

# FOUR YEAR UNDERGRADUATE PROGRAM (NEP-2020)

## Program: Bachelor in Computer Application (2024 -28)

### DISCIPLINE – COMPUTER APPLICATION

#### SESSION – 2024 -25

DSC -01 to 20		DSE -01 to 12	
Code	Title	Code	Title
CASC -01	Discrete Mathematics	CASE -01	Cyber Security and Cyber Law
CASC -02T	Computer Fundamental and MS-Office	CASE -02	Artificial Intelligence and Expert System
CASC -02P	<b>Lab 1:</b> MS-Office	CASE -03	Numerical Analysis
CASC -03T	Operating System	CASE -04	Computer System Architecture
CASC -03P	<b>Lab 2:</b> Operating System	CASE -05	Computer Graphics
CASC -04	Digital Electronics	CASE -06T	Cloud Computing
CASC -05T	Programming in C++	CASE -06P	<b>Lab 13:</b> Cloud Computing
CASC -05P	<b>Lab 3:</b> Programming in C++	CASE -07	Cryptography and Network Security
CASC -06T	Data Structure	CASE -08	Advanced Operating systems
CASC -06P	<b>Lab 4:</b> Data Structure Using C++	CASE -09	Soft Computing
CASC -07	Software Engineering	CASE -10	Digital Image Processing
CASC -08T	Relational Database Management System	CASE -11	Big Data Analytics
CASC -08P	<b>Lab 5:</b> Relational Database Management System ( Oracle/MySQL)	CASE -12	Major Project-2
CASC -09T	Programming in Java		
CASC -09P	<b>Lab 6:</b> Programming in Java	<b>DGE -01 &amp; 02</b>	
CASC -10	Theory of Computation	CAGE -01T	Computer Fundamental and MS-Office
CASC -11T	Web Technology	CAGE -01P	<b>Lab 1:</b> MS-Office
CASC -11P	<b>Lab 7:</b> Web Technology	CAGE -02T	Operating System
CASC -12T	Python Programming	CAGE -02P	<b>Lab 2:</b> Operating System
CASC -12P	<b>Lab 8:</b> Python Programming	<b>VAC</b>	
CASC -13	Data Mining and Data Warehousing	CAVAC-01	Artificial Intelligence
CASC -14T	Programming in .Net	<b>SEC</b>	
CASC -14P	<b>Lab 9:</b> Programming in .Net	CASEC-01	ICT Based Learning
CASC -15T	Machine Learning		
CASC -15P	<b>Lab 10:</b> Machine Learning		
CASC -16	Data Communication and Computer Networking		
CASC -17T	Advanced Java		
CASC -17P	<b>Lab 11:</b> Advanced Java		
CASC -18	Major Project-I		
CASC -19T	Mobile Application Development		

Date: 26/07/2024

Dr. H.S. Bhatia (Chairman)

Dr. K.B. Dubey

Dr. S.K. Sahu

Dr. Anil Kumar

Dr. Anshu Sharma

Dr. Sushil Kumar Sahu

Dr. S. Saini

Dr. R. Khuntia

Dr. Shailendra Arora

CASC -19P	Lab 12: Mobile Application Development		
CASC -20T	Fundamentals of IoT and Applications		
CASC -20P	Lab 14: Fundamentals of IoT and Applications		

**Program Outcomes (PO):**

- Gain a complete exposure to the theories and practices of Computer Application.
- Get transformed into a skilled learner and active programmer, enabling the students to focus on their higher studies.
- Value computer professionals and programmers.
- Explore how the concepts and applications of Computer lead to innovative thinking with a problem-solving attitude.

**Program Specific Outcomes (PSO):**

- Understand the basic computer knowledge and concept of operating systems.
- Understanding the concept of programming and develop program in C++.
- Understanding the concept of data structure and implementation with C/C++.
- Understanding the concept of DBMS and implementation in MySQL /Oracle.
- Understanding the concept of OOPs and Java programming and develop program in Java.
- Understanding the concept of web technology and its implementation with HTML/CSS/DHTML/PHP.
- Understand the basic concept of data and computer networks.
- Understanding the basic concept of digital electronics.
- Understanding the basic concept of cyber security and cyber law.
- Understanding the basic concept of Artificial Intelligence.

~~Dr. H.S. Hota~~  
(Chairman)

~~Kiran~~  
(Dr. K.B. Dubey)

~~Prabin~~  
(Dr. S.K. Sahu)

~~U.K.~~  
(Dr. U.K. Kumbhar)

~~Annu~~  
(Dr. Anil Sharma)

~~Prab~~  
(Dr. S. Jain)

~~Pr~~  
(R. Khuntia)

~~Sushil~~  
(Sushil Kumar Sahu)

~~Anurag~~  
(11/06/21)  
(Dr. Anurag Gupta)

~~Anurag~~  
(Dr. Anurag Shukla Ma)

~~Sh~~  
(Suresh Thakur)

~~Dr. S. P. Tanwar~~  
18-06-2019  
(Dr. S. P. Tanwar)

~~An~~  
(Shailendra Arora)

~~Anjeeta~~  
ANJEETA KUMAR

~~H.S.P. Tanwar~~  
(H.S.P. Tanwar)

