

Singhania University

(UGC- recognized university per section 2(f) of the UGC Act 1956)

COURSE OUTLINE

COURSE TITLE	Mathematical Foundation of Computer Science
Course Code	BCA-101
Credits	4 (L: 3 ,P:2 ,5)
Faculty Name	Vikash sharma
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

The Mathematical Foundation of Computer Science course aims to provide students with a strong foundation in the mathematical concepts and techniques essential for computer science. The course covers topics in discrete mathematics, logic, set theory, combinatorics, graph theory, and algorithms, equipping students with the skills needed for rigorous reasoning and problem-solving in computer science.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

- 1 Gain knowledge of the concepts and theory of limit, continuity and differentiability of functions. Attain skills of calculating the limit of functions and examining the continuity and differentiability of different types of functions, and perform successive differentiation of functions. To apply the procedural knowledge to obtain the series expansions of functions which find multidisciplinary applications.
2. Understand concepts of asymptotes and curvature, the geometrical meaning of these terms and to have procedural knowledge to solve related problems.
3. Determine singular points of a curve and classify them. Understand the concept of rectification of curves and derive the reduction formulae.
4. Have theoretical knowledge and practical skills to evaluate the area bounded by the curves, and volume and surface area of solids formed by revolution of curves.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
Attendance & Classroom participation	10%	Students should have at least 75% attendance
Mid- Sem Exam	20%	Mid term exam must be cleared by students for appearing in final examination.
End- Sem Exam	50%	The end term exam must be cleared for appearing in next semester with a minimum passing criteria .

6. Academic Integrity:

- Please note that students involved in academic dishonesty will receive a **ZERO** grade on the particular component in which the infraction occurred.
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7. No Network Policy

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operate such devices during the session timings will be penalized as per the rules. No discussion or negotiation will be entertained at all with respect to this.

COURSE TITLE	Programming Fundamental and Problem Solving using C
Course Code	BCA-102
Credits	4 (L: 3 ,P:2 ,5)
Faculty Name	Vikash sharma
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25, 1st Semester

1. Course Description

The Programming Fundamentals and Problem Solving Using C course aims to introduce students to the fundamental concepts of programming and develop problem-solving skills using the C programming language. The course covers basic programming constructs, data types, control structures, functions, arrays, pointers, and file handling in C.

Course Content:

2. Student Learning Outcomes :

At the end of this course, students should be able to:

Understand the concepts of computer and its applications in various fields. CO2: Understand the fundamental concepts of programming in C language. CO3: Demonstrate an understanding of data types, control structures, functions, arrays, and pointers CO4: Develop basic programming solutions using C language. CO5: Apply basic programming concepts to solve practical problems

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
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COURSE TITLE	Foundation of Computer Science
Course Code	BCA(M)-103
Credits	2 (L: 1 ,P: 1,2)
Faculty Name	Vikash sharma
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

The Foundations of Computer Science course aims to provide students with a comprehensive understanding of the fundamental concepts and principles that form the basis of computer science. The course covers essential topics such as algorithms, data structures, computational theory, and computer architecture, equipping students with the knowledge and skills necessary for further study and professional practice in computer science.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

1. understand the basics of computer
2. learn about I/O devices and operating systems
3. understand internet and its services
4. learn about the threats and security concepts on computers

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
Attendance & Classroom participation	10%	Students should have at least 75% attendance

Mid-Sem Exam	20%	Midterm exam must be cleared by students for appearing in final examination.
End- Sem Exam	50%	The end term exam must be cleared for appearing in next semester with a minimum passing criteria .

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COURSE TITLE	Computer Fundamental and PC Software
Course Code	MDC-101
Credits	4 (L:3 ,T:1, 4)
Faculty Name	Vikash sharma
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

The Computer Fundamentals and PC Software course is designed to provide students with a foundational understanding of computer systems, their components, and the essential software used in personal computing. The course covers hardware basics, operating systems, application software, and practical skills for using and managing PC software effectively.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

1: Understand the fundamental concepts of Computers & its applications. CO2: Understand the basic concepts of memory, storage devices and operating system. CO3: Understand the concept of ICT. CO4: Get exposure of data processing tool. CO5: Get exposure of data analysis and Presentation tool

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
Attendance & Classroom participation	10%	Students should have at least 75% attendance
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entertained at all with respect to this.

