrs)**
FUZZY SYSTEMS: Fuzzy Systems - General Discussion - Overview of Fuzzy Controllers and Example - Fuzzy systems & Neural Networks - Fuzzy Neural Networks - Fuzzy Automata - Fuzzy Dynamic Systems - Pattern Recognition - Introduction - Fuzzy clustering - Fuzzy Pattern Recognition - fuzzy Image Processing-Fuzzy Databases & Information Retrieval Systems - General Discussion - Fuzzy Databases -Fuzzy Information Retrieval.

UNIT – V   **(11 Hrs)**
APPLICATIONS: Engineering & Other applications - Introduction - Civil Engineering - Mechanical Engineering - Industrial Engineering - Computer Science Engineering - Reliability Theory - Robotics - Medicine - Economics - Decision Making - Fuzzy Systems & Genetic Algorithms - Fuzzy Regression - Interpersonal Communication.

Text Books:
1. George J. Klir & Bo Yuan, "Fuzzy Sets and Fuzzy Logic Theory and Applications.

Reference Book(s):
1. George J. Klir & Tina A. Folger, "Fuzzy Sets Uncertainty & Information", PHI, 2001.
2. J.S.R.Jang, C.T.Sun, E.Mizutani, "Neuro - Fuzzy and Soft Computing ", PHI, 2003.

I M.Sc(CS)		EPCS810C
SEMESTER – II	**GRID COMPUTING**	HRS/WK – 4
ELECTIVE – 2C		CREDIT – 3

Objective:

　　To impart knowledge related to the various concepts, methods of Grid computing with grid benefits, components, and standards support grid computing techniques.

UNIT I   **[12 Hrs]**

Introduction: Grid Computing & Key Issues-Applications-Other Approaches-Grid Computing Standards-Grid Topology-Component s& Layers-Pragmatic Course of Investigation.

UNIT II   **[12 Hrs]**

Goal Benefits & Status of Technology: Motivations-History of Computing, Communications and Grid Computing –Grid Computing Prime Time-Suppliers and Vendors-Economic Value-Challenges

UNIT III   **[12 Hrs]**

Components of Grid Computing Systems & Architecture: Basic Constituent Elements-A Functional view-A Physical View-Service View.

UNIT IV   **[12 Hrs]**

Grid Computing Standards-OGSI: Standardization-Architectural Constructs-Practical view-OGSA/OGSI Service Elements and Layered Model-More Detailed View.

UNIT V   **[12 Hrs]**

Standards Supporting Grid Computing-OGSA: Functionality Requirements-OGSA Service Taxonomy-Service Relationships-OGSA Services-Security Considerations.

Text Books:

1. "**A Networking Approach to Grid Computing**" -Daniel Minoli-Wiley publications-2004

Reference Books:

1. "**Grid Computing-A practical Guide to Technology & Applications**"-Ahmar Abbas-

Charles River Media Publications-2004

I M.Sc (CS)		PCSP203S
SEMESTER – II	**DOT NET LAB**	HRS/WK – 5
CORE		CREDIT - 3
PRACTICAL – 3		

Objectives:
- ❖ To enable the student to build applications in DOT NET Languages

C#.NET
1. Splash Screen
2. Notepad Application
3. Student Marksheet program and msaccess.
4. Login Form Creation program and msaccess

ASP.NET

5. Creating Student Bio-Data.
6. Request and Response Application using C# and msaccess.
7. Chatting using application and session object.
8. Application using Adrotator Control.
9. File uploading and downloading using server object.
10. Telephone Record maintenance and msaccess.

I M.Sc(CS)		PCSP204
SEMESTER – II	**INTERNET PROGRAMMING LAB**	HRS/WK – 5
CORE		CREDIT – 3
PRACTICAL - 4		

Objectives:

❖ To develop applications using HTML, XML and PHP.