# CURRICULUM STRUCTURE

## Scheme

**Program: BCA**

**Discipline: Computer Application**

Semester	Course Type	Course Code	Course Title	Total Credit	Total Marks	
					Max	Min
1 <sup>st</sup> Semester	DSC (Major/Core)	CASC-01	Discrete Mathematics	4	100	40
		CASC-02T	Computer Fundamental and MS-Office	3	100	40
		CASC-02P	Lab 1: MS-Office	1	50	20
		CASC-03T	Operating System	3	100	40
		CASC-03P	Lab 2: Operating System	1	50	20
2 <sup>nd</sup> Semester	DSC (Major/Core)	CASC-04	Digital Electronics	4	100	40
		CASC-05T	Programming in C++	3	100	40
		CASC-05P	Lab 3: Programming in C++	1	50	20
		CASC-06T	Data Structure	3	100	40
		CASC-06P	Lab 4: Data Structure Using C++	1	50	20
3 <sup>rd</sup> Semester	DSC (Major/Core)	CASC-07	Software Engineering	4	100	40
		CASC-08T	Relational Database Management System	3	100	40
		CASC-08P	Lab 5: Relational Database Management System (Oracle/MySQL)	1	50	20
		CASC-09T	Programming in Java	3	100	40
		CASC-09P	Lab 6: Programming in Java	1	50	20
	DSE	CASE-01	Cyber Security and Cyber Law	4	100	40
4 <sup>th</sup> Semester	DSC (Major/Core)	CASC-10	Theory of Computation	4	100	40
		CASC-11T	Web Technology	3	100	40
		CASC-11P	Lab 7: Web Technology	1	50	20
		CASC-12T	Python Programming	3	100	40
		CASC-12P	Lab 8: Python Programming	1	50	20

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Dr. Anand Sharma  
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	DSE	CASE-02	Artificial Intelligence and Expert System	4	100	40
5 <sup>th</sup> Semester	DSC (Major/Core)	CASC-13	Data Mining and Data Warehousing	4	100	40
		CASC-14T	Programming in .Net	3	100	40
		CASC-14P	Lab 9: Programming in .Net	1	50	20
		CASC-15T	Machine Learning	3	100	40
		CASC-15P	Lab 10: Machine Learning	1	50	20
	DSE	CASE-03	Numerical Analysis	4	100	40
6 <sup>th</sup> Semester	DSC (Major/Core)	CASC-16	Data Communication and Computer Networking	4	100	40
		CASC-17T	Advanced Java	3	50	20
		CASC-17P	Lab 11: Advanced Java	1	100	40
		CASC-18	Major Project-1	4	50	20
	DSE	CASE-04	Computer System Architecture	4	100	40
7 <sup>th</sup> Semester	DSC (Major/Core)	CASC-19T	Mobile Application Development	3	100	40
		CASC-19P	Lab 12: Mobile Application Development	1	50	20
	DSE	CASE-05	Computer Graphics	4	100	40
		CASE-06T	Cloud Computing	3	100	40
		CASE-06P	Lab 13: Cloud Computing	1	50	20
		CASE-07	Cryptography and Network Security	4	100	40
		CASE-08	Advanced Operating systems	4	100	40
8 <sup>th</sup> Semester	DSC (Major/Core)	CASC-20T	Fundamentals of IoT and Applications	3	100	40
		CASC-20P	Lab 14: Fundamentals of IoT and Applications	1	50	20
	DSE	CASE-09	Soft Computing	4	100	40
		CASE-10	Digital Image Processing	4	100	40
		CASE-11	Big Data Analytics	4	100	40
		CASE-12	Major Project - 2	4	100	40

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Dr. S. Datta

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Sushil Kumar Saha

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ANJEETA KUMAR

Dr. Anil Sharma

Dr. Anil Sharma

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF COMPUTER APPLICATION**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
Program: Bachelor in Computer Application (Certificate / Diploma / Degree/Honors)		Semester -III	Session: 2024-2025
1	Course Code	CASC-07	
2	Course Title	Software Engineering	
3	Course Type	DSC (Discipline Specific Course)	
4	Pre-requisite	As per program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able: <ul style="list-style-type: none"> <li>• Understand the fundamentals of software Engineering.</li> <li>• Identify and analyze the requirement of system.</li> <li>• Understand the design of existing System and Design the proposed System.</li> <li>• Understand the fundamentals of Software project management.</li> <li>• Create the test-cases and perform System testing.</li> <li>• Apply the concepts of software engineering for new system development.</li> </ul>	
6	Credit Value	4 Credits	Credit = 15 Hours - Learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40

**PART -B: Content of the Course**

Total No. of Teaching-learning Periods (01 Hr. per period) – 60 Periods (60 Hours)

Unit	Topics (Course contents)	No. of Period
I	<b>Software Engineering &amp; Models:</b> The evolving role of software, changing nature of software, Evolution of Software Engineering, Characteristics of software. SDLC Introduction, Software Process Models: Waterfall Model, V-model, Prototype model, RAD model, Incremental development model, Spiral Model, Evolutionary Model, RAD Model, Agile model.	15
II	<b>2 Requirements engineering process:</b> Requirement Gathering and Analysis, Feasibility studies, requirements validation, requirements management. Functional and Non-Functional Requirements, User requirements, System Requirements, SRS documents. <b>Design Engineering:</b> Software design concepts, design process, design methodology, Function-oriented software design, Structured analysis, Structured Chart, DFD, Concept of Modularity, Cohesion and Coupling, OOAD (Object oriented analysis and design) Concept, UML diagram, different view of software using UML diagrams, Class diagram, Object diagram, Activity diagram, Interaction diagram, State chart diagram.	15
III	<b>Software Project Management:</b> Need of Software project management, Software project managements complexities, Types of management in SPM, Project Planning, Software project scheduling, Project size estimation: LOC, Function Point. Project estimation techniques: Empirical, Analytical and Heuristic technique, COCOMO models.	15
IV	<b>Testing Strategies and Quality Management:</b> Testing Strategies for software, black-box and white-box testing, Verification and Validation, Unit-testing, Integration and system testing, Debugging approach. <b>Software Reliability &amp; Quality Management:</b> Software Reliability, Quality concepts, software quality assurance, software reviews, formal technical reviews, software configuration management, software reliability, the ISO 9000 quality standards. Capability Maturity Model. Risk Management.	15

Keywords Software, software Engineering, Models, Requirement engineering, Software Designing Tools, Testing.

