DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
KURUKSHETRA UNIVERSITY, KURUKSHETRA

<table>
<tr><th colspan="4">Session: 2023-24</th></tr>
<tr><th colspan="4">Part A - Introduction</th></tr>
<tr><td>Subject</td><td colspan="3">BCA</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Problem Solving through C</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-CAP-101 (Common with B23-CAI-101, B23-CDS-101, B23-CTS-101)</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="3">CC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3"></td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. learn the basics of C program, data types and input/output statements.
2. understand different types of operators, their hierarchies and also control statements of C.
3. implement programs using arrays and strings.
4. get familiar with advanced concepts like structures, union etc. in C language.
5*. to implement the programs based on various concepts of C.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3</td><td>2</td><td>5</td></tr>
<tr><td colspan="2">Max. Marks:100(70(T)+30(P))
Internal Assessment Marks:30(20(T)+10(P))
End Term Exam Marks: 70(50(T)+20(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><th colspan="4">Part B- Contents of the Course</th></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.
Candidate will have to attempt five questions in all, selecting one question from each unit. First</td></tr>
</table>

question will be compulsory.
Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

Unit	Topics	Contact Hours
I	Overview of C: History, Importance, Structure of C Program, Character Set, Constants and Variables, Identifiers and Keywords, Data Types, Assignment Statement, Symbolic Constant. Input/output: Formatted I/O Function-, Input Functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts().	10
II	Operators & Expression: Arithmetic, Relational, Logical, Bitwise, Unary, Assignment, Conditional Operators and Special Operators Operator Hierarchy; Arithmetic Expressions, Evaluation of Arithmetic Expression, Type Casting and Conversion. Decision making with if statement, if-else statement, nested if statement, else-if ladder, switch and break statement, goto statement, Looping Statements: for, while, and do-while loop, jumps in loops.	10
III	Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays -Declaration, Initialization and Memory representation. Functions: definition, prototype, function call, passing arguments to a function: call by value; call by reference, recursive functions. Strings: Declaration and Initialization, String I/O, Array of Strings, String Manipulation Functions: String Length, Copy, Compare, Concatenate etc., Search for a Substring.	10
IV	Pointers in C: Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays. User defined data types: Structures - Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, Array of Structures; Unions - Union definition; difference between Structure and Union.	10
V*	Practicum: Students are advised to do laboratory/practical practice not limited to, but including the following types of problems: • To read radius of a circle and to find area and circumference • To read three numbers and find the biggest of three • To check whether the number is prime or not • To read a number, find the sum of the digits, reverse the number and check it for palindrome • To read numbers from keyboard continuously till the user presses 999 and to find the sum of only positive numbers • To read percentage of marks and to display appropriate message (Demonstration of else-if ladder) • To find the roots of quadratic equation • To read marks scored by n students and find the average of	25

	marks (Demonstration of single dimensional array) • To remove Duplicate Element in a single dimensional Array • To perform addition and subtraction of Matrices • To find factorial of a number • To generate Fibonacci series • To remove Duplicate Element in a single dimensional Array • To find the length of a string without using built in function • To demonstrate string functions • To read, display and add two m x n matrices using functions • To read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters • To Swap Two Numbers using Pointers • To demonstrate student structure to read & display records of n students • To demonstrate the difference between structure & union.	

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum** • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	**End Term Examination:** A three hour exam for both theory and practicum.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Gottfried, Byron S., Programming with C, Tata McGraw Hill.
- Balagurusamy, E., Programming in ANSI C, Tata McGraw-Hill.
- Jeri R. Hanly & Elliot P. Koffman, Problem Solving and Program Design in C, Addison Wesley.
- Yashwant Kanetker, Let us C, BPB.
- Rajaraman, V., Computer Programming in C, PHI.
- Yashwant Kanetker, Working with C, BPB.

*Applicable for courses having practical component.