1. Create a HTML table with rows and columns and split them using Rowspan and Colspan.
2. Create a web page in the format of front page of a news paper using Text links. Align the text with colors.
3. Write a HTML program for new email account registration. Validate the input using Java Script.
4. Write an XML document to display your bio-data. Write an XSL style sheet and attach that to the XML document. Validate the document using DTD or XSD.
5. Write a server side PHP program that displays marks, total, grade of a student in tabular format by accepting user inputs for name, number and marks from a HTML form.
6. Write a PHP program to access the data stored in a mysql table.

II M.Sc (CS)	DATA MINING AND WAREHOUSING	PCS911
SEMESTER – III		HRS/WK – 4
CORE – 9	For the students admitted from the year 2008	CREDIT – 3

Objective:
  ❖ This course enable us to understand the concepts of Data Warehousing and Data Mining
     And its applications.
Unit I: **(10 Hrs)**
Data Mining Introduction:
Data mining –Introduction-classification of data mining system-Data mining Vs Data base-
Application of data mining-Data mining functionalities-Integration of data mining system with
the data warehouse system.
Unit II: **(12 Hrs)**
Knowledge Discovery Process: Knowledge Discovery process-Data cleaning: missing values-
noisy data-data cleaning as a process-Data Integration and Transformation-Data Reduction-
Types of OLAP servers: ROLAP Vs MOLAP Vs
HOLAP- Decision trees- Neural network- Genetics algorithms.
Unit III: **(13 Hrs)**
Data Warehouse Architecture: Steps for the design and construction of data warehouses-A
three tier data warehouse architecture –data warehouse back-End Tools and utilities-metadata
repository-From data warehousing to data mining-From online analytical processing to online
analytical mining-Data warehouse implementation-Efficient computation of data cubes.
Unit IV: **(13 Hrs)**
Classification and Prediction: Bayesian classification- Baye's theorem-
Rule based classification: Using IF-THEN rules for classification-Rule Extraction
from a decision tree-Prediction-Cluster Analysis-Types of data in cluster analysis.
Unit V: **(12 Hrs)**
Planning : Data warehouse scoping and planning –Testing and implementation of data
warehouse – Advantages of Data warehousing –Disadvantages of data warehousing.
Text Books:
1. DATA MINING Concepts And Techniques- Jiawei Han and Micheline Kamber [second
edition]

Reference Books :
1. Pieter Adrians , Dolf Zantiage "Data Mining ",Addison Wesley,1996

2. Sam Anahory,Dennis Murrey,"Data Warehousing in the real world",Addison
    Wesley, 1996.

3. C.S.R Prabhu- "Data Warehousing-Concepts, Techniques, Products & Applications"-2002.

II M.SC (CS)	OPEN SOURCE TECHNOLOGY	PCS912T
SEMESTER – III	For the students admitted from the year 2014	HRS/WK – 4
CORE – 10		CREDIT - 4

Objectives:

❖ This course provides an in-depth knowledge in PHP and MYSQL.

UNIT I

INTRODUCTION: PHP as Open Source – First Script – Beginning and Ending a block – comments in PHP – variables – Data types – Operators and Expressions – Constants- Using PHP Script with HTML.

UNIT II

CONTROL STATEMENTS: Branching and Looping Statements – Break and Continue statements – Nested Loops.

FUNCTIONS: Defining functions – calling functions – user defined functions – variable scope.

ARRAYS: Creating Arrays – Associative arrays – Multidimensional arrays – accessing arrays – manipulating arrays – sorting arrays.

UNIT III

PHP FUNCTIONS: I/O Functions – Data Functions – Time, Date and Mathematical Functions – Database functions.

UNIT IV:

MySQL: Understanding RDBMS – Working with Databases and Tables – Editing Records and Performing Queries – MySQL Access Controls.

UNIT V:

USING PHP WITH MySQL: Querying a MySQL Database with PHP – Validating User Input – Formatting Query Output.

Text Books:
1. Core PHP Programming – Leo Atkinson – II Edition – PHI Edition
2. PHP and MySQL – Vikram Vaswami – Mc Graw Hill

Reference Books:
1. MySQL/PHP Database Applications – Brad Bulger, Jay Greenspan, David Wall – Second Edition – Wiley Publication.

