



(Extra-Ordinary)

Tuesday, the 18<sup>th</sup> July, 2017

## NOTIFICATION

No. 84/2017

Date: 18/07/2017

**Subject :** Continuation of Prospectus No. 20161210 alongwith changes prescribed in syllabi for M.Sc.Part-I (Computer Software) (Sem.I & II) which to be implemented from the Session 2017-18.

It is notified for general information of all concerned that the Prospectus of M.Sc. (Computer Software) bearing No. 20161210 prescribed for the Academic Session 2016-17, shall continue for the session 2017-18 along with the changes prescribed in syllabi for M.Sc.Part-I (Computer Software) (Sem.I &II) which is substituted by the **Appendix-A** appended with this notification.

Sd/-  
(Dr.A.P.Deshmukh)  
Registrar  
Sant Gadge Baba Amravati University

### Appendix-A

**Syllabi prescribed for M.Sc.-Part I [Semester I & II] Computer Software to be Implemented from the Academic Session 2017-18.**

#### Semester-I - Theory

##### Paper- 1MCSW1 - Advanced Programming in JAVA

- Unit-I :** **Introduction to Java**, Java development tools, Control Structures: Simpleif, If..else, switch statement, Loop structure : For , Do..while, While loop control using break and continue.  
**Objects and classes:** class variable, instance variable, class methods, Access specifier, access modifiers. Methods: mainmethod, creating methods, calling methods, overloading methods, abstraction, recursion. Object: Initialization of object using constructors, parameterized constructor, Dynamic Memory allocation, Garbage collection. Passing objects to methods. Packages: creating and importing packages, Arrays :Declaration, initialization, sorting searching, array of objects.
- Unit-II :** **String**: String class, String Buffer, String Tokenizer. Command line arguments. Inheritance: super class, subclass , super keyword, this keyword, final modifier, abstract class, Method overriding. Interface: implementing interfaces **Exception Handling** : Error and Exception class, Errorhandling routine, try , catch , throw, throws, finally, uncaught exceptions, built-in exception, nested try-catch, user definedexception. Thread: Thread class, Runnable interface, states, priority and synchronization. Java I/O classes, File handling, **Packages:**API Packages, Reflection.
- Unit-III :** **Event handling:** Event Delegation model, Adapter classes, Event classes, Event Listener Interfaces, Handling Mouse and Keyboard events. **Applet:** Life cycle of an applet, paint, repaint, update methods. Graphics class, AWT class hierarchy, Frames, Layout managers, components, containers. Color class, Font class. User Interface: Button, Label, TextField, TeatArea, Choice, List, CheckBox, CheckBox Group, Dialog Boxes, Menu, Multiple Windows.
- Unit-IV :** **Swing:** JApplet, Icons & Labels, text fields, buttons, comboboxes, Tabbed Panes, Scroll Panes, Trees , tables, Exploring Swing. **Servelet:** Life cycle of a servelet, JSDK, Servelet API, Servelet Package, Classes and interfaces in servelet, Servelet parameters, reading and initializing servelet, HTTP, Request/ Response.
- Unit-V :** **JDBC:** Java database connectivity, Types of JDBC drivers , Writing first JDBC applications, Types of statement objects (Statement, Prepared Statement and Callable Statement), Types of result set, ResultSet Metadata, Inserting and updating records, JDBC and AWT, Connection pooling.
- Unit-VI :** **Remote Method Invocation**, Stand alone applications ,Client /Server application using RMI., Socket programming. **Java Beans:** Bean development kit, JAR Files, creating Bean, Properties of bean, Bean Info Interface, Java Bean API. Writing simple bean, Beans persistence and introspection, EJB, Architecture, Container classes, Interfaces, EJB types- Session, Entity, Message Driven.

#### Books:

1. The Complete Reference Java- 5th edition – Herbert Schildt and Patrick Naughton- Tata McGraw Hill
- 2 Developing Java Servlets James Goodwill
3. Learning Java- Rich Rapos, Willey, dreamTechPublication
4. Inside Servlets Dustine R Callway
5. Programming in Java 2 – Rajaram, -Scitech Pub. India pvt Ltd.

