# BCA Course Outcome I and II Semester

## Semester: I

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| Course Code: GRA210 | **Course Title:** Fundamentals of Computers |
| Course Credits: 03 | Hours/Week: 03 |
| Total Contact Hours: 42 | Formative Assessment Marks: 40 |
| Exam Marks:60 | Exam Duration: 03 |

**Course Outcomes (COs):**

• Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers

• Operating systems, functions of operating systems, classification of operating systems, kernel, shell, basics of Unix, shell programming, booting

• Databases, why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or in not in

• Internet basics, features, applications, services, internet service providers, domain name system, browsing, email, searching

• Web Programming basics, introduction of HTML and CSS programming

• Introduction of computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers.

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|---|---|
| **Course Code: GRA220** | **Course Title: Programming in C** |
| Course Credits: 03 | Hours/Week: 03 |
| Total Contact Hours: 42 | Formative Assessment Marks: 40 |
| Exam Marks: 60 | Exam Duration: 03 |

**Course Outcomes (COs):**

After completing this course satisfactorily, a student will be able to:

• Confidently operate Desktop Computers to carry out computational tasks

• Understand working of Hardware and Software and the importance of operating systems

• Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts

• Read, understand and trace the execution of programs written in C language

• Write the C code for a given problem

• Perform input and output operations using programs in C

• Write programs that perform operations on arrays

| **Course Code: GRA230** | **Course Title:** Mathematical Foundation |
|---|---|
| Course Credits: 03 | Hours/Week: 03 |
| Total Contact Hours: 42 | Formative Assessment Marks: 40 |
| Exam Marks: 60 | Exam Duration: 03 |

**Course Outcomes (COs):**

• Study and solve problems related to connectives, predicates and quantifiers under different situations.

• Develop basic knowledge of matrices and to solve equations using Cramer's rule.

• Know the concept of Eigen values.

• To develop the knowledge about derivatives and know various applications of differentiation.

• Understand the basic concepts of Mathematical reasoning, set and functions

## Semester: II

| Course Code: GRB210 | **Course Title: Data Structures using C** |
|---|---|
| Course Credits: 03 | Hours/Week: 03 |
| Total Contact Hours: 42 | Formative Assessment Marks: 40 |
| Exam Marks: 60 | Exam Duration: 03 Hours |

**Course Outcomes (COs):**

After completing this course satisfactorily, a student will be able to:

• Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms

• Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs

• Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs

• Demonstrate different methods for traversing trees

• Compare alternative implementations of data structures with respect to performance

• Describe the concept of recursion, give examples of its use

• Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing

| Course Code: GRB220 | **Course Title: Object Oriented Programming with JAVA** |
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| Course Credits: 03 | Hours/Week: 03 |
| Total Contact Hours: 42 | Formative Assessment Marks: 40 |
| Exam Marks: 60 | Exam Duration: 03 Hours |

**Course Outcomes (COs):**

After completing this course satisfactorily, a student will be able to:

• Understand the features of Java and the architecture of JVM

• Write, compile, and execute Java programs that may include basic data types and control flow constructs and how type casting is done

• Identify classes, objects, members of a class and relationships among them needed for a specific problem and demonstrate the concepts of polymorphism and inheritance

• The students will be able to demonstrate programs based on interfaces and threads and explain the benefits of JAVA's Exceptional handling mechanism compared to other Programming Language

• Write, compile, execute Java programs that include GUIs and event driven programming and also programs based on files

| **Course Code: GRB230** | **Course Title: Discrete Mathematical Structures** |
|---|---|
| Course Credits: 03 | Hours/Week: 03 |
| Total Contact Hours: 42 | Formative Assessment Marks: 40 |
| Exam Marks: 60 | Exam Duration: 03 Hours |

**Course Outcomes (COs):**

After completing this course satisfactorily, a student will be able to:

• To understand the basic concepts of Mathematical reasoning, set and functions.

• To understand various counting techniques and principle of inclusion and exclusions.

• Understand the concepts of various types of relations, partial ordering and

• equivalence relations.

• Apply the concepts of generating functions to solve the recurrence relations.

• Familiarize the fundamental concepts of graph theory and shortest path algorithm