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<tr><td>Subject</td><td colspan="3">BCA</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Foundations of Computer Science</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-CAP-102 (Common with B23-CAI-101, B23-CDS-101, B23-CTS-101)</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="3">CC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3"></td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="3">After completing this course, the learner will 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
5*. to understand the working of operating system, internet and security related concepts.</td></tr>
<tr><td rowspan="3">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3</td><td>2</td><td>5</td></tr>
<tr><td colspan="2">Max. Marks:100(70(T)+30(P))
Internal Assessment Marks:30(20(T)+10(P))
End Term Exam Marks: 70(50(T)+20(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><th colspan="4">Part B- Contents of the Course</th></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.
Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.
Practicum will be evaluated by an external and an internal examiner. Examination will be of</td></tr>
</table>

three-hour duration.		
Unit	**Topics**	**Contact Hours**
I	Computer Fundamentals: Evolution of Computers through generations, Characteristics of Computers, Strengths and Limitations of Computers, Classification of Computers, Functional Components of a Computer System, Applications of computers in Various Fields. Types of Software: System software, Application software, Utility Software, Shareware, Freeware, Firmware, Free Software. Memory Systems: Concept of bit, byte, word, nibble, storage locations and addresses, measuring units of storage capacity, access time, concept of memory hierarchy. Primary Memory - RAM, ROM, PROM, EPROM. Secondary Memory - Types of storage devices, Magnetic Tape, Hard Disk, Optical Disk, Flash Memory.	10
II	I/O Devices: I/O Ports of a Desk Top Computer, Device Controller, Device Driver. Input Devices: classification and use, keyboard, pointing devices - mouse, touch pad and track ball, joystick, magnetic stripes, scanner, digital camera, and microphone Output Devices: speaker, monitor, printers: classification, laser, ink jet, dot-matrix. Plotter. Introduction to Operating System**:** Definition, Functions, Features of Operating System, Icon, Folder, File, Start Button, Task Bar, Status Buttons, Folders, Shortcuts, Recycle Bin, Desktop, My Computer, My Documents, Windows Explorer, Control Panel.	10
III	The Internet: Introduction to networks and internet, history, Internet, Intranet & Extranet, Working of Internet, Modes of Connecting to Internet. Electronic Mail: Introduction, advantages and disadvantages, User Ids, Passwords, e-mail addresses, message components, message composition, mailer features. Browsers and search engines.	10
IV	Threats: Physical & non-physical threats, Virus, Worm, Trojan, Spyware, Keylogers, Rootkits, Adware, Cookies, Phishing, Hacking, Cracking. Computer Security Fundamentals: Confidentiality, Integrity, Authentication, Non-Repudiation, Security Mechanisms, Security Awareness, Security Policy, anti-virus software & Firewalls, backup & recovery.	10
V*	Practicum: Students are advised to do laboratory/practical practice not limited to, but including the following types of problems: Operating System: • Starting with basics of Operating Systems and its functionalities Computer Basics: • Identify the various computer hardware • Understanding the working of computer • Understanding various types of software	25

	Internet and E-mail: • Using Internet for various tasks • Creating and using e-mail. Security: • Understanding various threats • How to be safe from virus threats • Various software to get safe from virus attacks.	

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum** • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	**End Term Examination:** A three hour exam for both theory and practicum.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB.
- Dromey, R.G., How to Solve it By Computer, PHI.
- Norton, Peter, Introduction to Computer, McGraw-Hill.
- Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World.
- Rajaraman, V., Fundamentals of Computers, PHI.

*Applicable for courses having practical component.

