Tilak Maharashtra University

Bachelor of Computer Applications

Semester	Fourth	Teaching Hrs = 40
Subject Code	BCA – 440-20	
Subject Name	**JAVA Programming**	

Examination Scheme			Credits
External Exam	Internal Exam	Total Marks	
60	**40**	**100**	**4**

Course Outcomes (COs)
After learning this course student will be able to,

- To understand and implement object oriented concepts using java
- Able to solve real world problems using OOP techniques.
- How to develop web application using Java
- Able to understand the use of Packages and Interface in java.

Chapter 1: The Genesis of Java **(2 Hr)**
Creation of Java, Why it is important to Internet, characteristics of Java

Chapter 2. Basics of Programming **(4 Hr)**
Data types and variables, Arrays operators Types casting and conversion Condition & looping constructs Clauses and methods Overloading Inheritance

Chapter 3: Packages & Interfaces **(5 Hr)**
Defining Packages, Understanding & catch class path Access protection, Importing Packages, interfaces

Chapter 4: Exception Handling **(4 Hr)**
Exception types ,Using try & catch, Nested try, Using throw , throws finally Built in Exception, Creating & using own Exception ,Subclasses

Chapter 5: String Handling **(4 Hr)**
String constructions, String operations, Standard String methods

Chapter 6: Multithreading **(5 Hr)**
Thread Life Cycle, Thread's priorities, synchronization, runnable interface, IsAlive() & Join().Deadlock

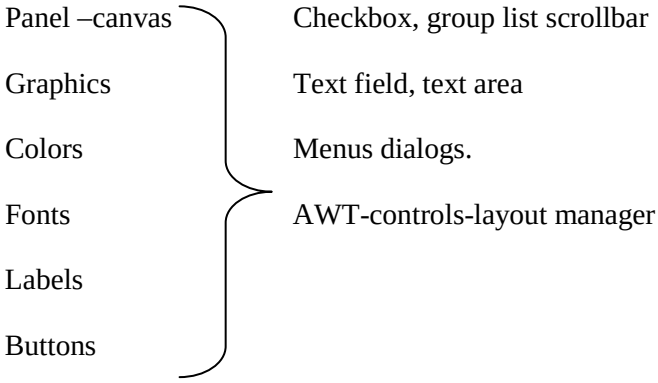
Chapter 7: I/O **(6 Hr)**
Streams, byte Streams, Char Streams, Reading console I/P, Writing Console O/P file I/O, sterilization

Chapter 8 : Applet Programming **(6 Hr)**

Applet basics, Simple display methods. Repainting passing parameters

Chapter 9: Event Handling **(6 Hr)**
Event Classes, Sources of Events, Event listeners

Chapter 10: User Interface **(6 Hr)**
AWT classes Windows fundamentals, Component-window, Container-frame



Chapter 11: Introduction to Swings **(2 Hr)**
Japplet, Icons, Labels, Text fields, Button, Combo Box, Tabbed panes, Scroll Panes, Trees, Tables

Reference Books:

- Java - Complete reference
- Java - O'reilly
- Java Black Book

Tilak Maharashtra University

Bachelor of Computer Applications

Semester	Fourth	Teaching Hrs = 35
Subject Code	BCA – 441-20	
Subject Name	**Principles and Practice of Management -II**	

Examination Scheme			**Credits**
External Exam	Internal Exam	Total Marks	
60	**40**	**100**	**4**

Course Outcomes (COs)
After learning this course student will be able to,

- Students will be able to understand current trends in management.
- To understand leadership & motivational theories to design motivational programs
- Can develop a systematic approach to solve organizational problems.

1. Staffing: **(5hr)**

a. Meaning , definitions
b. Importance
c. Recruitment and selection
d. Training and development
e. Performance appraisal

2. Directing: **(5hr)**
a. Meaning , definitions
b. Principles of directing

3. Communication: **(5hr)**
a. Meaning and definitions
b. Elements
c. Process
d. Importance
e. Types
f. Principles

4. Motivation: **(5hr)**
a. Meaning and definitions
b. Objectives
c. Theories of motivation
a. Maslow's theory of hierarchy of needs
b. Herzberg's two factor theory
c. McClelland's theory
d. Expectancy theory

e. Equity theory
f. Reinforcement theory
d. Special motivational techniques

5. Leadership: **(5hr)**
a. Meaning and definitions
b. Features
c. Importance

d. Theories
a. Great man
b. Trait
c. Situational
d. Behavioral
e. Followers
f. Managerial grid
g. Path goal
e. Styles of leadership
a. Autocratic
b. Participative
c. Laissez faire
f. Qualities of a leader

6. Controlling: **(5hr)**
a. Meaning and definitions
b. Features
c. Control process
d. Control techniques
a. Traditional
b. Modern

7. Recent trends in management: **(5hr)**
a. Social responsibility of mgmt
b. Stress mgmt
c. Total quality mgmt.
d. Disaster mgmt.
e. Event mgmt.
f. M.B.O. (management by objectives) BCA-526 Practical VB.Net

Reference Books:

1. Herald Koontz & O'Donnel : Principles of Management;McGraw Hill
2. L. M. Prasad : Principles & Practice of Management,Sultan Chand, Delhi
3. Dr. P. C. Pardeshi : Business Management,Nirali Prakashan, Pune

Tilak Maharashtra University

Bachelor of Computer Applications

Semester	Fourth	Teaching Hrs = 40	
Subject Code	BCA – 444-20		
Subject Name	**Advanced Database Management System**		
Examination Scheme			**Credits**
External Exam	Internal Exam	Total Marks	
60	**40**	**100**	**4**

Course Outcomes (COs)
After learning this course student will be able to,

- Knowledge of query processing and techniques involved in query optimization.
- Knowledge of the principles of concurrency control.
- Knowledge of the principles of recovery management.

