“A” Re-accredited By NAAC (2014) with CGPA-3.16

Revised Syllabus For

M.C.A. Part-III

(Sem. – V and VI)

Syllabus to be implemented from June 2015-16 onwards.
### SEM-V

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title of the Course</th>
<th>Credits</th>
<th>Teaching Scheme(h/w)</th>
<th>Evaluation Scheme (Marks)</th>
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<td>CS1511</td>
<td>Compiler Construction</td>
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<td>Web Technology</td>
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<td>Elective-III</td>
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<td>1. Mobile Application Development</td>
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<td>2. Cryptography and Network Security</td>
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<td>3. Distributed Computing</td>
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<td>CS1531</td>
<td>Computer Graphics and Digital Image Processing (CBCS)</td>
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<td>Web Technology Lab</td>
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<td>Python and Graphics Lab</td>
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<td>Project and Viva</td>
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### SEM-VI

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<th>Credits</th>
<th>Teaching Scheme(h/w)</th>
<th>Evaluation Scheme (Marks)</th>
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<td>Research/Industrial Project</td>
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Compiler Construction (CS1511)

UNIT-I (15 hrs)
Introduction to Compiler and Design of Lexical Analyzer Compiler Basics, Issues in Compilation, Phases of Compilation: the Analysis – Synthesis Model, Compiler Construction Tools. Designing a Lexical Analyzer: Role of Lexical Analysis, Input Buffering, Specification of Tokens, Recognition of Tokens, Finite automata, Conversion from regular expression to NFA, Deterministic finite automata, Conversion from NFA to DFA, Minimization of DFA, Creating Lexical Analyzer with LEX.

UNIT-II (15 hrs)

UNIT-III (15 hrs)

UNIT-IV (15 hrs)
Symbol Table Organization Introduction, Methods of organizing a symbol table: Unsorted, sorted symbol tables, binary search, hashing, its advantages, disadvantages, Collision, collision resolution techniques: Rehashing, Chaining.

BOOKS:
Web Technology (CS1512)

UNIT -I (15hrs)

Introduction: .NET framework and its architecture, CLR, JIT, CTS, Metadata, .NET Revolution, Characteristics of C#, Programming structure of C#, scope of variables, boxing & unboxing, Nullable Data types, Conditional statements, Arrays, Loops, Procedures and functions, Exception handling, Windows form controls, containers, Data Controls, Dialog Controls, sample application development, Deployment of C# application

UNIT -II (15hrs)


Microsoft SQL Server: Creation of Table, Views, Stored Procedures

UNIT -III (15hrs)

ASP.Net State Management: Server side State management, Client Side state management.

Caching in ASP.NET: Page caching, data caching, fragment caching

AJAX: Introduction to AJAX, Calendar Extender, Always Visible Control Extender, Confirm Button Extender, Filtered text Box extender, Password Strength, Drag Panel Extender

UNIT -IV (15hrs)

JavaScript: Introduction to JavaScript, JavaScript Identifiers, Operators, Control and looping structure, Functions, Arrays, Math functions, printing, events, cookies, objects, error handling, validations, animations, multimedia, Debugging, Image Map, Browsers.

Reference Books:

1. HTML: the complete reference by Thomas A. Powell
2. HTML, DHTML, JavaScript, Perl and CGI by Ivan Bayross
4. Professional ASP.NET 2.0 – Wrox Publication.
5. ASP.NET 2.0 (Black Book) – Dreamtech Press
8. A Beginners Guide, ASP.NET 3.5 by William B. Senders

**Python Programming (CS1513)**

**Unit-I** (15 hrs)
Installing Python, Simple program using Python, Expressions and Values, Variables and Computer Memory, error detection, Multiple line statements, Designing and using functions, functions provided by Python, Tracing function calls in memory model, omitting return statement. Working with Text: Creating Strings of Characters, Using Special Characters in Strings, Creating a Multiline String, Printing Information, Getting Information from the Keyboard

**Unit-II** (15 hrs)
A Boolean Type, Choosing Statements to Execute, Nested If Statements, Remembering the Results of a Boolean Expression Evaluation, A Modular Approach to Program Organization, Importing Modules, Defining Your Own Modules, Testing Code Semi automatically Grouping Functions Using Methods: Modules, Classes, and Methods, Calling Methods the Object-Oriented Way, Exploring String Methods, Underscores.