**Paper - 1MCSW2 - Software Engineering & Software Testing**

- Unit-I** : System Concept: Definition, Characteristics of System, Elements of System; Types of System: Physical or Abstract Systems, Open or Closed Systems, Man-made Information Systems; Subsystem. System Analyst: Role; Skills: Interpersonal, Technical; Information Gathering Tools (Fact Finding Techniques); Feasibility Study.  
Introduction to Software Engineering: Definition and Characteristics of Software; Software Application Domains; Software Engineering: Definition, Layered Model.
- Unit-II** : Evolution role of software, Software crisis and myths, Software Process Framework; Process Models: SDLC (Waterfall); Incremental; Evolutionary Models: RAD, Prototyping, Spiral; Concurrent Development Model; Components based Development Model. Software project planning: scope, resources, estimation, decomposition technique, Tools. Software risks: identification, risk: identification, risk projection, refinement & RMMM plan.
- Unit-III** : SCM process. Version control: SCM standards. System engineering: Hierarchy, Business Process & Product engineering: Overviews. Project scheduling: Concepts, people Efforts, Task set, Task network, Scheduling. EV analysis, Project Plan.  
Requirements Engineering: Requirements Engineering Tasks: Inception, Elicitation, Elaboration, Negotiation, Specification, Validation. Requirements Management; Steps in Requirements Engineering. Requirements Analysis: Objectives;
- Unit-IV** : Design process. Design principle & concepts. Effective modular design. Design model & documentation. Software architecture, Data Design, Architectural styles, equipment mapping, Transforms & Transaction mappings. User interface design: Golden Rule, UID, Task analysis & modeling, ID activities, Tools design evolution. Component level design: Structured programming, comparison of design notation.
- Unit-V** : Basics of Software Testing : Inspection and Testing. Testing objectives Terms : fault, failure, error, fault masking, test, test case. Fundamental Test process : test planning, test specification, Test execution, test records, test completion. Prioritizing the tests .Psychology of testing .Difference between QA and Testing, The general V-model
- Unit-VI** : Testing in the Software Lifecycle : Component Testing ,Integration testing , System Testing ,Acceptance Testing , Maintenance testing. Software Testing Process: Requirement Phase , Design Phase , Program (Build) Phase , Test Phase ,Installation Phase , Maintenance Phase . Test Plan : Objective of the test ,Scope of the test , Approach , Resources , Roles and Responsibilities, Entry and Exit Criteria, Risks, Defect Management

**Books:**

1. System Analysis and Design: Ellias M. Awad (Galgotia)
2. Software Engineering–A Practitioner’s Approach (7th Ed): Roger S. Pressman (Mc-Graw Hill)
3. Forouzan Data Communication and Networking McGraw Hill

**Paper – 1MCSW3 - .Net Technology using ASP**

- Unit-I** : Introduction to .net frameworks, page class, page life cycle, web forms.web controls, server controls, Server control events, user controls, web namespaces, validation, transaction management, session variables, session state object.
- Unit-II** : Ritch page composition: working with master page, working with themes, working with wizards. ADO.NET data providers, connecting to data source: connection string, connection pooling, Data container objects: data sets, data tables, data relations, data binding models: expression and components.
- Unit-III** : Windows forms, ASP.NET and ASP .NET AJAX, ADO.NET, Windows workflow foundation, Windows presentation foundation, Windows communication foundation, Windows cardspace, Application tracking managing web application. LINQ,
- Unit-IV** : Application structure and State: Structure of an application .The Global. asax application file, using states, http handlers. Navigation controls: tree view, menu. SiteMapPath: using the TreeView class, the tree view control. Menu class, menu control. using SitemapPath class, using SitemapPath controls.
- Unit-V** : LINQ Queries: introducing LINQ queries, working with files and streams, caching, application globalization, asp.net web services: securing web services, creating web services, deploying web services. MVC frameworks.
- Unit-VI** : Security and cryptography in asp.net: Type-Safe Code, Verifiably Type-Safe MSIL code. Security in .NET Framework 4.5, ASP.NET Security architecture, Introducing Authentication and Authorization, mobile web application architecture.

