Tilak Maharashtra University

Bachelor of Computer Applications

Semester	II	Teaching Hrs = 40	
Subject Code	BCA – 240 -20		
Subject Name	**Statistics**		
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,

* Recognize the importance and value of statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.
* Be life-long learners who are able to independently expand their statistical expertise when needed, or for interest's sake.

BCA-240-20 Statistics (40 Hrs)

1. Statistics **(5 Hr)**

Importance of statistics, scope of statistics in industry Economics, social sciences, management's sciences

2. Statistical Data **(5 Hrs)**

Types, variable, raw data attributes, primary and secondary data, Graphical representation of data, histogram, frequency, polygon, Ogive curves, diagrammatic representation of data. Simple bar diagram, subdivided bar diagram, pie diagram.

3. Measures Of Central Tendency **(8 Hrs)**

Concepts of central tendency of data, arithmetic mean, median, mode, Effects of change of origin scale on mean, numerical problems.

4. Measures Of Dispersion **(8 Hrs)**

Measures of dispersion absolute and relative measure of depression, Range, mean, variance, standard deviation coefficient of variation. Numerical problems.

5. Correlation **(5 Hrs)**

Correlation concept, Covariance, Coefficient of Correlation and Numerical problems

6. Linear Regression **(5 Hr)**

7. Index Numbers **(4 Hr)**

Price and quantity index numbers, Laspeyre's, Paasche's and Fisher's properties and Numerical, cost of Living Index Number.

Reference Books:

Mathematics and Statistics: -M. L. Vaidya, M. K. Kelkar
Statistical Analysis: -A Computer Oriented Approach
Introduction to Mathematical Statistics -S.C. Gupta
Introduction to calculus of finite differences -Richardson C.

Note:

- 8^{th} Chapter of Binary system
- 5 th Chapter Measures of Skewness
- 7^{th} chapter Bivariate Data

Has been truncated from the syllabus of Statistics.

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Semester	II	**Teaching Hrs** = 28	
Subject Code	**BCA – 241-20**		
Subject Name	**Communication Skills**		
Examination Scheme			**Credits**
External Exam	Internal Exam	Total Marks	
30	**20**	**50**	**2**

Course Outcomes (COs)

After learning this course student will be able to,

* Demonstrate critical and innovative thinking.
* Display competence in oral, written, and visual communication.
* Apply communication theories.
* Show an understanding of opportunities in the field of communication.
* Use current technology related to the communication field.
* Respond effectively to cultural communication differences.
* Communicate ethically.
* Demonstrate positive group communication exchanges.

BCA - 241-20 Communication Skills

1. The Types of Business Communication **2** Hr

Business Communication
The Classification, Functions & Scope of Business Communication
Internal Communication
External Communication

2. The Communication Process **2** Hr

Elements of Communication
The Communication Cycle
The Barriers To Communication

3. The Principles of Communication **2** Hr

The Medium of Communication
Accuracy
Brevity
Clarity
Courtesy

4. The Modes of Communication **3** Hr

Introduction
The Types of Communication
Oral Communication
Written Communication

Non-Verbal Communication
Visual Signs in Non-Verbal Communication
Audio Signals in Non-Verbal Communication
Silence
Time
Touch
The Functions of Non-Verbal Communication
The Merits & Demerits of Non-Verbal Communication

5. Verbal Skills **2** Hr
Introduction
The Language used in Oral Communication
Verbal & Linguistic Modifiers & Regulators & Voice Culture
The Techniques of Delivery

6. The Art of Listening **2** Hr
Listening & Hearing
The Value of Listening
The Functions of Listening
The Pitfalls involved in Listening
The Process of Listening / The Principles of Listening
How to Listen Efficiently
The Barriers to Efficient Listening
The Types of Listening