COURSE TITLE	English and Communication Level-1
Course Code	MAT-M1
Credits	2 (L:1 ,T:1, 2)
Faculty Name	Vikash sharma
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

English and Communication is a “minor program” in Bachelor of Computer Applications. The objective of this is to enable the students to solve the normal English and Communication problems on the basis of 12th class.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

1 The students will progress to understand intermediate of grammar. 2 The students will be able to understand tenses. 3 The students will be able to understand parts of speech, voice and narration. 4 Comprehend different forms and techniques of short fiction.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

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5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
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COURSE TITLE	Internet and Web Design
Course Code	SEC-1
Credits	3 (T:3 P:0,3)
Faculty Name	Vikash sharma
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

Internet and Web Design for Computer Science is” **multi disciplinary**” subject in Bachelor of Computer Applications. The objective of this is to enable the students to solve the social issues with the help of Internet and Web Design .

2. Student Learning Outcomes :

At the end of this course, students should be able to:

CO1: Understand the fundamental concept of internet and search engine. CO2: Understand the concept of Web-casting techniques. CO3: Understand the concept of website planning. CO4: Get exposure of HTML and handful exposure of HTMLtags. CO5: Learn about CSS and its characteristics.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
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entertained at all with respect to this.

COURSE TITLE	Digital and Technological Solutions-I
Course Code	VAC-1
Credits	4 (L:3 ,T:1 ,4)
Faculty Name	Monika
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25, 1st Semester

1. Course Description

Digital Solutions is an essential program in Bachelor of Computer Applications. The objective of this is to enable the students to solve the formalize intuitive notions of symmetry and which explores properties of integers and other closely related number systems

2. Student Learning Outcomes :

At the end of this course, students should be able to:

Utilize advanced search techniques and web

By the end of the course the students will be able to:• CO1: Understand the concept of logic gates.• CO2: Understand and use of number system and their• conversion. CO3: Learn the concept of combinational circuit and• sequential circuits. CO4: Understand the concept of Computer Organization and• instruction sets. CO5: Explore concepts related to Memory Organization and• Input Output Organization..

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.

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COURSE TITLE	Digital Logic Design
Course Code	BCA-201
Credits	3(L:2,T:1,3)
Faculty Name	Monika
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25, 2 nd Semester

1. Course Description:

Digital Design, as a minor course in the Bachelor of Computer Applications (BCA), aims to equip students with the skills to perform algebraic and arithmetic operations on various number systems. This foundational knowledge is essential for understanding how digital systems operate, including computers and other electronic devices. The course typically covers topics such as binary, octal, and hexadecimal

number systems, Boolean algebra, and logic gates, which are crucial for designing and analyzing digital circuits..

2. Student Learning Outcomes :

At the end of this course, students should be able to:

By the End of course the students will be able to:• CO1 Achieve Knowledge of design and development of C• problem solving skills CO2 Understand the basic principles of Programming in C• language CO3 Implement the concept of functions, arrays and pointers• in C language CO4 Understand and implement the concept of linear data• structure such as link list, stack and queue. CO5 Understand and implement the non linear data structures• such as tree and graph.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
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COURSE TITLE	Data and file structure
Course Code	BCA-202
Credits	3(L:2,T:1 ,3)
Faculty Name	Sushil
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25, 2 nd Semester

1. Course Description:

The Data and File Structures course aims to provide students with a thorough understanding of data organization, manipulation, and storage techniques. The course focuses on the efficient management and retrieval of data, which is essential for the development of high-performance software applications.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

By the end of the course the students will be able to:• CO1: Understand the fundamental concepts of data structures. • CO2: Design and implement various data structures to solve computational problems. CO3: Apply data structures for efficient storage and retrieval • of information. CO4: Develop algorithms for searching and sorting data. • CO5: Implement file handling operations in a programming • environment.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
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COURSE TITLE	Programming in C and Data Structure
Course Code	PSY-102
Credits	4(L:3 , T: 1 , 4)
Faculty Name	Vikash sharma
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25 2nd Semester