**Books:**

1. ASP.NET 4.5 Black Book.
2. ASP .Net – Complete Reference By Mathew MacDonald
3. Beginning ASP.NET 4.5 in C# and VB- (WROX)
4. ASP.NET: An Integrated Approach – Rick Miller

**Paper- 1MCSW4 - Computer Networks**

- Unit-I** : Digital Communication: Advantages; Data Transmission: Modes: Parallel, Serial: Asynchronous, Synchronous, Isochronous; Transmission Media: Guided and unguided; Modulation: Amplitude, Phase Shift, Frequency, QAM; Multiplexing: FDM, WDM, TDM, STDM, CDM; Switching: Circuit, Message, Packet; Delays in Packet Switched Network, Packet Loss; Network Reference Models: OSI: Layered Architecture and Services, TCP/IP: Layered Architecture and Services

- Unit-II** : Application Layer: Principles of Application Layer Protocols; Processes: Client-Server Model, Socket Interface; Services required by Application Layer; HTTP: Introduction, RTT, HTTP Handshake, types of HTTP Connections, HTTP Messages, Authentication and Cookies; FTP: Service Model, FTP Commands; Electronic Mail; SMTP; DNS: Services and working
- Unit-III** : Transport Layer: Transport-Layer Services and Principles; Multiplexing and Demultiplexing Applications; Connectionless Transport – UDP; Principles of Reliable of Data Transfer (RDT); Stop-and-wait and Pipelined protocols; GBN protocol; Connection-Oriented Transport: TCP; Flow Control; Principles of Congestion Control; Approaches towards Congestion Control; TCP Congestion Control
- Unit-IV** : Network Layer: Introduction; Network Service Model: Datagram, Virtual Circuit; Routing Principles; Routing Algorithms: Classifications; Hierarchical Routing; Internet Protocol: IP Addressing, IPv4: Classes and Packet format, DHCP; ICMP; Routing in the Internet: RIP, OSPF, BGP; Router; IPv6; Multicast Routing
- Unit-V** : Data Link Layer: Introduction; Services; Error Detection and Correction; Multiple Access Protocols and LANs; LAN Addresses and ARP; Ethernet; Hubs, Bridges and Switches; Wireless LANs: IEEE 802.11; The Point-to-Point Protocol; ATM, X.25 and Frame Relay.
- Unit-VI** : Network Security and Management: Secured Communication: Threats and Characteristics; Cryptography: Principles of Cryptography, Symmetric Key Cryptography, Public Key Cryptography; Privacy, Authentication, Integrity, No repudiation; Digital Signature; Key Distribution and Certification. Areas of Network Management; Network Management Architecture; Internet Network Management Framework; SMI, MIB, SNMP.

**Books:**

- 1) Computer Networking – James F. Kurose and Keith W. Ross (AddisonWesley)
- 2) Data Communication and Networking – Behrouz A. Forouzan (McGraw Hill)
- 3) Computer Network & Internet - Douglas E. Comer (Pearson)
- 4) Data and Computer Communication – William Stallings (Pearson)
- 5) Computer Networks - Andrew S. Tanenbaum (PHI)

**Practicals for Semester-I :-**

- 1) Lab-I: Practicals Based on Paper-1MCSW1 & 1MCSW2.
- 2) Lab-II : Practicals Based on Paper-1MCSW3 & 1MCSW4.