7. Body Language **2** Hr
Introduction
The Types of Body Language
Facial Expressions
Kinesics Related To the Body
Touch

8. How to conduct Oral Communication **2** Hr
The Classification of Oral Communication
Dyadic Communication
Group Communication
Requests
Complaints
Inquiries
Introduction
Dictation
The Telephone
Interviews An Overview
At the Interview Venue

9. The Essentials of Written Communication **2** Hr
Introduction
Alignment
Font Style
Bold, Italics & Normal

Font Size
Indentation & Block Style
Items
Emphasis
Letter Heads
Continuation Sheets
Stationery
Presentation

Reference Books:

1. Communication Skills : Dr. Rao & Dr. Das- Himalaya Publishing House
2. Communication Skills : Dr. Urmila Rai, S.M. Rai – Himalaya Publishing house
3. Communication : By C.S. Rayadu - Himalaya Publishing House
4. Developing Communication Skills : Mohan Banerjee, Macmillan, India
5. Business Correspondance & report : R. C. Sharma, Krishna Mohan Writing- A Practical approach to Business & technical communication
6. Communication Skills for : Dr. Anjali Ghanekar, Everest Publishing

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Bachelor of Computer Applications

Semester	II	Teaching Hrs = 35	
Subject Code	BCA – 242-20		
Subject Name	**Object Oriented Programming using C++**		
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,

* Understand the OOP principles
* Develop knowledge of Advance version of language C with classes and objects
* Differentiate between object oriented programming and procedural oriented language and data types in C++.
* Simulate the problem in the subjects like Operating system, Computer networks and real world problems.
* Develop knowledge of program using C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.

BCA – 242 -20 C++

Total Lectures: 35 Hr

INTRODUCTION (3 Hour)

C++ programming Basic

Object Oriented programming, Characteristics, Advantages of object Oriented programming over procedural language.

INTRODUCTION TO C++, EXTENSION OF C (4 Hour)

Data types, constants, references, Variable, Loops and decisions

Arrays, strings and Structures Revision

Classes and objects

INTRODUCTION TO C++ CLASSES: (5 Hour)

Data Members, Functions, Scope resolution operator,

Access specifier

New, delete operator, Static members.

CONSTRUCTOR and DESTRUCTOR (3Hour)

Encapsulation, Inline functions, and default parameters

Pointers and '*This*' pointer

OVERLOADING: (6Hour)

Function Overloading, Operator Overloading

Default Arguments

INHERITANCE: (4 Hour)
Base class, derived class, Virtual Class, Abstract class.

POLYMORPHISM (4 Hour)
Virtual functions, Pure Virtual functions and abstraction
Function Overloading and ambiguities
All remaining types of functions

STREAM CLASS, FILE INPUT/OUTPUT. (3 Hour)
FStream classes, working with files with functions for reading and writing

EXCEPTION HANDLING. (3 Hour)
Fundamental, Multiple catch statements, catching all exception
Templates concept

Reference Books:

The complete reference - Herbert Schildt
Object Oriented Programming in C++ - Robert Lafore
Object Oriented Programming in C++ - E Balagurusamy

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Semester	II	**Teaching Hrs** = 40	
Subject Code	BCA – 243-20		
Subject Name	Structured System Analysis and Design		
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,

- Define and describe the five phases of the system development life cycle.
- Understand the expected benefits from systems projects.
- Explain the ways in which information systems support business requirements.
- Understand how systems analysts interact with users, management, and other information systems professionals.
- Develop data flow diagrams and decision tables.
- Perform a feasibility study.
- Evaluate systems development alternatives.
- Solve realistic systems analysis problems.