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<tr><td>Subject</td><td colspan="3">BCA</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Logical Organization of Computer</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-CAP-103 (Common with B23-CAI-101, B23-CDS-101, B23-CTS-101)</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="3">CC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">Basic Knowledge of Mathematics (10th Level)</td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. understand number systems, error detecting correcting code and representations of numbers in a computer system.
2. understand computer arithmetic and Boolean algebra and simplification of Boolean expressions.
3. understand working of logic gates and design various combinational circuits using these logic gates.
4. understand working of different types of flip-flops and design different types of registers.
5*. to understand the practical aspects of logical organization of computer.</td></tr>
<tr><td rowspan="3">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3</td><td>2</td><td>5</td></tr>
<tr><td colspan="2">Max. Marks:100(70(T)+30(P))
Internal Assessment Marks:30(20(T)+10(P))
End Term Exam Marks: 70(50(T)+20(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><th colspan="4">Part B- Contents of the Course</th></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question</td></tr>
</table>

will comprise of short answer type questions covering entire syllabus.
Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.
Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

Unit	Topics	Contact Hours
I	Number Systems: Binary, Octal, Hexadecimal etc. Conversions from one number system to another, BCD Number System. BCD Codes: Natural Binary Code, Weighted Code, Self-Complimenting Code, Cyclic Code. Error Detecting and Correcting Codes. Character representations: ASCII, EBCDIC and Unicode. Number Representations: Integer numbers - sign-magnitude, 1's & 2's complement representation. Real Numbers normalized floating point representations.	10
II	Binary Arithmetic: Binary Addition, Binary Subtraction, Binary Multiplication, Binary Division using 1's and 2's Compliment representations, Addition and subtraction with BCD representations. Boolean Algebra: Boolean Algebra Postulates, basic Boolean Theorems, Boolean Expressions, Boolean Functions, Truth Tables, Canonical Representation of Boolean Expressions: SOP and POS, Simplification of Boolean Expressions using Boolean Postulates & Theorems, Kaurnaugh-Maps (upto four variables), Handling Don't Care conditions.	10
III	Logic Gates: Basic Logic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. Their symbols, truth tables and Boolean expressions. Combinational Circuits: Design Procedures, Half Adder, Full Adder, Half Subtractor, Full Subtracor, Multiplexers, Demultiplexers, Decoder, Encoder, Comparators, Code Converters.	10
IV	Sequential Circuits: Basic Flip- Flops and their working. Synchronous and Asynchronous Flip –Flops, Triggering of Flip-Flops, Clocked RS, D Type, JK, T type and Master-Slave Flip-Flops. State Table, State Diagram and State Equations. Flip-flops characteristics & Excitation Tables. Sequential Circuits: Designing registers –Serial-In Serial-Out (SISO), Serial-In Parallel-Out (SIPO), Parallel-In Serial-Out (PISO) Parallel-In Parallel-Out (PIPO) and shift registers.	10
V*	Practicum: Students are advised to do laboratory/practical practice not limited to, but including the following types of problems: Number System: • Problems based on Number System and their conversion. • Programs based on Number System conversion. Binary Arithmetic • Problems based on Binary Arithmetic.	25

	• Programs based on Binary Arithmetic. • Problems based on Boolean Expression and their simplification Logic Gates • Understanding working of logic Gates. Combinatorial Circuits: • Designing and understanding various combinational circuits. Sequential Circuits: • Designing and understanding various sequential circuits.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum** • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	**End Term Examination:** A three hour exam for both theory and practicum.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- M. Morris Mano, Digital Logic and Computer Design, Prentice Hall of India Pvt. Ltd.
- V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall.
- Andrew S. Tanenbaum, Structured Computer Organization, Prentice Hall of India Pvt. Ltd.
- Nicholas Carter, Schaum's Outlines Computer Architecture, Tata McGraw-Hill.

*Applicable for courses having practical component.