**Semester-II**

**Paper – 2MCSW1 - Programming in C#**

- Unit-I** : Understanding .net:origin of .net technology,.net framework,the common language runtime,framework base classes,user and program interfaces,visual studio .net,benefits c# and .net
- Unit-II** : Overview of C# : Introduction, namespaces,Types, variables, Expressions, Operators, Boxing and unboxing, Type declaration, Input from console, Printing and formatting the output, interactive I/O, CLR, Command line arguments, controls and statements : Decision making, Iteration , branching statements.
- Unit-III** : Classes, Objects, Objects as data types, static methods, class members, Controlling access, implementing class, Methods, Overloading methods, implementing methods, Abstract and base classes, virtual methods.
- Unit-IV** : Structs and Enum, arrays, strings, attributes, Exception and error handling, Common Exception classes, Exception handling routine, Types of Errors, Exception Handling Codes, Multiple Catch Statements, Catch Handler, Finally Statement, Nested Try Blocks
- Unit-V** : console I/O operations :console class,console input output,formatted output ,File manipulation: Managing file system,moving,coping,deleting files,reading,writing to files,file security.
- Unit-VI** : Data Access with .Net: ADO.net overview ,Database connections, commands, the Data Reader, the DataSet class, populating a DataSet, data set and commands , Accessing and using Data in ADO.

**Books:**

1. Er. V.K.Jain : The Complete guide to C# Programming (Dreamtech Press)
2. Eric Gunnerson : A Programmers introduction to C# (APress)
3. C# .Net Fundas - Y.P. Kanetkar , BPB
4. Programming C# By Jesse Liberty - Orelly
5. Programming in C# By E. Balguruswami –
6. C# Programming: Black Book – DreamTech Publication

**Paper - 2MCSW2 - Distributed Operating System**

- Unit-I** : Introduction to distributed systems: goals of distributed system, hardware and software concepts, design issues. Communication in distributed systems: Layered protocols, ATM networks, the client-server model, remote procedure call and group communication.
- Unit-II** : Synchronization in distributed systems: Clock Synchronization, mutual exclusion, Election Algorithms, the Bully algorithm, a ring algorithm, atomic transactions, dead lock in distributed systems, distributed dead lock prevention, and distributed dead lock detection.
- Unit-III** : Processes and processors in distributed systems: Threads, system, models, processor allocation, scheduling in distributed system, fault tolerance and real time distributed systems.

- Unit-IV** : Distributed file systems: Distributed file systems design, distributed file system implementation, trends in distributed file systems. Distributed shared memory: What is shared memory, consistency models, page based distributed shared memory, shared variable, distributed shared memory, object based DSM.
- Unit-V** : Case Study : AMOEBA : Introduction to AMOEBA, objects and capabilities in AMOEBA, Process Management in AMOEBA, Memory Management in AMOEBA, Communication in AMOEBA. The AMOEBA servers : The Bullet Server - Interface and Implementation, The Directory Server – Interface and Implementation, The Replication Server, The Run Server, The Boot Server, The TCP/IP Server, Other Servers.
- Unit-VI** : Case study MACH: Introduction to MACH, Process management, in MACH, Memory management in MACH, communication in MACH, UNIX emulation in MACH. Case study DCE: Introduction to DCE threads, RPC's, Time service, directory service, security service, distributed file system.

**Books:**

1. Andrew. S. Tanenbaum, Distributed operating system, PHI
2. Ceri & Palgathi, Distributed Database System, McGraw Hill
3. Raghu Rama Krishnan and Johannes Gchrib, Database Management System, McGraw Hill
4. Date C.J, An Introduction to Database system, Vol-I & II, Addition Wesley
5. Korth, Silbertz, sudarshan, Database Concepts, McGrew Hill
6. Elmasari, Navathe, Fundamentals of Database Systems, Addition Wesley
7. Data C.J. An introduction to database system, Addition Wesley
8. Rama Krishnan, Gehke, Database Management system, McGraw Hill
9. M. Tamer Ozsü and Patrick Valduriez, Principles of Distributed Database Systems II Edition Pearson Education Asia
10. Stefano Ceri and Giuseppe Pelagatti Distributed Database , Principles and Systems McGraw Hill

