

**TEACHING AND EXAMINATION SCHEME FOR
M.Sc. Final Computer science**

Paper Name (Theory)	Lec.	Tut.	Exam. Hours	Max. Marks
MCS 201 CC++ and data structures	3	1	3	100
MCS 202 System Software and Compilers	3	1	3	100
MCS 203 Data Communications & Networking	3	1	3	100
MCS 204 Software Engineering	3	1	3	100
MCS 205 Computer Graphics	3	1	3	100
MCS 206 Project (Report, Viva-Voce)			3	100
Theory Optional:				
MCS 207 Web technology	3	1	3	100
OR				
MCS 208 Spatial database Management Systems	3	1	3	100

Paper Name (Practical)

MCS 201 CC++ and data structures				
MCS 202 System Software and Compilers			3	200
MCS 203 Data Communications & Networking				
MCS 204 Software Engineering				
MCS 205 Computer Graphics				
MCS 206 Project (Report, Viva-Voce)			3	100

Total of Theory 600
Total of Project 100
Total of Practicals 200

Grand Total (Theory + Practicals + Project) 900
Total Marks of M.Sc. Computer Science: 1800

M.Sc. COMPUTER SCINCE (FINAL)-2012
MCS 201 C ++ and Data Structures

Max. Marks: 100

Min. Marks: 36

Unit – 1

Object Oriented Programming concepts, encapsulation, inheritance, polymorphism, class Object, complexity, analysis, Big O notation.

Unit – 2

Constants variables, Data types, Operators, expression, managing I/O, operators decision, making and branching, loopmg array.

Unit – 3

Strings, functions, structure, pointers, virtual functions, constructors, destructors, recursion.

Unit – 4

Single linked lists, double linked list, circular list, sparse table, stack, queue, Deques list, priority queue, graph, spanning tree, shortest path, hashing.

Unit – 5

Tree, Binary Tree, Binary search tree, tree traversal, breadth – first, depth- first, insertion, deletion, AUL tree, Btree sorting, insertion, selection, bubble, decision tree, heap, shall, heap, quick, merge, sort, Radik sort.

Reference Books:

1. Object oriented Programming with C ++, E Balagurusamy, Tata McGraw Hill.
2. Data Structures and algorithms in C ++, Adam Drozdex, Vikas Publications.
3. Understanding Programming an introduction using C++, Scott R Canon, Vikas Publications.

MCS 202 SYSTEM SOFTWARE AND COMPLIERS

Max. Marks: 100

Min. Marks: 36

Unit – 1

Introduction to compiler, structure of compiler role of the lexical analyzer, design of lexical analyzers, regular expressions, expressions, context free grammar, parse tree.

Unit – 2

Parsers, shifts reduce, operators, pre-cascade, LR parser constructing SLR grammar, parse tree.

Unit – 3

Intermediate code, parse tree, syntax tree, tree address code, quadruples and triples, translation of assignment statements, symbol table.

Unit – 4

Evolution of the components of a programming system, machine language, assembly language, design of assembler, statement of problem, data stricter, format of databases, table processing searching, sorting.

Unit – 5

Macro instructions, features of macro facility, algorithms, macro calls, instruction for definition, two pass and single pass algorithms.

Reference:

1. Principles of complier design, Alfred V Aho & Jeffrey D Ullman, Addison Wesley.
2. System Programming Donovan.

MCS 203 DATA COMMUNICATION AND NETWORKS

Max. Marks: 100

Min. Marks: 36

Unit – 1

Introduction to Data communication and networking protocols, standards and architecture, topology, transmission mode, OSI modal, analog and of digital signals, periodic and a periodic signals, time and frequency domain, Fourier analysis concept.

Unit – 2

Encoding digital to digital conversion, analog to digital conversion, digital to analog conversion, transmission of digital data, DTE-DCE interface, EIA – 232, EIA-449, X-21, modern, guided and unguided, transmission media.

Unit – 3

Multiplexing TDM, FDM, WDM, DSL, HDLC, error classification, types of errors, error detection, error correction, virtual redundancy check.

Unit – 4

Asynchronous transfer mode, protocol architecture, ATM cells, ATM layers, switching, network and concepts, routing, packet switching, X 25, virtual circuit approach, point-to-point- layers, link control protocol, net-work control protocol.

Unit – 5

Introduction to ISDN, subscriber access to ISDN, ISDN layer, broadband ISDN, frame relay operation and layers, repeaters, bridges, gateway, routers, client-server model, bootstrap protocol, Telnet, FTP, hyper ext protocol.

Reference:

1. Data and Computer communication, William Stallings, PHI
2. Data and communication and networking, Behforooz A. Forouzan.
3. Data and communication and networking, AS God bole, Tata McGraw hill.
4. Networking concepts and Architecture, Hancock, BPB Publications.
5. Data and communication and networking, Tannerbaum, PHI.

MCS 204 SOFTWARE ENGINEERING

Max. Marks: 100

Min. Marks: 36

Unit – 1

Concepts of Software Engineering, Software Characteristics, components applications, software Metrics and Models, process and product Metrics, Size metric, Complexity metric. McCabe's Cyclometric Complexity. Halsted Theory, Function Point Analysis.

Unit – 2

System Development Life Cycle (SDLC) Steps, water fall model, prototypes, spiral mode, planning and software project: Cost Estimation, Project Scheduling Quality Assurance Plans, project Mentoring Plans.