2. Teach yourself PHP within 24 Hours – SAMS Publication.

II M.SC (CS)		PCS913Q
SEMESTER – III	CLOUD COMPUTING	HRS/WK – 4
CORE – 11		CREDIT - 3

Objective
To impart the basic concepts of Cloud Computing and its applications.

Unit I (12 Hrs)
INTRODUCTION TO CLOUD COMPUTING: Roots of Cloud Computing -Layers and Types of Cloud - Features of a Cloud - Infrastructure Management- Cloud Services - Challenges and Risks - Migrating into a Cloud: Introduction - Broad Approaches - Seven Step Model - Integration as a\Service - Integration Methodologies - SaaS.

Unit II (12 Hrs)

INFRASTRUCTURE AS A SERVICE: Virtual Machines - Layered Architecture - Life Cycle - VM Provisioning Process - Provisioning and Migration Services - Management of Virtual Machines Infrastructure - Scheduling Techniques - Cluster as a Service - RVWS Design - Logical Design - Cloud Storage – Data Security in Cloud Storage - Technologies.

Unit III (12 Hrs)

PLATFORM AND SOFTWARE AS A SERVICE: Integration of Public and Private Cloud - Techniques and Tools - Framework Architecture –Resource Provisioning Services - Hybrid Cloud - Cloud Based Solutions for Business Applications - Dynamic ICT Services - Importance of Quality and Security in Clouds - Dynamic Data Center - Case Studies - Workflow Engine in the Cloud - Architecture - Utilization - Scientific Applications for Cloud – Issues - Classification - SAGA - Map Reduce Implementation.

Unit IV (12 Hrs)

MONITORING AND MANAGEMENT: An Architecture for Federated Cloud Computing - Use Case - Principles - Model - Security Considerations – SLA Management - Traditional Approaches to SLO - Types of SLA - Life Cycle of SLA - Automated Policy - Performance Prediction of HPC - Grid and Cloud - HPC Performance Related Issues.

Unit V (12 Hrs)
APPLICATIONS: Best Practices in Architecting Cloud Applications in the AWS Cloud - Massively Multilayer Online Game Hosting on Cloud Resources - Building Content Delivery Networks using Clouds – Resource cloud Mashups

Textbooks
1. Rajkumar Buyya, James Broberg and Andrzej Goscinski, "CloudComputing Principles and Paradigms", Wiley Publications, 2011

Books for Reference

1. George Reese, "Cloud Application Architectures", Shroff O'reilly, ISBN: 8184047142, 2009.
2. Michael Miller, "Cloud Computing Web Based Applications that change the way you work and collaborate online", Pearson Education, 2009.

II M.SC (CS)	PRINCIPLES OF COMPILER DESIGN	EPCS914T
SEMESTER – III	For the students admitted in the year 2015	HRS/WK – 4
ELECTIVE – 3A		CREDIT - 3

Objectives:

❖ To understand the various phases of a compiler and to develop skills in designing a compiler.

UNIT I:

Compiler - Phases of Compiler – Lexical Analysis – Role of Lexical analyzer – Finite Automata – Regular Expression – From a Regular expression to an NFA , NFA to DFA – Design of Lexical Analyzer.

UNIT II :

Syntax Analyzer – CFG – Role of the Parser – CFG – Top Down Parsing – Recursive descent parsing, predictive Parsers – Bottom up Parsing – Shift reduce, operator precedence parsers.

UNIT III:

Syntax directed definition :- Construction of Syntax trees – Intermediate code generation – Intermediate Languages – Syntax trees, post fix form, Three address code – Boolean expressions.

UNIT IV:

Symbol table – contents of Symbol table – Implementation of Stack allocation scheme – Storage allocation.

UNIT V:

Code Optimization and code generation – principles sources of optimization – loop optimization – Dag Representation of Basic blocks.

Code generation – simple code generator .