Name and Signature of Convener & Members of CBAs:

Dr. H.S. Hota *(Signature)*  
 Chairman (Dr. K.B. Dubey) *(Signature)*  
 Dr. S.K. Saha *(Signature)*  
 Dr. S. Jain *(Signature)*  
 Dr. Anil Sharma *(Signature)*  
 Dr. A.S. Sharma *(Signature)*  
 ANJEETA Kujur *(Signature)*  
 R. Chakraborty *(Signature)*



**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF COMPUTER APPLICATION**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
<b>Program:</b> Bachelor in Computer Application <i>(Certificate / Diploma / Degree/Honors)</i>		<b>Semester - III</b>	<b>Session:</b> 2024-2025
1	<b>Course Code</b>	<b>CASC-08T</b>	
2	<b>Course Title</b>	<b>Relational Database Management System</b>	
3	<b>Course Type</b>	<b>DSC (Discipline Specific Course)</b>	
4	<b>Prerequisite (if, any)</b>	<i>As per program</i>	
5	<b>Course Learning Outcomes (CLO)</b>	At the end of this course, the students will be able to: <ul style="list-style-type: none"> <li>• Learn about Database Concepts, Architecture, various Users, Data Models and Data Management.</li> <li>• Familiar with RDBMS Software like Oracle and MySQL.</li> <li>• Create various Tables and Databases.</li> <li>• Explore various SQL commands.</li> <li>• Create Database on the basis of E-R diagrams for Minor and Major Project.</li> </ul>	
6	<b>Credit Value</b>	<b>3 Credits</b>	<b>Credit = 15 Hours - Learning &amp; Observation</b>
7	<b>Total Marks</b>	<b>Max. Marks: 100</b>	<b>Min Passing Marks: 40</b>

**PART -B: Content of the Course**

**Total No. of Teaching–Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)**

Unit	Topics (Course contents)	No. of Period
<b>I</b>	<b>Overview of Database Management:</b> Introduction, Data Processing versus Data Management, Data Models: Network Model, Relational Model, Hierarchical Model, Instance and schema, View of Database system, File Oriented Approach vs Database Oriented Approach, Data Independence, DBMS Architecture, Database Administration Roles, Database languages: DDL, DML, DCL, TCL, Different kinds of DBMS users, Introduction to Data Dictionary.	12
<b>II</b>	<b>Database Design and E-R Model:</b> Introduction, Entity, Strong and weak entities, Relationship, Cardinality, Attributes, Concept of keys: Super key, Candidate key, Primary key, Alternate key, Foreign key, ER Diagram, Constraints in Database, Codd's Rules, Extended ER features: Generalization, Specialization and Aggregation, Participation, Converting an E-R model into relational Schema.	11
<b>III</b>	<b>Relational Database Design and Operations:</b> Introduction, Dependencies: Functional dependencies, Multivalued Dependencies, Join dependencies, Database anomalies, Decomposition, Normalization: Normal forms 1NF, 2NF, 3NF, BCNF, 4NF, 5NF, Denormalization. Relational Algebra: Select operation, Project operation, Union operation, Cartesian Product operation, Intersection operation, Join operation, Different types of joins (Inner join, Outer join, Self join).	11
<b>IV</b>	<b>Transaction:</b> Introduction, Desirable properties of transaction (ACID), Concurrency control techniques, Serializability.	11
<b>Keywords</b>	<i>Data Models, Data Dictionary, E-R Model, E-R Diagram, Keys, Functional Dependency, Anomalies, Normalization, Relational Algebra, Concurrency, Serializability.</i>	

**Name and Signature of Convener & Members of CBoS:**

Convener: *Dr. S. Hota* (Chairman)
   
 Members: *Dr. K.B. Dubey*, *Dr. S.K. Saha*, *Dr. Anil Sharma*, *Dr. S. Jain*, *R. Khantke*, *Dr. A.S. Singh*, *Swarn Kataria*, *Shri. Anand*, *Anjeeta Kujur*