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<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">BCA</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Mathematical Foundations for Computer Science-I</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-CAP-104 (Common with B23-CAI-101, B23-CDS-101, B23-CTS-101)</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="3">CC-M</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3"></td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After learning this course student will be able:
1. Gain the knowledge of set theory, types of sets and operations on sets. Understand various concepts of matrices and determinants, and acquire the cognitive skills to apply different operations on matrices and determinants.
2. Have the knowledge of the basic concepts of complex numbers and acquire skills to solve linear quadratic equations.
3. Gain the knowledge of the concepts of Arithmetic progression, Geometric progression and Harmonic progression, and find A.M., G.M. and H.M. of given numbers.
4. Understand the concept of differentiation
5. * Attain the skills to make use of the learnt concepts of Introductory Mathematics in multidisciplinary learning contexts and to know their applications</td></tr>
<tr><td rowspan="3">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>1</td><td>1</td><td>2</td></tr>
<tr><td>Contact Hours</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td colspan="2">Max. Marks:50(30(T)+20(P))
Internal Assessment Marks:15(10(T)+5(P))
End Term Exam Marks:35(20(T)+15(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><td colspan="4">Part B-Contents of the Course</td></tr>
</table>

Instructions for Paper- Setter		
Unit	**Topics**	**Contact Hours**
I	Sets and their representations, Empty set, Finite and infinite sets, Subsets, Equal sets, Power sets, Universal set, Union and intersection of sets, Difference of two sets, Complement of a set, Venn diagram, De-Morgan's laws and their applications.	4
II	An introduction to matrices and their types, Operations on matrices, Symmetric and skew-symmetric matrices, Minors, Co-factors. Determinant of a square matrix, Adjoint and inverse of a square matrix, Solutions of a system of linear equations up to order 3.	4
III	Quadratic equations, Solution of quadratic equations. Arithmetic progression, Geometric progression, Harmonic progression, Arithmetic mean (A.M.), Geometric mean (G.M.), Harmonic mean (H.M.), Relation between A.M., G.M. and H.M.	4
IV	The concept of differentiation, differentiation of simple functions, Use of differentiation for solving problems related to real-life situations. Differentiation of simple algebraic, trigonometric and exponential functions.	4
V*	Practicum: Students are advised to do laboratory/practical practice not limited to, but including the following types of problems: **Problem Solving**- Questions related to the practical problems based on following topics will be worked out and record of those will be maintained in the Practical Note Book: • Problems related to union, intersection, difference and complement of sets. • Problems based on De Morgan's Laws. • Problems related to Venn diagrams. • Problems to find inverse of a matrix. • Problems to find determinant of a square matrix of order 3. • Problems to find nth term of A.P., G.P. and H.P. • Problems to find sum of n terms of A.P., G.P. and H.P. • Problems to find A.M., G.M. and H.M. of given numbers. • Problems involving formulation and solution of quadratic equations in one variable. • Problems to find first derivatives of functions.	25
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: 4		**End Term Examination:** **A three hour exam**

• Seminar/presentation/assignment/quiz/class test etc.: NA • Mid-Term Exam: 6 ➢ **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	**for both theory and practicum.**

PartC-Learning Resources

Text /Reference Books:

- C. Y. Young (2021). *Algebra and Trigonometry*. Wiley.
- S.L. Loney (2016). *The Elements of Coordinate Geometry (Cartesian Coordinates)* (2nd Edition). G.K. Publication Private Limited.
- Seymour Lipschutz and Marc Lars Lipson (2013). *Linear Algebra.* (4th Edition) Schaum's Outline Series, McGraw-Hill.
- C.C. Pinter (2014). *A Book of Set Theory*. Dover Publications.
- J. V. Dyke, J. Rogers and H. Adams (2011). *Fundamentals of Mathematics* (10th Edition), Brooks/Cole.
- A. Tussy, R. Gustafson and D. Koenig (2010). *Basic Mathematics for College Students* (4th Edition). Brooks Cole

*Applicable for courses having practical component.