1. **Introduction to RDBMS** **1 Hrs**
   - What is RDBMS
   - Difference between DBMS & RDBMS

2. **SQL (Structured Query Language)** **12 hrs**
   - Subdivisions of SQL
     DDL, DML ,DCL with all commands
   - Data Types
   - The CREATE TABLE Command,
     Constraints in CREATE TABLE
   - Inserting Data into tables
   - Viewing Data in the tables (SELECT with all options)
   - Sorting data in a table (Order By)
   - Group By, Having clause
   - Delete operations
   - Updating the contents of the table
   - Modifying structure of a table
   - Renaming table, Truncating tables, Destroying table
   - Data Constraints (Primary Key, Foreign Key, Unique Key, Check, Default, NOT NULL)
   - Computations done on Table data (Arithmetic Operators, logical operators, range searching, pattern matching(LIKE)
   - Functions (Aggregate functions, Numeric Functions, Character Function, Date function, Conversion function)
   - Sub queries
   - Joins (Simple Join, inner join, outer join, cross join)

3. Oracle Objects **3 Hrs**

- Views
- Sequences
- Index

4. PL/SQL **10 Hrs**

- Introduction to PL/SQL
- Architecture of PL/SQL
- Data types
- PL/SQL blocks (attribute- %TYPE, %ROWTYPE)
- Operators, functions, comparisons, numeric, character, date
- Control Statements
    1. Conditional control (if statement)
    2. Interactive control (Loops)
    3. Sequential Control (GOTO statement)

5. Error Handling (Exception handling) **1 Hrs**

Pre-defined,
User defined

6. Functions, Procedures **1 Hrs**

7. Cursors **4 Hrs**

Definition
Types of cursors (Implicit, explicit)

8. Triggers **2 Hrs**

9. Packages **1 Hrs**

10.NoSQL Database **5 hrs**

Introduction to NoSQL Database, Types and examples of NoSQL Database- Key value store, document store, graph, Performance, Structured verses unstructured data, Distributed Database Model, Comparative study of SQL and NoSQL, NoSQL Data Models, Introduction to Big Data.

Reference Books:

SQL & PLSQL for Oracle 11G –Black Book
Oracle Database 11G- The complete reference

Tilak Maharashtra University

Bachelor of Computer Applications

Semester	Fourth	Teaching Hrs = 45	
Subject Code	BCA – 445-20		
Subject Name	Environmental Studies		
Examination Scheme			**Credits**
External Exam	Internal Exam	Total Marks	
60	**40**	**100**	**4**

Course Outcomes (COs)
After learning this course student will be able to,

- To understanding ecological and physical sciences and their application in environmental problem solving.
- To analyse interaction between social and environmental processes.

Unit 1 : Multidisciplinary nature of environmental studies (2 Hr)

Definition, scope and importance

Need for public awareness.

Unit 2 : Natural Resources :

Renewable and non-renewable resources :

Natural resources and associated problems.

a) Forest resources : Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
b) Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
d) Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
e) Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
f) Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

Unit 3 : Ecosystems (8 Hr)

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the

following ecosystem :-

a. Forest ecosystem
b. Grassland ecosystem
c. Desert ecosystem
d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 4 : Biodiversity and its conservation (6 Hr)

- Introduction – Definition : genetic, species and ecosystem diversity.
- Biogeographical classification of India
- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values
- Biodiversity at global, National and local levels.
- Inida as a mega-diversity nation
- Hot-sports of biodiversity.
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

Unit 5 : Environmental Pollution (8 Hr)

Definition

- Cause, effects and control measures of :-

a. Air pollution
b. Water pollution
c. Soil pollution
d. Marine pollution
e. Noise pollution
f. Thermal pollution

g. Nuclear hazards

- Solid waste Management : Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Diaster management : floods, earthquake, cyclone and landslides.

Unit 6 : Social Issues and the Environment (8 Hr)

- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rahabilitation of people; its problems and concerns. Case Studies
- Environmental ethics : Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Public awareness.

Unit 7 : Human Population and the Environment (7 Hr)

- Population growth, variation among nations.
- Population explosion – Family Welfare Programme.
- Environment and human health.
- Human Rights.
- Value Education.
- HIV/AIDS.
- Women and Child Welfare.

- Role of Information Technology in Environment and human health.
- Case Studies.

Unit 8 : Field work (6 Hr)

- Visit to a local area to document environmental assets-river/forest/grassland/hill/mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc. (Field work Equal to 5 lecture hours

References

1) https://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf
2) Environmental Studies - Saras Publication
3) A Textbook of Environmental Studies - Dr D.k.Asthana, Dr. Mera Asthana