**Unit-III** (15hrs)

**Unit-IV** (15hrs)
Storing Data Using Other Collection Types: Storing Data Using Sets, Storing Data Using Tuples, Storing Data Using Dictionaries, Inverting a Dictionary, Using the In Operator on Tuples, Sets, and Dictionaries, Comparing Collections, A Collection of New Information Object-Oriented

References:

2. Python for Informatics: Exploring Information, Charles Severance
4. Introduction to Python for Computational Science and Engineering (A beginner's guide), Hans Fangohr

Mobile Application Development (CS1514)

UNIT –I (15 hrs)


UNIT-II (15hrs)

Android Components and Activities Creating Android Project, Debugging Application through DDMS, setting up environment AVD Creation, Executing Project on Android Screen.

Building UI with Activities: Activities, Views, layouts and Common UI components, Creating UI through code and XML, Activity lifecycle, Intents, Communicating data among Activities.

UNIT -III (15 hrs)


UNIT -IV (15 hrs)

Data Storage and SQLite: Android File System, Introducing SQLite, SQLiteOpenHelper and creating a database, Opening and closing a database, Working with cursors, Inserts, updates, and deletes.

References:

1. Professional Android 4 Application Development Reto Meier Wrox


Cryptography and Network Security (CS1514)

UNIT 1 (15)

Introduction to concept of security: Need, Principles, Policy, Types of attacks, Basic Network security terminology. Types of Cryptography: Stream Ciphers and Block Ciphers, Algorithm Types and modes, Computer based symmetric (Electronic code book, Cipher block chaining, Cipher feedback, Output Feedback) Computer based
Symmetric Key Cryptographic Algorithms (Data Encryption Standard and variations, International Data Encryption Algorithm , RC5, Blowfish).

UNIT 2  

(15)

Number Theory : Prime number, Fermat’s Theorem, Euler’s Theorem, Modular arithmetic, Discrete Logarithms, Quadratic Residues, Chinese remainder theorem, Primality testing
Asymmetric Key Cryptography ( Public Key Cryptography) Diffie Hellman Key exchange algorithm, RSA algorithm, One way hash function, Digital Signature , MD5, Secure hash algorithm, Digital Certificates.

UNIT 3

(15)


UNIT 4  

(15)


References:

3) Cryptography and Information Systems By V.K. Pachghare,PHI
4) Introduction to Computer Security By Matt Bishop and Sathynarayana ,Pearson Education.
5) Applied Cryptography protocols, Algorithms and Source Code in c By Bruice Schneier ,Wiley India.

Distributed Computing (CS1514)

UNIT-I  

(15hrs)
Introduction of Distributed Computing and Synchronization
History of Distributed Computing; Forms of computing: Monolithic, Micro, distributed, parallel, Co-operative; Distributed System Models; Issues in designing DS. Synchronization in Distributed Computing: Introduction; Clock Synchronization: Physical clock, Clock synchronization algorithms, use of synchronized clock; Logical clocks: event ordering, implementation of logical clocks, Lamport’s Timestamps, Vector Timestamps; global state; Mutual Exclusion: Centralized algorithms, distributed algorithms, token ring algorithm; Election algorithms: bully algorithm, ring algorithm

UNIT -II
Interprocess Communication: Event synchronization, Timeout and Threading, Deadlock and timeouts, Data Encoding, Request Response Protocols, Event diagram, sequence diagram, Connection –oriented /connectionless IPC, Evolution of paradigms for IPC.

UNIT-III

UNIT-IV

Reference Books:

Computer Graphics and Digital Image Processing(CS1531)
Unit-I
(15 hrs)

Unit-II
a) Line, Circle, Ellipse and Curve generation algorithm, b) Polygon filling algorithm c)Windowing and clipping: Window to Viewport transformation, line clipping and polygon clipping, B) 2D and 3D transformations: a) 2D basic transformation, other transformation, composite transformation, matrix representation and homogeneous transformation, b) 3D concepts: Display models, parallel and perspective projections c) 3D basic transformation, other transformation & composite transformation.

Unit-III
Chromatic and achromatic light, properties of light, color lookup tables, Color models: XYZ, RGB, CMY, HSV, HLS, B) Curve generation: a) Bezier curve, properties of Bezier curve, Cubic Bezier Curve, b) B-Spline curves: i) Uniform, Periodic B Spline, ii) Cubic, periodic Bspline, iii) Open, uniform B- Spline iv) Non-uniform B-spline, c) Beta-Spline: Beta spline continuity conditions, cubic periodic beta spline, matrix Representation, d) Introduction to fractal (Koch and Hilberts curve) e)Basic illumination models: Ambient light, diffuse reflection, specular reflection and its Phong model, shadows and transparency, ray tracing, displaying continuous tone images, halftone pattern and Dithering techniques, aliasing and antialiasing

Unit-IV

Reference Books:
5. Theory and problems of Computer Graphics --- Plastock & Kelly  