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<tr><th colspan="4">Session: 2023-24</th></tr>
<tr><th colspan="4">Part A - Introduction</th></tr>
<tr><td>Subject</td><td colspan="3">COMPUTER SCIENCE</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Office and spreadsheet Tools Learning</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-SEC-101</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="3">SEC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3"></td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3"></td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. understand the basic concepts of operating systems
2. do the basic editing and formatting in a document
3. create basic spread-sheets for different purposes
4. create basic presentations for different applications
5*. to understand the working of operating system and various office tools practically.</td></tr>
<tr><td rowspan="3">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>2</td><td>1</td><td>3</td></tr>
<tr><td>Contact Hours</td><td>2</td><td>2</td><td>4</td></tr>
<tr><td colspan="2">Max. Marks:75(50(T)+25(P))
Internal Assessment Marks:20(15(T)+5(P))
End Term Exam Marks: 55(35(T)+20(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><th colspan="4">Part B-Contents of the Course</th></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.
Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.
Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.</td></tr>
</table>

Unit	Topics	Contact Hours
I	Operating System - Definition, Functions, Types of Operating System, Basics of Popular Operating Systems, The User Interface, Exploring Computer, Icons, taskbar, desktop, Using Menu and Menu-selection, managing files and folders, Control panel – display properties, add/remove software and hardware, Common utilities.	4
II	Word Processing - Introduction to Word Processing, Menus, Creating, Editing & Formatting Document, Spell Checking, Printing, Views, Tables, Word Art, Mail Merge, Macros, Inserting hyperlinks, Searching for text, Modifying page setup, Applying document themes, Applying document style sets, Inserting headers and footers.	7
III	Spread Sheet: Elements of Electronics Spread Sheet, Applications, Creating and Opening of Spread Sheet, Menus, Manipulation of cells: Enter texts numbers and dates, Cell Height and Widths, Copying of cells, Mathematical, Statistical and Financial function, Drawing different types of charts, Sort and Filter Data.	7
IV	Presentation Software: Creating, Modifying and enhancing a presentation, Type of presentation views, Using sound, Animation, Working with Objects, Printing.	7
V*	Practicum: Operating System: • Starting with basics of Operating Systems and its functionalities Word Processing: • Create and format word documents. • Use tables, word Art and other features in your documents. • Use macros to simplify the tasks in a document. • Use mail merge to write once for many. Spread Sheet: • Use spreadsheet for basic data handling • Apply formulas to sheet for automation. • Use Charts & Shapes for better visualization of the data. • Use sorting and filtering of the data Presentation Software: • Prepare and format presentations. • Apply slide transitions, animations and sequencing for slides. • Apply different formatting and insert options to make presentation better. • Appling sound and animation.	25
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7		**End Term Examination:** A three hour exam for both theory and

➢ **Practicum** • Class Participation: 2 • Seminar/Demonstration/Viva-voce/Lab records etc.: 3 • Mid-Term Exam: NA	practicum.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Help files from Apache Open Office, https://wiki.openoffice.org/wiki/Documentation
- Channelle Andy, "Beginning OpenOffice 3: From Novice to Professional", aPress Publications
- Beginning OpenOffice 3: From Novice to Professional, Andichannele, Apress.
- Microsoft Office 2016 Step by Step: MS Office 2016 Step by Step, By Joan Lambert, Curtis Frye
- Computer Fundamentals - By Pradeep K. Sinha, Priti Sinha, BPB Publications, 6th Edition
- Getting Started with LibreOffice 5.0, Friends of OpenDocuments Inc., Http://friendsofopendocument.com
- Documentation from LibreOffice, https://documentation.libreoffice.org/en/english-documentation/

*Applicable for courses having practical component.

English

Semester-I

Nomenclature of the Course: **English Language and Communication Skills: Level 1**

Course Code: **B23-AEC-111**

Course Type: **AEC-1**

Level of the Course: **100-199**

Credits: 2 (Theory 2)

Total Marks: 50

End Term Exam Marks: 35

Internal Assessment Marks: 15

Exam Time: 3 Hrs.