BCA-243-20 SSAD Structured System Analysis and Design

1. **System Concept and the information system environment (3 Hr)**
   System concept definition, Characteristics of system, Boundaries and interface, Open and closed system, Types of system

2. **Phases of Software Development Life Cycle (4 Hr)**
   What are problem, Feasibility study, analysis, design, implementation, and maintenance

3. **The role of System analyst (3 Hr)**
   Academic and professional qualifications, the multifaceted role of the analyst, Change agent, Investigation and monitoring, Architect, Psychologist, The analyst/ User Interface, MIS organization

4. **Different approaches to Software Development (3 Hr)**
   Waterfall model, Spiral Model, Prototyping, RAD, Object oriented

5. **Structured System Analysis Tools and Techniques (3 Hr)**
   Fact finding tools and techniques,Functional Decomposition Diagram (FDD)

6. **Application System Modeling (3 Hr)**

ER model (Data Modeling), Data Flow Diagram (Process Modeling)

7. **Database Design Methods** **(2 Hr)**
   Mapping ER diagram, Data Normalization techniques

8. **Logic representation techniques** **(2 Hr)**
   Decision trees, Decision tables, Structured English

9. **Input/output form design** **(3 Hr)**
   Input data, input media and devices, output design, form design, classification of form, form control

10. **System testing and quality assurance** **(4 Hr)**
    Nature of test data, test plan, system testing, quality assurance, audit trail

11. **Hardware and software selection** **(2 Hr)**
    Hardware suppliers, software suppliers, service suppliers, procedure for hardware and software selection

12. **Implantation and software maintenance** **(4 Hr)**
    Request for review, review plan, software maintenance, Maintenance procedure, reducing maintenance cost.

13. **Project scheduling and software** **(2 Hr)**
    Why do system fails, project management

14. **Security and Recovery of systems** **(2 Hr)**
    System security, Recovery planning

Reference Books:

System Analysis and Design	-	V. Raja Raman
Introduction to system Analysis	-	Skidmore
Introduction to system Design	-	Skidmore
System Analysis and Design	-	Elias M. Awad

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Semester	II	Teaching Hrs = 35	
Subject Code	BCA – 244-20		
Subject Name	Principles and Practices of Management-I		
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,

* Discuss and communicate the management evolution and how it will affect future managers.
* Evaluate leadership styles to anticipate the consequences of each leadership style.
* Observe and evaluate the influence of historical forces on the current practice of management.
* Explain how organizations adapt to an uncertain environment and identify techniques managers use to influence and control the internal environment.
* Practice the process of management's four functions: planning, organizing, leading, and controlling.
* Gather and analyze both qualitative and quantitative information to isolate issues and formulate best control methods.

BCA-244-20 Principles and Practice of Management (PPM 1)

1. ***Management an Overview:*** ***(5 Hr)***
   a. Meaning , Definition
   b. Nature of mgmt.
   c. Importance of mgmt.
   d. Functions of mgmt.
   e. Management as an art , a science and a profession
   f. Levels of management
   g. Managerial skills
   h. Distinguish between management, organization and administration

2. ***Evolution of Mgmt. thought :*** ***(5 Hr)***
   a. Contribution of F.W.Taylor
   b. Contribution of Henry Fayol
   c. Contribution of Elten Mayo
   d. management thoughts today(other contributions)

3. ***Planning :*** ***(5 Hr)***
   a. Meaning, definitions
   b. Nature , characteristics

c. Process of planning
d. Types of planning
e. Essentials of good plan
f. Importance, Advantages, Disadvantages

4. Forecasting: ***(5 Hr)***

a. Meaning, definitions
~~b.~~ Importance
c. Techniques
d. Advantages and limitations

5. Decision making: ***(5 Hr)***

a. Meaning and definitions
b. Importance of decision making
c. Types of decisions
d. Process of decision making
e. Styles of decision making
f. Techniques used in decision making

6. Organizing: ***(5 Hr)***

a. Meaning and definitions
b. Features of organizational structure
c. Types of organization:
    a. Line
    b. Line and staff
    c. Functional
    d. matrix
    e. Committee
e. Departmentalization
f. Span of management
g. Delegation of authority
h. Centralization and decentralization

CASE STUDY (5 ***Hr***)

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