**Paper- 2MCSW3 – Advanced Database Management System**

- Unit-I** : **Introduction** : Review of Database Concepts, File Organization concepts, Normalization. Physical Database Design and Tunning. Index Selection, Overview of Database Tunning, Choices in tuning the conceptual schema. Choices in tuning queries and views, DBMS Benchmarking. Security. **Security and Authorization:** Introduction to database security, Issues, Control Measure, Grant and revoke. Permissions Access Control-Discretionary, Mandatory, Audit Trail, Challenges in database security
- Unit-II** : **OODBMS & ORDBMS** : Overview of Object-Oriented concepts & Characteristics, Objects, OIDs and reference types, Database design for ORDBMS, Comparing RDBMS, OODBMS & ORDBMS. **Advance Database Management System Concepts & Architecture:** Spatial data management, Web based systems Overview of client server architecture, Databases and web architecture, N-tier Architecture, Business logic – SOAP, Multimedia databases, Mobile database.
- Unit-III** : **Parallel databases:** Introduction, Parallel database architecture, I/O parallelism, Inter-query and Intra-query parallelism, Interoperation and Intra-operational parallelism, Design of parallel systems, **Distributed Databases:** Introduction, DDBMS architectures, Homogeneous and Heterogeneous Databases, Distributed data storage, Distributed transactions, Commit protocols, Availability,
- Unit-IV** : **Concurrency control** transactions and schedule, Serializability, Lock based concurrency control lock management, specialized locking techniques, control without locking. Crash Recovery, Introduction to crash recovery, Log, Check pointing, Recovery from a system crash.
- Unit-V** : **MySQL-** Introduction, Installation, Administration, PHP Syntax, MySQL Connection, Creating Database, Drop, Select, Datatypes, Create Table, Insert, Select, Where, Update, Delete, Like, Sorting, Join, Pattern Matching, Transactions, Alter, Index, Sequences, SQL Injection
- Unit-VI** : **Big Data with Hadoop**, Introduction to Bigdata, Overview, Hadoop environment setup, SDFS overview, Command reference, Hadoop streaming, Multinode cluster.

**Books :**

- 1) Database Management System -Raghu Ramkrishna McGraw Hill. International Editions.
- 2) Introduction to Database System by C.G.Date.
- 3) MySQL- Paul DuBois, 4<sup>th</sup> Edition
- 4) Database system concepts\*, 5th Edition –by Abraham Silberschatz, Henry Korth, S,Sudarshan, (McGraw Hill International )
- 5) Database systems : "Design implementation and management", by Rob Coronel, 4<sup>th</sup> Edition, (Thomson Learning Press)
- 6) Big Data-Black Book

**Paper- 2MCSW4 - Fundamentals of Open Source Systems**

- Unit-I** : Introduction to OSS, Need for OSS, History, FOSS initiative presentation, Security and Reliability, Applications  
Introduction to Linux, Kernel/Ubuntu, Process, Concept Scheduling, Cloning, Signals, development with linux, OSS installation,

- Unit-II** : Shell Scripting : Basic shell commands, logging in, listing files, editing files, copying/moving files, viewing file contents, changing file modes and permissions, process management ; User and group management, file ownerships and permissions, PAM authentication ;
- Unit-III** : Introduction to Android, Android Platform, History, Architecture, Versions, DVM, Installing Eclipse and SDK packages, Virtual Device or Emulator, Hello World App, File system Hierarchy, Android Sample apps, Android User Interface, Event Handling, Styles and themes, Creating Custom components
- Unit-IV** : Python- Introduction, Syntax of Python, Data Types, Sets, Conditional Statements, Loops: While, For, Loop control statement  
Abstraction, Parameters, Scoping, Recursion,
- Unit-V** : Advanced Python- Files, I/O Formatting, Errors and Exceptions, Functions, Modules, OOPS concepts: Classes, Inheritance, Garbage Collection, Method Overriding, Data Encapsulation, Building GUI Applications, Database Support,
- Unit-VI** : Open Source Cloud- Introduction, FOSS cloud software environment, Eucalyptus- History, Overview, Goals, Architecture, Terminology, Components, Mechanism, Open Nebula- Overview, History, Objectives, Features, Architecture, Computing Platform