Workload: Theory 2 hours

Course Learning Outcomes:

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

E101.1. The students will learn various types of verbal and non-verbal communication.

E101.2. They will understand the importance of interpersonal communication on workplaces and different ways of behaviour and communication.

E101.3. They will comprehend the importance of listening skills and its types.

E101.4. They will be introduced to parts of speech and their role in language learning.

Contents of the Course:

Unit I: Theory and Types of Communication

Verbal and Non-Verbal Communication

Unit II: Workplace and Interpersonal Communication

Introducing Oneself, Introducing Others, Making Requests, Offering Help, Congratulating, Making Enquiries and Seeking Permission

Unit III: Importance of Listening Skills and their types

Barriers to Effective Listening and how to overcome them

Note-taking Techniques to capture the main ideas

Unit IV: Parts of Speech

Suggested Readings:

Hargie, Owen. *The Handbook of Communication Skills*. Routledge, 2006.

Knapp, Mark L., et al. *Nonverbal Communication in Human Interaction*. Cengage Learning, 2013.

West, Richard, and Lynn H. Turner. *Understanding Interpersonal Communication: Making Choices in Changing Times*. Cengage Learning, 2010.

Instructions to the Paper Setters:

1. Question No 1 will be compulsory and have 7 questions based on all the four Units and the students will be required to write answers in 30 words.
2. Question No 2 and 3 will be set on Unit-I covering the entire Unit. Students will be required to attempt any one.
3. Question No 4 and 5 will be set on Unit-II covering the entire Unit. Students will be required to attempt any one.
4. Question No 6 and 7 will be set on Unit-III covering the entire Unit. Students will be required to attempt any one.
5. Question No. 8 and 9 will be based on Unit-IV having 7 parts each covering the entire Unit. Students will be required to attempt any one of these questions.

Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

i.	Class Participation	4 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
iii.	Mid-Term Exam	7 Marks
	Total	15 Marks

VAC 2 B23-VAC-201

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	I/ II		
Name of the Course	**Environmental Studies**		
Course Code	**B23-VAC-201**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**VAC**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept of environmental studies, sustainable development and ecosystem. 2. Learn about the various natural resources and about biodiversity and its conservation. 3. Know about the types of pollution, solid waste management, global environmental issues and environmental laws. 4. Understand the concept of population growth and its impacts on environment and disaster management. 5. Get knowledge about the environment, its problems, impacts and solutions.		
Credits	Theory	Practical	Total
	2	NA	2
Contact Hours	2	NA	2
Max. Marks: 50 **Internal Assessment Marks:** 15 **End Term Exam Marks:** 35		**Time:** 2 hours	
Part B- Contents of the Course			

Instructions for Paper- Setter

Total number of questions set will be nine. Questions no. 1 is compulsory covering the entire syllabus. Two questions will be set from each unit. Students have to attempt five questions in all, selecting one question from each unit including the compulsory question. Each question is of 7 marks. All questions carry equal marks. Final theory exam time allowed will be of 3 hours.

Unit	Topics	Contact Hours
I	**Introduction to environmental studies:** Multidisciplinary nature of environmental studies; Scope and importance; Concept of sustainability and sustainable development. **Ecosystems:** Definition, structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs, Major ecosystems types: Forest ecosystem, Grassland ecosystem, Desert ecosystem and Aquatic ecosystem (lakes, rivers, oceans).	02 hours/week
II	**Natural resources: Renewable and Non- renewable Resources** Land resources: Land degradation and soil erosion. Forest resources: Importance of forests, deforestation: causes and impacts on environment. Water resources: Use and over- exploitation of surface and ground water. Energy resources: Renewable and non- renewable energy sources. **Biodiversity and Conservation:** Definition and its types, Endangered and endemic species of India. Threats to biodiversity: Habitat loss, poaching of wildlife, man- wildl conflicts, biological invasions; Conservation of biodiversity: In-situ a Ex- situ conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational values.	
III	**Environmental pollution** Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution. Solid waste management: Sources, methods of disposal: Landfill, incineration and composting. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. **Environmental Policies & Practices** Environmental laws: Environment (Protection) Act, 1986, Air	

	(Prevention & Control of Pollution) Act, 1981, Water (Prevention and control of Pollution) Act, 1974.	
IV	**Human Communities and the Environment:** Human population growth: Impacts on environment, human health and welfare. Resettlement and rehabilitation of project affected person. Disaster management: floods, earthquake, cyclones, landslides and drought. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.	