**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF COMPUTER APPLICATION**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
Program: Bachelor in Computer Application (Certificate / Diploma / Degree)		Semester - III	Session: 2024-2025
1	Course Code	CASC-08P	
2	Course Title	Lab 5: Relational Database Management System (Oracle/MySQL)	
3	Course Type	Practical	
4	Prerequisite	As per program	
5	Course Learning Outcomes (CLO)	<p>At the end of this course, the students will be able to:</p> <ul style="list-style-type: none"> <li>• Learn about Database Concepts, Architecture, various Users, Data Models and Data Management which helps them to interact with various Databases.</li> <li>• Develop various Tables and Databases which helps them to develop new Software.</li> <li>• Practice various SQL commands which helps them to generate new relationships among various Tables and Databases which are useful for Software Development.</li> <li>• Familiar with RDBMS Software like Oracle and SQL Server which are used as Backend for Software Development.</li> <li>• Develop new Databases for their Minor and Major Project Development which enhances their Data Storage, Data Accessibility and Data Management.</li> </ul>	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field Learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
<b>PART -B: Content of the Course</b>			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
List of Practical Experiments	<ol style="list-style-type: none"> <li>1. Design an employee table in Oracle/SQL Server having eid(primary key) ename, edesignation, edoj, edob, eaddress, salary, econtact as fields and answer the following questions :               <ol style="list-style-type: none"> <li>a) Insert five records in above created table.</li> <li>b) Display all five records.</li> <li>c) Delete the fourth record.</li> <li>d) Update the third record of the field ename as 'hari'.</li> <li>e) Add one new field in the table.</li> </ol> </li> <li>2. Design a salary table Oracle/SQL Server with one primary key and foreign key(employee table) having following fields : Month, working days, deptid, gross, incentive, deduction and net salary.               <ol style="list-style-type: none"> <li>a) Insert five records in the above created table.</li> <li>b) Display all five records.</li> <li>c) Use foreign key relations and display records.</li> <li>d) Update the second record of field deptid as 'Sales'.</li> <li>e) Add one new field in the table.</li> </ol> </li> <li>3. Create a new user in Oracle/SQL Server.</li> <li>4. Create a view in Oracle/SQL Server.</li> <li>5. Create a new table in Oracle/SQL Server and practice for join operation.</li> <li>6. Create a new user in Oracle/SQL Server and practice for the commit and rollback command.</li> </ol>		30







## PART-C: Learning Resources

### Text Books, Reference Books and Others

#### Text Books Recommended:

- Naughton P and Schildt H., Osborne, The complete reference, McGraw-Hill, Berkeley Publication.
- James R. Laverick, An Introduction to JAVA programming, Firewall Media publication.

#### Reference Books Recommended:

- E. Balgurusamy, Java Programming, McGraw-Hill Publication.
- Rashmi Kanta Das, Core JAVA for beginners, Vikas Publication.

#### Online Resources:

- SWAYAM URL Link for Java
  - [https://onlinecourses.swayam2.ac.in/aic20\\_sp13/preview](https://onlinecourses.swayam2.ac.in/aic20_sp13/preview)
  - [https://onlinecourses.nptel.ac.in/noc19\\_cs84/preview](https://onlinecourses.nptel.ac.in/noc19_cs84/preview)
  - <https://www.dqindia.com/iit-bombay-offers-free-online-course-java-swayam-platform/>
  - <https://www.classcentral.com/course/swayam-programming-in-java-12930>
- W3schools Java Tutorial.  
Java Tutorial (w3schools.com)
- Online Platforms to Exercise and Execute the Java Programs
  - Online Java Compiler (programiz.com)
  - Solve Java | HackerRank
  - Online Java Compiler - Online Java Editor - Java Code Online (jdoodle.com)
- NPTEL Channel: Programming in Java  
Programming In Java - Course (nptel.ac.in)

## PART -D: Assessment and Evaluation

### Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 +20	Better marks out of the two Test / Quiz obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10	
	Total Marks - 30	

End Semester Exam (ESE):	Two section – A & B
	Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks
	Section B: Descriptive answer type qts., 1 out of 2 from each unit-4x10=40 Marks

### Name and Signature of Convener & Members:

Dr. H.S. Flora  
 Chairman  
 Dr. K. Prasad  
 (Dr. K. Prasad)  
 Dr. S.K. Saha  
 (Dr. S.K. Saha)  
 Dr. Anil Sharma  
 (Dr. Anil Sharma)  
 Dr. S. Jain  
 (Dr. S. Jain)  
 R. Khuntia  
 (R. Khuntia)  
 Dr. AS. Sharma  
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ANJEETA Kujur

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF COMPUTER APPLICATION**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
<b>Program: Bachelor in Computer Application</b> (Certificate / Diploma / Degree)		<b>Semester – III</b>	<b>Session: 2025-2026</b>
1	<b>Course Code</b>	CASC-9P	
2	<b>Course Title</b>	Lab 6: Programming in Java	
3	<b>Course Type</b>	Practical	
4	<b>Prerequisite (if, any)</b>	As per program	
5	<b>Course Learning Outcomes (CLO)</b>	At the end of this course, the students will be able to: <ul style="list-style-type: none"> <li>• Execute the program in java</li> <li>• Implement the concept of multi-threading</li> <li>• Develop new Packages which help them to develop new application software and Utility Software.</li> <li>• Develop new Online Software and Internet Games with the help of Applet and AWT Packages.</li> <li>• Familiar about Applet, Thread and Servlet Life Cycle which helps them to develop value added services for Internet Users.</li> </ul>	
6	<b>Credit Value</b>	1 Credits	Credit =30 Hours Laboratory or Field Learning/Training
7	<b>Total Marks</b>	Max. Marks: 50	Min Passing Marks: 20
<b>PART -B: Content of the Course</b>			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
Lab./Field Training/ Experiment Contents of Course	1. Write a program to check palindrome number. 2. Write a program to check Armstrong number. 3. Write a program to check the prime number. 4. Write a program to calculate simple interest using the GUI Form. 5. Write a program to demonstrate the thread life cycle. 6. Write a program to show the use of applet. 7. Write a program to demonstrate the concept of arrays. 8. Write a program to find the second largest and second smallest number in array. 9. Write a program to perform multiplication of two matrices. 10. Write a program to demonstrate the concept of method overloading. 11. Write a program to demonstrate the concept of constructor overloading. 12. Write a program to demonstrate the concept of inner classes. 13. Write a program to demonstrate the concept of inheritance. 14. Write a program to demonstrate the concept of access specifiers in java. 15. Write a program to implement the concept of interface. 16. Write a program to show the creation of package in java. 17. Write a program to design the user registration form with basic registration details. 18. Write a program to show the exception handling process in java. 19. Write a program to show the significance of multithreading. 20. Write a program to read the data from the console device and store it in any file in secondary storage. 21. Write a program to copy the content of any file into another file. 22. Write a program to demonstrate the advantages of event delegation model. 23. Write a program in java for command line value passing.  <b>Note:</b> Concerned teacher can add additional practical exercises as per requirement.		<b>30</b>