Unit – 3

Software Development & Software Design: system design, detailed design, function oriented design, object oriented design user Interface design, Design level metrics: Phases, Process Models, Role of Management, Role of Metrics and Measurement, software Quality factors.

Unit – 4

Coding and Testing: Programming Practices, verification, Monitoring and Control, Testing level metrics Software quality and reliability Clean room approach, software reengineering.

Unit – 5

Testing & Reliability: Testing Fundamentals, Test case design, Functional Testing, Fundamentals, Test case design, Functional Testing, Structural Testing, Test Plan activities during testing, Unit system, Integration Testing, Concept of Software Reliability, Software Repair and Availability, Software Errors and Faults Reliability Models (JM,GO, MUSA Markov) Limitations of Reliability Models.

Reference:

1. Software Engineering Fundamentals, Ali Behforooz, oxford Univ. Press.
2. Software Engineering Pressman, R.S. Pressman & Associates.
3. Software Engineering Sommerville, Addison Wesley.

MCS 205 Computer Graphics

Max. Marks: 100

Min. Marks: 36

Unit – 1

Interactive graphics, passive graphics, advantage of interactive graphics, classification of application, hardware and software requirement of computer graphics, scan, converting point, line, circle, ellipse, filling, polygons, ellipse are, pattern clipping lines, circle, ellipse, polygon.

Unit –2

2D transformation, matrix representation of 2D, window to view port transformation, matrix representation of 2D transformation, display technologies.

Unit –3

Geometric models, project, attributes and 3D view, planar geometric projection and implementation, coordinate system, polygon meshes, cubic transformation in 3D, 3D clipping.

Unit –4

Perspective depth buffer algorithm, scan-line coherence algorithm, area coherence algorithm, priority algorithm, Boolean set operations for solid modeling, primitive instances, boundary representation.

Unit –5

Shading modeling shading model for polygons, surface, shadow, transparency, inter – object reflections, image processing, advanced raster graphic architecture, advance graphic, advance geometric and raster algorithms.

Reference:

1. Principles of Interactive computer Graphics, Newman and Sproull, Tata McGraw Hill.
2. Computer Graphics, Plastok and Gordon Kalley, McGraw Hill.
3. Computer Graphics, Cornel Pokorny, BPB Publication.

OPTIONAL MCS 207 WEB TECHNOLOGY

Max. Marks: 100

Min. Marks: 36

Unit – 1

Internet current state, hardware and software requirement, ISP an internet account, web home page, URL, browser, security on web, searching tools, search engines, FTP, Gopher, Telnet, emails, TFTP.

Unit – 2

Web browser architecture, webpage and multimedia, static, dynamic and active web page Simple network management protocol, hypertext transfer protocol.

Unit – 3

HTML, Crating web page, Methods of Linking publishing, HTML, “Text formatting and alignment, Font Control, Arranging text in lists, Images on a web page, Background and Color Control Interactive Layout with Frames”.

Unit – 4

JavaScript, comment types, JavaScript reserved words, identifiers, events, primitive data types, escape sequences, data type conversion functions and methods, operators, control structures and statements objects, applet fundament, applet life cycle, local and remote applet applications, tags, creating and passing parameters to applets, exception handling.

Unit – 5

Java beans, beans architecture, AWT components, advantage of Java beans serialization, JDBC, class and methods, API components, JDBC components, driver, connectivity to database, processing result and interfaces, RMI, comparison of distributed and non-distributed Java programs, interfaces, RMI architecture layer, ODBC, CORBA, CORBA services and products, CGI, structure of CGI.

Reference:

1. HTML 4 Unleashed, Darnell, BPB Publication.
2. Practical HTML 4, Philips, PHI.
3. JavaScript, Don Gosselin, Vikas Publication.
4. Principles of Web Design, Joel Sklar, Vikas Publication.
5. Web programming Kris Jamsa, Frank Bros & Co.
6. Enterprise Java Beans, O’ Reilly.
7. JDBC Developers resources, PHI.
8. Business Websites, Adams, BPB Publication.
9. CGI Programming with Pert. Tec media.

MCS 208 SPATIAL DATABASE MANAGEMENT SYSTEM

Max. Marks: 100

Min. Marks: 36

Unit – 1

Introduction go GIS, history, definition, hardware and software, raster bases GIS, data acquisition, nature of spatial data, geo-referencing.

Unit – 2

GIS functionality, data models, raster, vector, object, oriented coordinate system and geo-coding, data structures.

Unit – 3

Introduction to Arc View, creating maps, adding tabular data, choosing map projection, attribute, features, aggregating data, creating and editing spatial data.

Unit – 4

Introduction to Arc Avenue, data types, string, numbers, geo-coding, script, writing loops, interacting with views and themes, graphics, creating layout.

Unit – 5

Introduction to ARC/INFO, file menu, edit, object menu, query menu, table menu, window menu, browse menu, map menu, graph menu, layout menu, main toolbar, feature and function, case studies based on planning.

Reference Books:

1. ARC Macro Language – Developing Arc info Menus, Macros with AML, Longman, ESRI.
2. Geographical Information System, Tor Bernhardsen, Longman.
3. Computer Vision and Image processing Scott E Umbaugh, PHI
4. Inside ArcInfo, Michael Zeiler, Onward Press.
5. Inside Mapliff Professionals, Larry Daniel, Onward Press.
6. Principle of GIS, Peter and McDonald, Longman.