Suggested Evaluation Methods

Internal Assessment:15 marks ➢ **Theory** • Class Participation: 4 marks • Seminar/presentation/assignment/quiz/class test etc.: 4marks • Mid-Term Exam: 7 marks	**End Term Examination:** Theory: 35 marks (Written exam)

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Kaushik, A & Kaushik, C.P. 2022. Perspectives in Environmental Studies. New Age International Pvt Ltd, New Delhi.
2. Bharucha, E. 2021. A Textbook of Environmental Studies for Undergraduate Courses, Orient Blackswan Pvt Ltd.
3. Goswami, P., Mandal, J. & Singh, S. 2022. A Textbook on Environmental Studies, Ashok book stall, Assam.
4. Joshi, P.C. & Joshi, N. 2009. A Text Book of Environmental Science. APH Publishing Corporation.
5. Basu, M. & Xavier Savarimuthu, S.J. 2017. Fundamentals of Environmental Studies. Cambridge University Press.
6. Singh, R.P. & Islam, Z. 2012. Environmental Studies. Concept Publishing Company.

Part A - Introduction			
Subject	**Business Administration**		
Semester	**I**		
Name of the Course	**Social Media Marketing**		
Course Code	**B23-BBA-MDC-102**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-1**		
Level of the course (As per Annexure-I	**Introductory-Level**		
Pre-requisite for the course (if any)	**None**		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the significance and challenges of social media marketing. 2. Develop a comprehensive social media marketing strategy. 3. Create and manage engaging social media content. 4. Utilize social media advertising tools and analyze campaign performance. 5*.		
Credits	Theory	Practical	Total
	3	**0**	**3**
Contact Hours	**45**	**0**	**45**
Max. Marks: **75** Internal Assessment Marks: **25** End Term Exam Marks: **50**		Time: **3 Hours**	

Part B- Contents of the Course

Instructions for Paper- Setter

The Paper-Setter shall set *nine* questions in all and the question paper shall be divided into two parts. **Part 'A'** shall comprise *four* short answer type questions from the whole of the syllabus carrying 2.5 marks each, which shall be compulsory. **Part 'B'** shall comprise *eight* questions (*two* questions from each unit) carrying 10 marks each and the student will be required to attempt *four* questions selecting *one* question from each unit.

Unit	Topics	Contact Hours
I	Social Media Marketing: Meaning and significance in modern era; Impact of social media platforms- Facebook, LinkedIn, Twitter, Instagram, Pinterest, and YouTube on Marketing endeavours; Problems associated with Social Media Marketing.	12
II	Social Media Planning: Social media goals and objectives; Audience analysis; Developing social media marketing strategy; Social media control; Integrating marketing strategy with social media marketing strategy.	11
III	Social Media Content: Content Creation, Audience Engagement; Content Scheduling; Content Management and Control.	11
IV	Social Media Advertising and Analytics: Tools for social media Advertising; Planning and executing social media campaigns; An Overview of social media analytics tools.	11
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** ● Class Participation: **05** ● Seminar/presentation/assignment/quiz/class test etc.: **07** ● Mid-Term Exam: **13** ➢ **Practicum** ● Class Participation: ● Seminar/Demonstration/Viva-voce/Lab records etc.: ● Mid-Term Exam:	End Term Examination: **50**