Keywords	Class, Object, interface, Inheritance, package, exception handling, threads, applet, AWT.
Name and Signature of Convener & Members:	
Dr. H.S. Hoty Chairman	(Dr. K.B. Dubey) (Dr. S.K. Sahu) (Dr. Anil Sharma) (Dr. S. Jain) R. Khurshid Sushil Kumar Saha Shresh Thakur Anjeeta Kujur

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  - o <https://www.dqindia.com/iit-bombay-offers-free-online-course-java-swayam-platform/>
  - o <https://www.classcentral.com/course/swyam-programming-in-java-12930>
- W3schools Java Tutorial.  
Java Tutorial (w3schools.com)
- Online Platforms to Exercise and Execute the Java Programs
  - o Online Java Compiler (programiz.com)
  - o Solve Java | HackerRank
  - o Online Java Compiler - Online Java Editor - Java Code Online (jdoodle.com)
- NPTEL Channel: Programming in Java  
Programming In Java - Course (nptel.ac.in)

### PART -D: Assessment and Evaluation

#### Suggested Continuous Evaluation Methods:

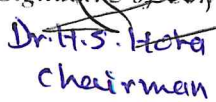
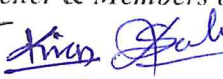

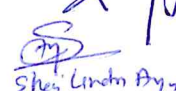
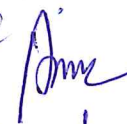


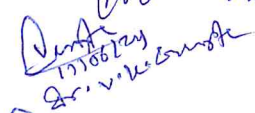

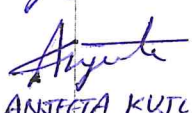
Maximum Marks: 50 Marks  
 Continuous Internal Assessment (CIA): 15 Marks  
 End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar + Attendance - 05 Total Marks - 15	
End Semester Exam (ESE):	Laboratory / Field Skill Performance:	Managed by Course teacher as per lab. status
	On spot Assessment A. Performed the Task based on lab. work - 20 Marks B. Spotting based on tools & technology (written) - 10 Marks Viva-voce (based on principle/technology) - 05 Marks	

#### Name and Signature of Convener & Members:

Dr. H.S. Hoty Chairman	(Dr. K.B. Dubey) (Dr. S.K. Sahu) (Dr. Anil Sharma) (Dr. S. Jain) R. Khurshid Sushil Kumar Saha Shresh Thakur Anjeeta Kujur
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**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF COMPUTER APPLICATION**  
**COURSE CURRICULUM**

<b>PART-A: Introduction</b>			
Program: Bachelor in Computer Application (Certificate / Diploma / Degree/Honors)		Semester – III	Session: 2024-2025
1	Course Code	CASE-01	
2	Course Title	Cyber Security and Cyber Law	
3	Course Type	DSE (Discipline Specific Elective)	
4	Prerequisite	As per Program	
5	Course Learning Outcomes(CLO)	At the end of this course, students will be able to: <ul style="list-style-type: none"> <li>• Understand the fundamental concepts in cyber security and distinguish among the attacks, threats and vulnerabilities.</li> <li>• Identify, differentiate and explain different cyber crimes and frauds.</li> <li>• Understand the concept of Cyber security issues and challenges associated with it.</li> <li>• Understand the cyber crimes, their nature, legal remedies and how to report the crimes through available platforms and procedures.</li> <li>• Understand the basic concepts related to E-Commerce and digital payments.</li> </ul>	
6	Credit Value	4 Credits	Credit = 15 Hours -Learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
<b>PART – B: Content of the Course</b>			
Total No. of Teaching– Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No .of Period
I	<b>Introduction:</b> Defining Cyberspace, Architecture of cyberspace, Internet, World wide web, Internet society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security, Cyber Physical System Security, Classification of cyber crimes, Common cyber crimes- cyber crime targeting computers and mobiles, cyber crime against women and children, financial frauds, social engineering attacks, malware and ransomware attacks, zero day and zero click attacks, Cybercriminals modus-operandi, Reporting of cyber crimes, Remedial and mitigation measures.		15
II	<b>Authentication:</b> Vulnerability and vulnerability assessment, Intrusion Detection and Intrusion Prevention System, Introduction of Authentication, User Authentication Methods, Biometric Authentication Methods.		15
III	<b>Different Securities:</b> Window Security, Smartphone Security, Browser Security, Web Security, Email Security, Wi-Fi Security, and Social Media Security: Challenges, opportunities and pitfalls in online social network, Best practices for the use of Social media, Introduction to digital payments, Components of digital payment and stakeholders, Digital payments related common frauds and preventive measures. RBI guidelines on digital payments and customer protection in unauthorized banking transactions.		15
IV	<b>Cyber Law Basics:</b> Information Technology Act 2000-Amendments; Laws regarding posting of inappropriate content, Relevant provisions of Payment Settlement Act 2007, Cybercrimes and offenses dealt with IPC, RBI Act, IPR in India.		15
Keywords	Cyberspace, Cybercrime, Cyber security, Physical System security, Ransomware, Modus-operandi, Authentication, Vulnerability, Intrusion Detection and Prevention, Cyber Law.		
Signature of Convener & Members of CBoS:			
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">             Dr. H.S. Hota            chairman         </div> <div style="text-align: center;">             Anurag         </div> <div style="text-align: center;">             Swadesh Lakher         </div> <div style="text-align: center;">             Shri. Linton         </div> <div style="text-align: center;">             Anam         </div> <div style="text-align: center;">             Anil         </div> <div style="text-align: center;">             Anshu         </div> <div style="text-align: center;">             Anshu         </div> <div style="text-align: center;">             Anshu         </div> <div style="text-align: center;">             ANJETA KUMAR         </div> </div>			