Text Books

1. Compilers Principles ,Techniques and Tools Alfred V.Aho, Ravi Sethi, Jeffrey D.Ullman.

   Chapter 1 : (1.1,1.3), Chapter 3: (3.1,3.6,3.7,3.9), Chapter 4: (4.1,4.2,4.4 – 4.6),

   Chapter 5: (5.1,5.2), Chapter 7: (7.5), Chapter 8: (8.1,8.4)

2. Principles of Compiler Design Alfred V.Aho and Jeffrey D.Ullman.

   Chapter 9: (9.1,9.2), Chapter 10: (10.1,10.2,10.3),
   Chapter 12: (12.1,12.2,12.3), Chapter 15: (15.2,15.4,15.5,15.7)

II M.SC (CS)	MOBILE COMPUTING	EPCS914S
SEMESTER – III		HRS/WK – 4
ELECTIVE – 3B		CREDIT – 3

Objectives:
- ❖ To provide basics for various techniques in Mobile Communications.
- ❖ To build working knowledge on various telephone and satellite networks.
- ❖ To study the working principles of wireless LAN and its standards.
- ❖ To build skills in working with Wireless application Protocols to develop mobile content applications.

UNIT I (12 Hrs)
INTRODUCTION: Mobile and Wireless Devices-Simplified Reference Model-Need For Computing- Multiplexing-Spread Spectrum and Cellular Systems-Medium Access Control-Comparisons.

UNIT II (12 Hrs)
TELECOMMUNICATION SYSTEMS: Telecommunication systems – GSM – Architecture-Protocols- Hand Over and Security – Satellite Networks **-** Satellite Systems.

UNIT III (13 Hrs)
WIRLESS LAN: IEEE 802.11– System Architecture – Protocol Architecture – Blue Tooth – MAC layer –Security and Link Management.

UNIT IV (12 Hrs)
MOBILE IP: Goals– Packet Delivery– Agent Advertisement and Solicitation - Registration-Tunneling and Reverse Tunneling.

UNIT V (11 Hrs)
WIRELESS APPLICATION PROTOCOL: Objectives of WAP– Architecture of WAP– WML Features-WML Script.

Text Book:
1. Jochen Schiller, "Mobile Communications", PHI/Pearson Education, 2/e.Delhi,2000.

Reference Book(s):
1. Sandeep Singhal,Thomas Bridgman,Lalitha Suryanarayana, Danil Mouney, Jari Alvinen, David Bevis, Jim Chan and Stetan Hild, "The Wireless Application Protocol: Writing Applications for the Mobile internet", Pearson Education Delhi,2001.
2. Asoke K Talukder, Roopa R Yavagal, "Mobile Computing",TMG,2006.

II M.Sc (C.S)	DIGITAL IMAGE PROCESSING	EPCS914A
SEMESTER –III		HRS/WK-4
Elective – 3C		CREDIT-3

Objectives:
Digital image Processing is an area which is ever growing in the research side. This paper intends to improve the student's perspective on research side with an eye opener on Digital image processing.

UNIT – I   **[10 HRS]**
Introduction : Examples of fields that use digital image processing, fundamental steps in digital image processing, components of image processing system.. Digital Image Fundamentals: A simple image formation model, image sampling and quantization, basic relationships between pixels (p.nos. 15-17, 21- 44, 50-69).

UNIT-II   **[14 HRS]**
Image enhancement in the spatial domain : Basic gray-level transformation, histogram processing, enhancement using arithmetic and logic operators, basic spatial filtering, smoothing and sharpening. (p.nos76-141).

UNIT-III   **[12 HRS]**
Image restoration: A model of the image degradation/restoration process, noise models, restoration in the presence of noise–only spatial filtering, Weiner filtering.
UNIT-IV
 Geometric transforms : Introduction to the Fourier transform and the frequency domain, estimating the degradation function (p.nos147-167,220-243,256-276).
                                                          [12 HRS]

UNIT-V
Image Compression : Fundamentals, image compression models, error-free compression. (p.nos: 409-467,492-510).
                                                          [12 HRS]

Text Books:
Rafeal C.Gonzalez, Richard E.Woods, Digital Image Processing, , Second Edition, Pearson Education/PHI.

