Syllabus of

BCA III
(Bachelor of Computer Application)

Semester-VI

Designed by Dr. S.B. Kishor

GONDWANA UNIVERSITY, GADCHIROLI

SESSION 2014-2015
## BCA – III

### SEM VI

<table>
<thead>
<tr>
<th>Paper</th>
<th>Course Title</th>
<th>Theory Marks</th>
<th>Internal Marks</th>
<th>Practical Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper 1</td>
<td>Database Administration &amp; Distributed Computing</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Paper 2</td>
<td>Image Processing and Analysis</td>
<td>80</td>
<td>20</td>
<td></td>
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<tr>
<td>Paper 3</td>
<td>Java</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Paper 4</td>
<td>Project</td>
<td>Internal: 50</td>
<td>External: 50</td>
<td>Total Project Marks: 100</td>
</tr>
</tbody>
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Total Project Marks: 100
BCA –III (Semester – VI)

Paper – I : Database Administration & Distributed Computing
Paper – II : Image Processing and Analysis
Paper – III : Java
Paper – IV : Project
BCA –III
SEMESTER-VI
PAPER-I: DATABASE ADMINISTRATION & DISTRIBUTED COMPUTING    [ Marks: 80

UNIT-I: Introduction to Oracle Database Administration

UNIT-II: Oracle Database Architecture and Administration

UNIT-III: Fundamentals

UNIT-IV: Message Passing

Books:

References:
UNIT –I: Digital Image
Image Formation: Geometric Model, Basic Transformations, Perspective Projection, Camera Calibration- Photometric Model.

UNIT-II: Image Processing

UNIT-III :Image Compression
Error Criterion: Lossy Compression methods, loss –less compression, Huffman coding, Run length coding- Block coding, Quad Tree coding- contour coding.
Segmentation: Region Extraction-Pixel based Approach, Feature Thresholding, Optimum Threshold, Threshold Selection Methods, Multi-level Thresholding, Local Thresholding, Region based Approached.

UNIT-IV: Image Analysis and Feature Extraction
Representation: Topological Attributes, Geometrical Attributes, Some other Properties, Description, - Boundary based Description-Region based Description- Relationship.
Recognition: Deterministic Methods, Clustering, Statistical Classification, Fuzzy Mathematical Recognition, Syntactic Recognition, Grammar, Recognition Strategy, Tree search, Graph Matching.

Books:

References:
1) Adrian Low, Computer vision and Image Processing, McGraw Hill (1991)
2) Kenneth R. Castleman, Digital Image Processing, PHI
UNIT – I: Introduction to Java
History of Java, Features of Java, JDK Environment, Java Virtual Machine, Garbage Collection

Programming Concepts of Basic Java: Identifiers and Keywords, Data Types in Java, Java coding Conventions, Expressions in Java, Control structures, decision making statements, Arrays and its methods

UNIT – II: Objects and Classes
Object Fundamentals, Pass by value, ‘this’ reference, Data Hiding and Encapsulation, Overloading, Overriding Constructors, Finalization, Subclasses (Inheritance), Relationship between super class object and subclass object, implicit subclass object to super class object Conversion, Dynamic method dispatch.

Language Features: Scope rules, Static data, Static methods, Static blocks, Modifiers of Class, Method, Data Members and Variable, Abstract Classes, Interfaces, Packages, Importing Packages and Classes, User define packages.

UNIT – III: Exception Handling & Multithreading
Types of Exceptions try, catch, finally, throws keywords, creating your own exception, exceptions and Inheritance

Multithreading: Multithreading Concept, Thread Life Cycle, Creating multithreading Application, Thread Priorities, Thread synchronization.

UNIT – IV: Abstract Window Toolkit & Streams and File I/O

Streams and File IO: Files and Stream, Stream classes, Reader Writer classes, File class Tests and Utilities, Serialization and deserialization.

Books:

References:
2) Jerry R Jackson Alan L, “Java by Example 1.2”, McClellan Publication
Instruction:
Towards the end of the second semester of study, a student will be examined in the course “Project Work”.

The project proposal should be prepared in consultation with the guide. The project guide must be a person having a regular university approval or in accordance with University guidelines.

a. Project Work may be done individually or in groups (Maximum 3 students) in case of bigger projects. However if project is done in groups, each student must be given a responsibility for a distinct module and care should be taken to monitor the progress of individual student.

b. The Project Work should be done using the tools covered in the Syllabus.

c. The Project Work should be of such an nature that it could prove useful or relevant from the System-oriented/Application/commercial.

d. The project work will carry 100 marks.

e. The external viva-voce examination for Project Work would be held as per the Examination Time Table of the final year of study decided by University.

f. Head/Co-ordinator of Computer Dept. must reject any project title which was previously carried out in any computer course. It must maintain Record that lists the projects along with other detail (like Guide, Session, and Number of students working on project etc.) that was carried out of and must be shown to external examiner at the time of examination.

Types of Project
As majority of the students are expected to work out a project in some industry/research and development laboratories/educational institutions/software export companies, it is suggested that the project is to be chosen by the candidate should have some direct relevance in day-to-day activities of the candidates in his/her institution.

The Applications Area of Project- Database Management System/Relational Database Management System/Internet/web Designing/Hardware and Software interaction based etc.
**Project Proposal (Synopsis)**

The project proposal should clearly state the objectives and environment to the proposed project to be undertaken. It should have full details in the following form:

1. Title of the project
2. Objectives and Hypothesis of the Project
3. Project Category (Database/Web Designing/Application/Hardware Interface etc.)
4. Tools/Platform, Languages to be used covered in the syllabus
5. A complete Structure of the program:
   i. Analysis.
   ii. Numbers of Modules.
   iii. Data Structures or Tables
   v. Types of Report Generation.

**Project Report Formulation**

1. Title Page.
3. Declaration Page.
5. Index or Content Page.
6. Documentation.
   i) Introduction/Objectives.
   iii) Project Category.
   iv) Software Requirement Specification.
   vii) Validation Checks.
   viii) Implementation, Evaluation and Maintenance.
   ix) Security Measures taken.
   x) Future Scope of the project.
   xi) Bibliography (APA Style)

**Appendix**

O Survey Questionnaire

**Note:** Project report should be type/printed in double line space using A4 size bond papers with left margin of 1.5” and right margin of 1.0” in Times new Roman font.