1. Course Description:

The Programming in C and Data Structures course aims to provide students with a comprehensive understanding of the C programming language and the fundamental data structures used in computer science. The course focuses on developing problem-solving skills and efficient data management techniques, which are essential for software development.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

By the End of course the students will be able to:• CO1 Achieve Knowledge of design and development of C• problem solving skills CO2 Understand the basic principles of Programming in C• language CO3 Implement the concept of functions, arrays and pointers• in C language CO4 Understand and implement the concept of linear data• structure such as link list, stack and queue. CO5 Understand and implement the non linear data structures• such as tree and graph.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

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COURSE TITLE	Object Oriented and Programming in c++
Course Code	AGR-M1
Credits	2 (T:2 , P: 0 , 2)
Faculty Name	Vikash sharma
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25 2 nd Semester

1. Course Description:

The Object-Oriented Programming in C++ course aims to provide students with a solid understanding of the principles of object-oriented programming (OOP) and how to apply these principles using the C++ programming language. The course focuses on developing software design skills and writing efficient, modular, and maintainable code.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

1. The students will learn about section formula ,distance formula .
2. He will be able to learn two dimensional equations solutions.
3. The knowledge about differentiations.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
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COURSE TITLE	Data base Management system and SQL
Course Code	AEC-201
Credits	4 (T:3 , P :1 ,4)
Faculty Name	Vikash shrma
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25 2nd Semester

1. Course Description:

The Database Management Systems (DBMS) and SQL course aims to provide students with a comprehensive understanding of database concepts, design, and management. The course focuses on the principles of database systems, relational database models, and the practical use of SQL for data manipulation and querying.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

Acquaint the students with the knowledge of series & sequence, single & multiple variable calculus, knowledge of vector calculus and their applications

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

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5. Evaluation:

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Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
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COURSE TITLE	Python Programming
Course Code	SEC-201
Credits	4 (T:3 , T :1 ,4)
Faculty Name	Dharpal
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25 2 nd Semester

1. Course Description:

The Python Programming course aims to provide students with a comprehensive introduction to the Python programming language. The course covers fundamental programming concepts, data structures, object-oriented programming, and advanced Python features. Students will learn to write efficient, readable, and maintainable code for a variety of applications.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

Impart knowledge of matrices and applications closed form and series solutions of Differential equations, Laplace Transform, Fourier series, Fourier Transform & their applications.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
Attendance & Classroom participation	10%	Students should have at least 75% attendance
Mid-Sem Exam	20%	Midterm exam must be cleared by students for appearing in final examination.
End- Sem Exam	50%	The end term exam must be cleared for appearing in next semester with a minimum passing criteria .

6. Academic Integrity:

- Please note that students involved in academic dishonesty will receive a **ZERO** grade on the particular component in which the infraction occurred.
- Academic dishonesty consists of misrepresentation by deception or by other fraudulent means. In an academic setting this may take the form of copying or use of unauthorized aids in tests, assignments, examinations, term papers, or cases; plagiarism; talking during in-class examinations; submission of work that is not your own without citation; submission of work generated by another person; aiding and abetting another student's dishonesty; and giving false information for the purpose of gaining credits.

7. No Network Policy

Students cannot operate any network enabled devices such as cell phones, e- tabs, I -pads or any other electronic network enabled devices inside the classroom during the sessions unless specifically instructed by the faculty. In case you are compelled to carry it in person, you may keep it in the switched off mode. Anyone found to operate such devices during the session timings will be penalized as per the rules. No discussion or negotiation will

COURSE TITLE	Environmental Science(Environmental Issues)
Course Code	VAC-201
Credits	4 (T:3 , T :1 ,4)
Faculty Name	Dharpal
Program	Bachelor of Computer Applications
Academic Year and Semester	w.e.f. 2024-25 2 nd Semester

be entertained at all with respect to this.

1. Course Description:

The Environmental Science course focuses on understanding environmental issues, their causes, impacts, and solutions. The course aims to equip students with the knowledge and skills to analyze environmental problems critically and to explore sustainable solutions for a healthier planet.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

Impart knowledge of matrices and applications closed form and series solutions of Differential equations, Laplace Transform, Fourier series, Fourier Transform & their applications.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
Attendance & Classroom participation	10%	Students should have at least 75% attendance
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