Reference Books:
1. Milan Sonka, Vaclav Hlavac and Roger Boyle, Image Processing, Analysis, and Machine Vision, Second Edition, Thomson Learning.
2. Adrian Low, Computer Vision and Image Processing, Second Edition, B.S.Publications.
3. William K. Prat ,Digital Image Processing, , Wily Third Edition.
4. Chanda, D. Datta Majumder , Digital Image Processing and Analysis, , Prentice Hall of India, 2003.

II-MSC (CS)	WEB GRAPHICS	EPCS915T
SEMESTER – III		HRS/WK – 4
Elective – 4A		CREDIT - 3

Objectives:
- ❖ The purpose of the course is to learn the basic concepts on web in graphics
- ❖ To understand the importance of graphics
- ❖ To know the needs and various types of web graphics tools

Unit – I   **(11 Hrs)**
Introduction: HTML Coding – Basic Web Graphics – Web Page Design – Site building – Image Maps – Adding Multimedia to the Web.

Unit – II   **(12 Hrs)**
Print Sharp Pro/Photoshop: Introduction – Image Basics – File Formats – GIF – JPEG – Color Palette – Layers – Creating new Images – Brushes – Grids – Scaling Images – Moving and Merging layer – Tool Pality – Skin Capturing – Gray – Using Style Palette – Animation.

Unit – III   **(13 Hrs)**
Image Handling: Scanning images – adding text to the images – Designing icons – Creating background images – Color models – Color Depths – Color Calibration – Creating Gradians – Oil paint effect.

Unit – IV   **(13 Hrs)**
Multimedia: Creating Clipping- Animation with sound effect – audio or video – Window's M.P activates control – Agent Control – Embedding VRML in a web page – Real player activates control.

Unit – V   **(12 Hrs)**
Applications: Creating Website with a particular theme using all the utilities- Graphics – Animations and Interactions.

Reference Text Books:
3. Photoshop 6 Visual jump start, Adobe +2000 – Richard Schrand.
4. Flash 5.0 graphics, Animation and Interaction, Macromedia 2000 – James L Mohles.

II M.Sc (C.S)	NETWORK SECURITY	EPCS915A
SEMESTER –III		HRS/WK-4
Elective – 4B	For the students admitted in the year 2008	CREDIT-3

Objectives:
  ❖ This course provides a way to understand the various security techniques in networks.

UNIT I   **(10 Hrs)**
CONVENTIONAL AND MODERN ENCRYPTION : Services - Attacks - Steganography -
Classical Encryption Techniques - SDES - DES - Differential and Linear Cryptanalysis - Modes
of operation - Encryption Algorithms - Triple DES - Blowfish - CAST128 - RC5 - Traffic
Confidentiality.

UNIT II   **(11 Hrs)**
PUBLIC KEY ENCRYPTION : Uniqueness - Number Theory concepts - Primality - Modular
Arithmetic - Fermet & Euler Theorem - Euclid Algorithm - RSA - Elliptic Curve Cryptography -
Diffie Hellman Key Exchange.

UNIT III   **(13 Hrs)**
AUTHENTICATION: Digests - Requirements - MAC - Hash function - Security of Hash and
MAC - Birthday Attack - MD5 - SHA - RIPEMD - Digital Signature Standard - Proof of DSS.

UNIT IV   **(14 Hrs)**
SECURITY PRACTICE : Authentication applications - Kerberos - Kerberos Encryption
Techniques - PGP - Radix64 - IP Security Architecture - Payload - Key management - Web
security requirements - SSL - TLS – SET.

UNIT V   **(12 Hrs)**
SYSTEM SECURITY : Resources - Intruders and Intrusion - Viruses and Worms - OS Security -
Firewalls - Design Principles - Packet Filtering - Application gateways - Trusted systems -
Counter Measures.

Text Books:

1.William Stallings, "Cryptography & Network Security", Pearson Education, 3rd Edition 2003.