## PART-C: Learning Resources

### Text Books, Reference Books and Others

#### Text Books Recommended:

- Cyber criminology: Exploring Internet Crimes and Criminal Behavior by K. Jaishankar, CRC press.
- Data communication and Networking by B. Forouzan, TMH.
- An unofficial guide to ethical hacking by Ankit Fadia, trinity publisher.
- An ethical guide to hacking mobile phones by Ankit Fadia, trinity publisher.
- Computer Network Security and Cyber Ethics by Siva Ram Murthy, B.S. Manoj, McFarland and Company, INC

#### Reference Books Recommended:

- Cyber Crime Impact in the New Millennium, by R. C Mishra, Auther Press. Edition 2010.
- Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
- Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson, 13th November, 2001)
- Electronic Commerce by Elias M. Awad, Prentice Hall of India Pvt Ltd.
- Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
- Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.
- Fundamentals of Network Security by E. Maiwald, McGraw Hill.

#### Online Resources:

- Cyber Security from SWAYAM: [https://onlinecourses.swayam2.ac.in/ccc21\\_cs09/preview](https://onlinecourses.swayam2.ac.in/ccc21_cs09/preview)
- Introduction to Cyber Security from SWAYAM: [https://onlinecourses.swayam2.ac.in/nou20\\_cs01/preview](https://onlinecourses.swayam2.ac.in/nou20_cs01/preview)
- Cyber Security for Beginners: [https://heimdalsecurity.com/pdf/cyber\\_security\\_for\\_beginners\\_ebook.pdf](https://heimdalsecurity.com/pdf/cyber_security_for_beginners_ebook.pdf)
- Cyber Criminology by K. Jaishankar: <https://larose.staff.ub.ac.id/files/2011/12/Cyber-Criminology-Exploring-Internet-Crimes-and-Criminal-Behavior.pdf>
- Fundamental of Cyber Security by Dr. Jitendra Pandey: <http://www.uou.ac.in/sites/default/files/slm/FCS.pdf>
- Information Technology Act 2000: <https://www.meity.gov.in/content/information-technology-act-2000>
- Information Technology Act: <https://www.meity.gov.in/content/information-technology-act>
- Cyber Crime Law and Practice: [https://www.icsi.edu/media/webmodules/publications/Cyber\\_Crime\\_Law\\_and\\_Practice.pdf](https://www.icsi.edu/media/webmodules/publications/Cyber_Crime_Law_and_Practice.pdf)

## PART-D: Assessment and Evaluation

### Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment(CIA): 30 Marks

End Semester Exam(ESE): 70 Marks

Continuous Internal Assessment(CIA): (By Course Teacher)	Internal Test / Quiz- (2): 20 & 20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment/Seminar- 10	
	Total Marks - 30	

End Semester Exam (ESE):	Two section – A & B
	Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks
	Section B: Descriptive answer type qts., 1 out of 2 from each unit-4x10=40 Marks

Names and Signature of Convener & Members of CBoS:

Dr. H.S. Hota  
Chairman

K. S. ...

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ANJEEVA KUMAR

FOUR YEAR UNDERGRADUATE PROGRAM(2024–28)  
Department of Commerce and Management

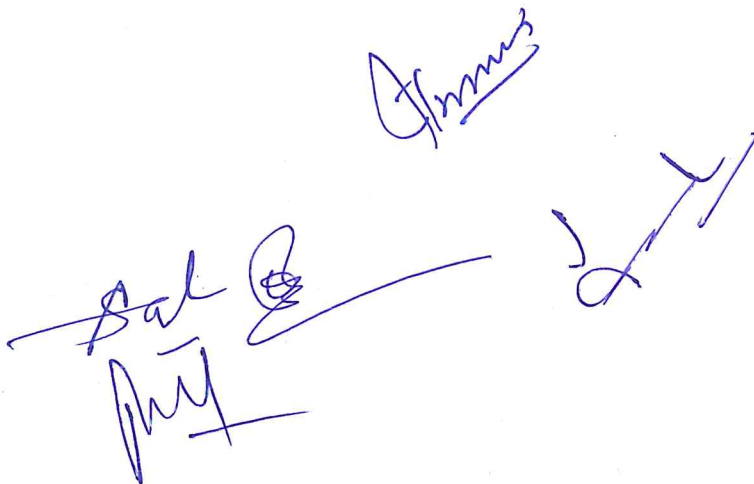
## COURSE CURRICULUM

<b>PART-A: Introduction</b>			
<b>Program:</b> Bachelor in Business Administration <i>(Certificate/ Diploma/Degree/Honors)</i>		<b>Semester-III</b>	<b>Session:2024-2026</b>
1	<b>CourseCode</b>	BBVAC - 02	
2	<b>CourseTitle</b>	Digital Marketing	
3	<b>CourseType</b>	Value Addition Course [VAC]	
4	<b>Pre-requisite(if, any)</b>	<i>As per requirement</i>	
5	<b>Course Learning Outcomes(CLO)</b>	<ul style="list-style-type: none"> <li>➤ Interpret the concept of digital marketing and its integration of traditional marketing.</li> <li>➤ Learn the behaviour of online consumers.</li> <li>➤ Create digital media campaigns through an understanding of email content and social media marketing.</li> <li>➤ Leverage digital strategies to gain competitive advantage for business and career.</li> </ul>	
6	<b>Credit Value</b>	<b>2 Credits</b>	<i>Credit=15 Hours-learning &amp; Observation</i>
7	<b>Total Marks</b>	<b>Max.Marks: 50</b>	<b>Min Passing Marks: 20</b>
<b>PART-B: Content of the Course</b>			
<b>Total No. of Teaching-learning Periods (01 Hr. per period)-30 Periods(30 Hours)</b>			
Unit	Topics(Course contents)		No. of Period
I	Fundamentals of Digital marketing & Its Significance, Traditional marketing Vs Digital Marketing, Evolution of Digital Marketing, Digital Marketing Landscape, Key Drivers, Digital Consumer & Communities, Gen Y & Netizen's expectation & influence w.r.t Digital Marketing		08
II	The Digital users in India, Digital marketing Strategy- Consumer Decision journey, POEM Framework, Segmenting & Customizing messages, Digital advertising Market in India, Skills in Digital Marketing, Digital marketing Plan.		07
III	Terminology used in Digital Marketing, PPC and online marketing through social media, Social Media Marketing, SEO techniques, Keyword advertising, Google web-master and analytics overview, Affiliate Marketing, Email Marketing, Mobile Marketing		08
IV	Display advertising, Buying Models, different type of ad tools, Display advertising terminology, types of display ads, different ad formats, Ad placement techniques, Important ad terminology, Programmatic Digital Advertising.		08
<b>Keywords</b>		<i>Digital Marketing, Technology, Consumer, Buying.</i>	
<b>PART-C: Learning Resources</b>			
<b>Text Books, Reference Books and Others</b>			
<b>Text Books Recommended-</b>			
<ol style="list-style-type: none"> <li>1. Digital Marketing –Kamat and Kamat-Himalaya</li> <li>2. Marketing Strategies for Engaging the Digital Generation, D. Ryan,</li> <li>3. Digital Marketing, V. Ahuja, Oxford University Press</li> <li>4. Digital Marketing, S.Gupta, McGraw-Hill</li> <li>5. Quick win Digital Marketing, H. Annmarie , A. Joanna, Paperback edition</li> </ol>			
<b>Online Resources-</b>			
➤ <a href="https://www.thinkwithgoogle.com/">https://www.thinkwithgoogle.com/</a>			
<b>Online Resources-</b>			
➤ <a href="https://www.coursera.org/socialmediamarketing">https://www.coursera.org/socialmediamarketing</a>			
➤ <a href="https://academy.hubspot.com/courses/social-media">https://academy.hubspot.com/courses/social-media</a>			

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<b>PART-D:AssessmentandEvaluation</b>		
<b>Suggested Continuous Evaluation Methods:</b>		
<b>MaximumMarks:</b>		
		<b>50Marks</b>
<b>ContinuousInternalAssessment(CIA):</b>		<b>15Marks</b>
<b>End SemesterExam(ESE):</b>		<b>35Marks</b>
<b>Continuous Internal Assessment (CIA): (By Course Teacher)</b>	Internal Test / Quiz-(2):10 & 10 Assignment/Seminar +Attendance - 05 Total Marks - 15	Bettermarksout ofthetwoTest/ Quiz +obtainedmarksinAssignmentshallbeconsideredagainst15Marks
<b>End Semester Exam (ESE):</b>	Twosection- A & B SectionA:Q1. Objective-05 x1=05 Mark;Q2. Short answertype-5x2 =10Marks SectionB:Descriptiveanswer typeqts.,1outof2 fromeachunit-4x05=20Marks	

**NameandSignature ofConvener&Members ofCBoS:**

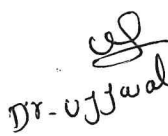
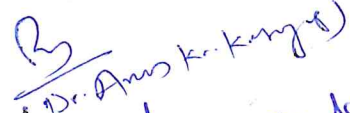
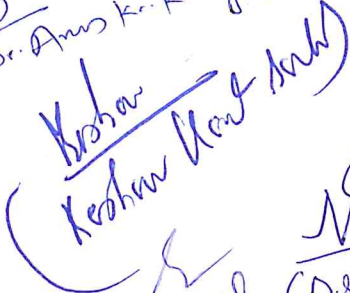
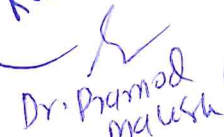
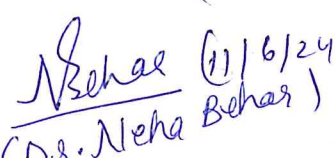
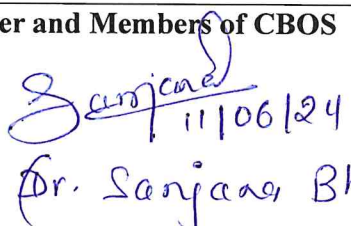
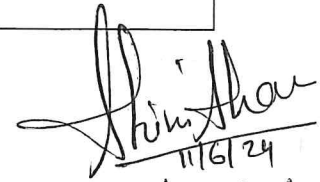
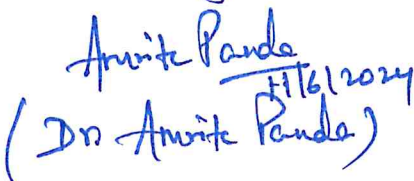