**Book:**

1. Fundamental of Open Source Software – M.N. Rao, PHI publication
2. Beginning Python- Magnus Lie Hetland, Apress Publication
3. The Complete Reference- Python By Martin C. Brown
4. Learning Python – By Lutz M. Orelly Publishing
5. Linux Linleashed (Techmedia)
6. Back – Linux Kernel Internals (Addison –Wesley)
7. Linux Shell Scripting Cookbook By Sahnatanu Tushar & Sarath Lakshman
8. Mastering Shell Scripting- Andrew Mallett
9. LINUX: Linux Command Line, Cover all essential Linux commands. A complete introduction to Linux Operating System , By Ray Yao & Ruby Perl.

**Practicals for Semester-II :-**

- 1) Lab-III : Practicals Based on Paper-2MCSW1 & 2MCSW2.
- 2) Lab-IV : Practicals Based on Paper-2MCSW3 & 2MCSW4.

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**NOTIFICATION**

No. 85/ 2017

Date: 18/7/2017

**Subject : Additional chances for the failure students of old course**

It is notified for general information of all concerned that, the Academic Council in its meeting held on 6.6.2017 vide item No. 43 resolved to provide the additional (3) three chances to the failure students of old course wherever the schemes and the syllabi has been changed and no further chances are recommended.

In view of the aforesaid resolution of the Academic Council, the University hereby providing (3) three additional chances for the failure students of B.Sc. Part-I (Sem-I & II) {(Computer Science/Computer Application/Information Technology/Computer Application(Vocational)} and M.Sc.Part-I (Computer Software) (Sem-I &II) as mentioned in the following Table.

-Table-

Sr.No.	Name of the Examination	Additional chances provided
1	B.Sc. Part-I Sem-I (CS/CA/ IT/CA Voc.)	Winter-17, Summer-18 & Winter-18
2	B.Sc. Part-I Sem-II (CS/CA/IT/CA Voc.)	Summer-18, Winter-18 & Summer-19
3	M.Sc. Part-I Sem-I (Computer Software)	Winter-17, Summer-18 & Winter-18
4	M.Sc. Part-I Sem-II (Computer Software)	Summer-18, Winter-18 & Summer-19

Sd/-  
(Dr.A.P.Deshmukh)  
Registrar  
Sant Gadge Baba Amravati University

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**NOTIFICATION**

No. 86 / 2017

Date: 18/7/2017

**Subject : Additional chances for the failure students of old course**

It is notified for general information of all concerned that, the Academic Council in its meeting held on 6.6.2017 vide item No. 43 resolved to provide additional (3) three chances to the failures students of old course wherever the schemes and the syllabi has been changed and no further chances are recommended.

In view of the aforesaid resolution of the Academic Council the University hereby providing (3) three additional chances for the failures students of B.Sc. Part-I (Languages) Sem-I & II and B.C.A. Part-I (Languages) Sem-I & II as mentioned below :

Sr.No.	Examination	Subjects	Additional Chances Provided
1	B.Sc.-I Sem-I	Languages (Compulsory English, Compulsory Marathi, Compulsory Hindi, Compulsory Urdu, Compulsory Sanskrit, Supplementary English)	Winter-2017, Summer-2018 & Winter-2018.
2	B.Sc.-I Sem-II	Languages (Compulsory English, Compulsory Marathi, Compulsory Hindi, Compulsory Urdu, Compulsory Sanskrit, Supplementary English)	Winter-2017, Summer-2018 & Winter-2018.
3	B.C.A.-I Sem-I	Communication Skills	Winter-2017, Summer-2018 & Winter-2018.
4	B.C.A.-I Sem-II	Communication Skills	Winter-2017, Summer-2018 & Winter-2018.

Sd/-  
(Dr.A.P.Deshmukh)  
Registrar  
Sant Gadge Baba Amravati University

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