Reference Books:

1. Charlie Kaufman, Radia Perlman, Mike Speciner, "Network Security, Private communication in a public world", PHI, 2nd edition, 2002.
2. Douglas R.Stinson, "Cryptography - Theory and Practice ", CRC Press, 1995.
3. Bruce Schneier, Niels Ferguson, "Practical Cryptography", Wiley Dreamtech India Pvt. Ltd., 2003.

I M.Sc (C.S)		EPCS915B
SEMESTER –III	E –COMMERCE	HRS/WK-4
ELECTIVE – 4C		CREDIT-3

Objective:
Almost all Business that is done in this world is electronically. This paper deals with all issues pertaining to the E-Commerce and equips the students with almost all technical issues regarding E-Commerce.

Unit-1   **[12 HRS]**
Electronic commerce environment and opportunities: Background – the electronic commerce environment - electronic marketplace technologies – models of electronic commerce:Overview – electronic data interchange – migration to open EDI – electronic commerce with WWW/Internet – Commerce Net Advocacy – Web commerce going forward.

Unit-2   **[12 HRS]**
Approaches to safe electronic commerce: Overview – secure transport protocols – secure transactions – secure electronic payment protocol(SEPP) – Secure electronic transaction(SET) – certificates for authentication – security on web servers and enterprise networks – electronic cash and electronic payment schemes: Internet monetary payment and security requirements – payment and purchase order process – on-line electronic cash.

Unit-3   **[12 HRS]**
Internet/Intranet security issues and solutions: The need for computer security – specific intruder approaches – security strategies – security tools – encryption – enterprise networking and access to the internet – antivirus programs – security teams.

Unit-4   **[12 HRS]**
MasterCard/visa secure electronic transaction: Introduction – business requirements – concepts – payment processing – E-mail and secure E-mail technologies for electronic commerce: Introduction – The means of distribution A Model for message handling – how does E-mail work? – MIME: Multipurpose internet mail extensions – S/MIME: Secure multipurpose internet mail extensions – MOSS: Message object. Security services – Comparisons of security methods – MIME and related facilities for EDI over the internet.

Unit-5   **[12 HRS]**
Internet and web site establishment: Introduction – technologies for web servers – internet tools relevant to commerce – internet applications for commerce – internet charges – internet access and architecture – searching the internet – internet resources: A travelogue of web malls: Introduction – a shopping experience – a travelogue – applications: Advertising on the internet: Issues and technologies: Introduction – advertising on the web – "Marketing 101" – creating a web site.

Text Books:
1. Daniel Minoli and Emma Minoli. 1999. Web commerce technology handbook. Tata Mc Graw Hill.
2. Kamalesh K Bajaj and Debjani Nag. 1999. E-Commerce, the cutting edge of business. TataMc Graw Hill.
3. Janice Reynolds. 2004. The Complete E-Commerce Book: Design, Build & Maintain a Successful Web-based Business. Focal Press Publication.

Reference Books:
1. Kenneth C. Laudon, Carol Guercio Traver. 2001. E-commerce: Business, Technology, Society. Addison Wesley Publication.
2. Constance H. McLaren, Bruce J. McLaren. 1999. E-commerce: Business on the Internet South. Western Educational Publication.

II M.SC (CS)		PCSP305S
SEMESTER – III	**PHP & MYSQL**	HRS/WK – 5
CORE		CREDIT – 2
PRACTICAL - 5		

Objective:

❖ Gain an in-depth understanding of database programming in PHP using MySQL.

1. Multiplication Table.
2. Creating Bio-Data Using PHP and HTML.
3. Marksheet Preparation.
4. Shopping Cart.
5. Using Class and Objects.
6. Creating Feedback Form Using PHP Functions.
7. Shell Program in PHP to find User Session.
8. Cookie to Find the Visit of user in a Web page.
9. Connecting the MySQL Database with PHP.
10. Accessing Operations in MySQL DB using PHP.