**GOES TO 04TH SEMESTER**

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)  
COURSE CURRICULUM**

PART A: INTRODUCTION			
Program: Certificate Course		Semester- I Sem	Session: 2024-25
1	Course Code	AEC 01	
2	Course Title	Environmental Studies	
3	Course Type	Ability Enhancement Course (AEC)	
4	Prerequisite (If Any)	As per requirement	
5	Course Outcome (CO)	At the end of this course, students will be able to – CO 01: relate the basic concept of the environment CO 02: explain environmental alterations CO 03: develop skills in environmental measurement CO 04: examine correction measures of the environment	
6	Credit Value	02 C	01 Credit = 15 Hrs. Teaching-Learning
7	Total Marks	Max. Marks: 50	Minimum Pass marks: 20
PART: B CONTENT OF THE COURSE			
Total No. of Teaching-Learning Periods: 30Hours/ 30Periods			
UNIT	TOPIC (Course Contents)		No. of Hours
I	<b>Basic Composition:</b> 1. Abiotic and Biotic components of the environment 2. Biodiversity—Concept, types, and measures about its protection 3. Basic concept of Bio-Geo Chemical Cycle 4. Energy Flow in an ecosystem		07
II	<b>Alterations in Environment:</b> 1. Concept and components of the pond ecosystem 2. Air pollution and measures for its control 3. Water pollution and measures for its control 4. Global warming, Climate change, and possible measures		07
III	<b>Measurements of Environmental Components</b> 1. Soil composition and methods of its analysis 2. Water analysis methods for DO, BOD, COD 3. Water analysis methods for pH, TDS, Turbidity, Salinity, and Alkalinity 4. Information about environmental factors—PM-10, PM-2.5, NO <sub>2</sub> , O <sub>3</sub>		08
IV	<b>Application Measures</b> 1. Useful microbes to control water pollution 2. Useful microbes to control soil pollution 3. Concept of Biodegradation 4. Concept of Phytoremediation		08
Key Words	Ecosystem, Pollution, Climate Change, Biodegradation		

Name and Signature of Convener and Members of CBOS

 Dr. Ujjwalesu  
 Dr. Anurag K. Kung'u  
 Keshav  
 Dr. Pramod  
 Dr. Neha Behar  
 Dr. Sanjana Bhagat  
 Dr. Shirani Sh  
 Anvite Panda  
 (Dr. Anvite Panda)

## PART-C: Learning Resources

### Text Books, Reference Books, and Others

#### Text Books Recommended –

1. Ecology and Environment, 8<sup>th</sup> Edition, P.D.Sharma, Rastogi Publication, Meerut.
2. Environmental Biology, 2<sup>nd</sup> Edition, P.D.Sharma, Rastogi Publication, Meerut.
3. Environmental Biology and Toxicology, 2<sup>nd</sup> Edition, P.D.Sharma, Rastogi Publication, Meerut.
4. Environmental Studies, 1<sup>st</sup> Edition, S.V.S.Rana, Rastogi Publication, Meerut.
5. Environmental Biotechnology, 1<sup>st</sup> Edition, S. V. S. Rana, Rastogi Publication, Meerut.

#### Online Resources–

- e-Resources / e-books and e-learning portals

#### Online Resources–

- e-Resources / e-books and e-learning portals

## PART -D: Assessment and Evaluation

### Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

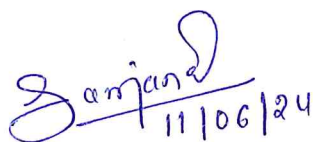
Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

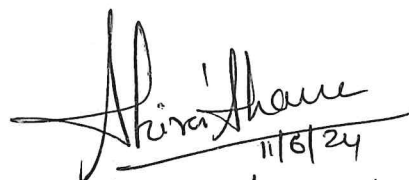
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2):	10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar +Attendance -	05	
	Total Marks -	15	

End Semester Exam (ESE):	Two sections – A & B Section A: Q1. Objective – 05 x1= 05 Mark; Q2. Short answer type- 5x2 =10 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit- 4x05 =20 Marks
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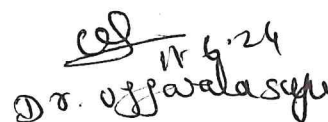
Name and Signature of Convener & Members of CBoS:

  
11/06/24

(Dr. Sanjani Bhagat)

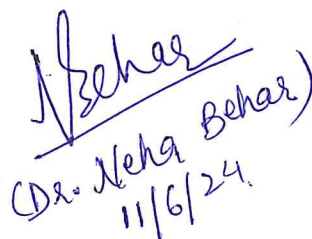
  
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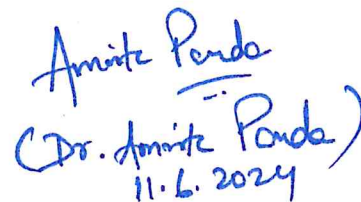
(Dr. Shivani Sharma)


  
11/6/24  
Dr. Ujjwal Singh

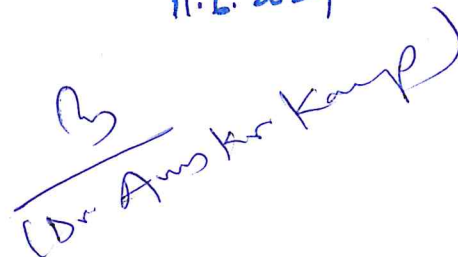
  
11/06/24

(Dr. Shubha Diwan)

  
11/6/24  
Dr. Neha Behar

  
11.6.2024  
Dr. Amite Pande

  
Dr. Pramod Kumar Mahesh

  
Dr. Anurag Kaur