

**JSS College for Women (Autonomous)**  
**Department of Computer Science**  
**B.Sc (Computer Science) Course Outcome I to VI Semester (NEP 2020)**  
**Semester: I**

Course Code: GMA280	<b>Course Title:</b> Computer Fundamentals and Programming in C
Course Credits: 04	Hour of Teaching/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 2 <sup>1</sup> / <sub>2</sub> Hours

**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

**Semester: II**

Course Code: <b>GMB280</b>	<b>Course Title:</b> Data Structures using C
Course Credits: 04	Hour of Teaching/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 2 <sup>1</sup> / <sub>2</sub> 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 and searching

### Semester: III

Course Code: GMC280	<b>Course Title:</b> Object oriented Programming with JAVA
Course Credits: 04	Hour of Teaching/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 2 1/2 Hours

#### Course Outcomes (COs):

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

- Explain the object-oriented concepts and JAVA.
- Write JAVA programs using OOP concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.
- Implement Classes and multithreading using JAVA.
- Demonstrate the basic principles of creating Java applications with GUI.

### Semester: IV

Course Code: GMD280	<b>Course Title:</b> Database Management System
Course Credits: 04	Hour of Teaching/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 2 1/2 Hours

#### Course Outcomes (COs):

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

- Explain the various database concepts and the need for database systems.
- Identify and define database objects, enforce integrity constraints on a database using DBMS.
- Demonstrate a Data model and Schemas in RDBMS.
- Identify entities and relationships and draw ER diagram for a given real-world problem.
- Convert an ER diagram to a database schema and deduce it to the desired normal form.
- Formulate queries in Relational Algebra, Structured Query Language (SQL) for database manipulation.
- Explain the transaction processing and concurrency control techniques.

## B.Sc.: Semester V

DSC-5 Course code: GME 280	Course Title: Programming in Python
Total Contact Hours: 52	Course Credits: 04
Formative Assessment Marks: 40	Duration of SEE/Exam: 2½ Hours
Summative Assessment Marks: 60	

**Course Outcomes (COs):** After the successful completion of the course, the student will be able to:

**CO1:** Setup python to develop simple applications

**CO2:** Understand the basic concepts in Python Programming

**CO3:** Learn how to write, debug and execute Python programs

**CO4:** Understand and demonstrate the use of advanced data types such as tuples, dictionaries and lists, Tuples and Sets

**CO5:** Design solutions for problems using object-oriented concepts in Python

**CO6:** Use and apply the different Python Libraries for GUI Interface, Data Analysis and Data

Visualization

**CO7:** Extend the knowledge of python programming to build successful career in software development

## B.Sc.: Semester V

DSC-6 Course code: GME 290	Course Title: Computer Networks
Total Contact Hours: 52	Course Credits: 04
Formative Assessment Marks: 40	Duration of SEE/Exam: 2½ Hours
Summative Assessment Marks: 60	

**Course Outcomes (COs):** After the successful completion of the course, the student will be able to:

- Define various data communication components in networking
- Describe networking with reference to different types of models and topologies
- Understand the need for Network and various layers of OSI and TCP/IP reference model
- Explain various Data Communications media
- Describe the physical layer functions and components
- Identify the different types of network topologies and Switching methods
- Describe various Data link Layer Protocols
- Identify the different types of network devices and their functions within a network
- Analyse and interpret various Data Link Layer and Transport Layer protocols
- Explain different application layer protocols

## **B.Sc.: Semester VI**

DSC-7 Course code: GMF 280	Course Title: Web Technologies
Total Contact Hours: 52	Course Credits: 04
Formative Assessment Marks: 40	Duration of SEE/Exam: 2½ Hours
Summative Assessment Marks: 60	

### **Course Outcomes (COs):**

After the successful completion of the course, the student will be able to:

- Understand basics of web technology
- Recognize the different Client-side Technologies and tools like, HTML, CSS, JavaScript
- Learn Java Servlets and JDBC
- Web Technology for Mobiles and Understand web security

## **B.Sc.: Semester VI**

DSC-8 Course code: GMF 290	Course Title: Statistical Computing & R Programming
Total Contact Hours: 52	Course Credits: 04
Formative Assessment Marks: 40	Duration of SEE/Exam: 2½ Hours
Summative Assessment Marks: 60	

### **Course Outcomes (COs):**

After the successful completion of the course, the student will be able to:

- Explore fundamentals of statistical analysis in R environment
- Describe key terminologies, concepts and techniques employed in Statistical Analysis
- Define Calculate, Implement Probability and Probability Distributions to solve a wide Variety of problems
- Conduct and interpret a variety of Hypothesis Tests to aid Decision Making
- Understand, Analyse, and Interpret Correlation Probability and Regression to analyse the underlying relationships between different variables