II M.Sc (CS)		JPCS306
SEMESTER - III	MINIPROJECT	HRS/WK-3
CORE PRACTICAL-6		CREDIT – 2

Objective:

The main objective of this Mini project is to expose the students to get a broad idea to develop project.

II M.Sc (CS) SEMESTER –IV CORE PRACTICAL-7	MAIN PROJECT	JPCS1016 CREDIT-22

Objective:

The main objective of this Main project is to expose the student to industry atmosphere and help them to gain knowledge on software development.

FORMAT FOR PREPARING MINI & MAIN PROJECT REPORT

Arrangement of contents

1. Title Page
2. Bonafide Certificate
3. Acknowledgement
4. Table of contents
5. Abstract
6. Chapters of the Report
7. References
8. Appendices, if any

Appendices should be named as
        APPENDIX – A
        APPENDIX - B

BINDING SPECIFICATION
Report should be found using flexible cover of thick white Art Paper.
The Spine for the Bound volume should be of black calico of 2cms width.
The Cover should be printed in Block letters.

MARGIN SPECIFICATION
        Top   : 4   cms
        Bottom : 3   cms
        Left   : 4.5 cms
        Top   : 2.5 cms

PAGE NUMBERING
All Page numbers should be typed without punctuation on the Bottom-Center Portion of the Page. The Preliminary pages (table of contents and abstract) should be numbered in Lowercase Roman Literals. Papers of main Text, starting with Chapter-1, Should be consecutively numbered using Arabic Numerals.

<u>TITLE PAGE</u>

<div align="center">

TITLE OF THE PROJECT

A project report

Submitted for the partial fulfillment for

the award of degree of

MASTER OF COMPUTER SCIENCE

By

STUDENT'S NAME

(Register Number)

Under the Guidance of

GUIDE'S NAME

COLLEGE ADDRESS

Month and year

</div>

CERTIFICATE

This is to certify that the mini project report entitled

TITLE OF THE PROJECT

being submitted to the St.Joseph's College of Arts and Science (Autonomous),Affiliated to

Thiruvalluvar University-Vellore.

By

Mr. / Ms. STUDENT'S NAME

For the partial Fulfillment for the award of degree of

MASTER OF COMPUTER SCIENCE

Is a Bonafide record of work carried out by him/her, under

my guidance and supervision.

Head of the Department   Internal Guide

Submitted for the viva-voce examination on---

Examiners:

1.

2.

THEORY EXAMINATION

Continuous Internal Assessment (CIA)   (25 marks)

Two Internal Examinations   15 marks
Assignment / Seminar   10 marks

Total   25 marks

External Examination (75 marks)

Question Pattern

M. Sc COMPUTER SCIENCE

Time: 3 Hours   Max. Marks: 75

Section – A (5 X 5 = 25)

(Answer any FIVE questions out of EIGHT)
(One question from each unit and three questions from important topics with problems and programs)

Section – B (5 X 10= 50)

(Answer any FIVE questions out of EIGHT)
(One question from each unit and three questions from important topics with problems and programs)

PRACTICAL EXAMINATION

Continuous Internal Assessment **(CIA) (40 marks)**

Based on the Periodical Evaluation of Record and Experiments Assessed by the Staff- Incharge

External Examination **(60 marks)**

3 Hrs. Exam

Total Marks: 60

Experiments	- 50 marks
Viva	- 5 marks
Record	- 5 marks

Total **- 60 marks**

MINI PROJECT

<u>Continuous Internal Assessment</u> (CIA) (40 marks)

Based on the Periodical Evaluation of Record and Experiments Assessed by the Staff- Incharge

External Examination (60 marks)

3 Hrs. Exam

Total Marks: 60

Experiments	- 50 marks
Viva	- 5 marks
Record	- 5 marks
Total	**- 60 marks**

MAIN PROJECT

Continuous Internal Assessment (CIA) (20 Marks)

Based on the Periodical Evaluation of Record and Experiments Assessed by the Staff- Incharge

External Examination (80 marks)

3 Hrs. Exam
Total Marks: 80

Total   **- 80 marks**