Part C-Learning Resources
Recommended Books/e-resources/LMS: 1. Sameer Deshpande, Philip Kotler, Nancy R. Lee; *Social Marketing in India*; Pearson Publication *2.* Jason McDonald; *Social Media Marketing Workbook* 3. Linda Coles; *Marketing with Social Media*; Pearson Publication 4. Dan Zarrella; *The Social Media Marketing Book*; Pearson Publication 5. Michael R. Solomon, Tracy Tuten; *Social Media Marketing*; Pearson Publication 6. Guy Kawasaki, Peg Fitzpatrick; *The Art of Social Media: Power Tips for Power Users*; Pearson Publication.

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FIRST		
Name of the Course	Electronics in Daily Life		
Course Code	B23-ELE-104		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-1**		
Level of the course	100-199		
Pre-requisite for the course (if any)	Any Arts, Commerce Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand about various electronic components 2. Learn about the use of AC and DC voltages and transformers etc 3. Understand the concept of assembling and disassembling of various home appliances. 4. Learn the concept and importance of earthing 5. To get practical exposure of various electronics components and appliances		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60
Max. Marks: 75 (50 Theory + 25 Practical) Internal Assessment Marks: 15 Theory + 5 Practical End Term Exam Marks: 35 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.
3. Medium of examination may be Hindi/English.

Unit	Topics	Contact Hours
I	**Introduction to basic Electronics components and Devices:** Resistor, Color code, Inductor, Capacitor, basic Potentiometer circuit, Multiple range Potentiometer Classification of Instruments, Analog and Digital Mode of operations, Basics of CRO, Multimeter	7
II	AC - DC Voltage, Domestic Electric supply, Transformer, Power consumption, wire, electric tester, clamp meter, Fuse, circuit breaker, Inverter, Electric consumption meter reading, BEE rating, Soldering techniques, LED, Display HD, Full HD and UHD.	8
III	Repair and Maintenance of Home Appliances(Basic idea of Internal Circuit and working): Inverters and UPS, Switch Mode Power Supply, washing Machine , Electric Iron, Microwave Oven, Rice Cooker	9
IV	Measurement of Earth Resistance: Necessity of Earth Electrode, Necessity of measurement of Earth Electrode, Factors effecting Earth Electrodes, Methods of measuring Earth Resistance	6
V*	**Note:** A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. 1. Measurement of alternating voltage using multimeter. 2. Measurement of voltage and Time period and using CRO. 3. Measurement of resistance value using colour codes and multimeter. 4. Design and verify the potential divider arrangement using resistances. 5. Testing of wire, measuring voltage, current and frequency using multimeter 6. Demonstrate soldering of basic electronics components using soldering iron. 7. Understanding the role of transformer.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 15 Marks** • Class Participation: **4 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **4 Marks** • Mid-Term Exam: **7 Marks** ➢ **Practicum 5 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **5 Marks** • Mid-Term Exam:		**End Term Examination:** **35 Marks** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. A course in Electrical and Electronic Measurements and Instrumentation by A K Sawhney.
2. Electronics Instrumentation and Measurement Techniques by W D Cooper
3. Handbook of Repair and Maintenance of Domestic Electronics Appliances, Shashi Bhushan Sinha, BPB Publications
4. Getting Down to Earth: A practical guide to earth resistance testing, Megger

Kurukshetra University, Kurukshetra

(Established by the State Legislature Act XII of 1956)
('A+' Grade, NAAC Accredited)

॥ योगस्थ: कुरु कर्माणि ॥
सर्बुद्धि व योग युक्त होकर कर्ा करो
(Perform Actions while Stead fasting in the State of Yoga)

Syllabus of Examination (2nd Semester) for Under-Graduate Programmes

Bachelor of Computer Applications (BCA)

according to

Curriculum Framework for Under-Graduate Programmes

As per NEP-2020 (Multiple Entry-Exit, Internships and Choice Based Credit System)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

(For the Batches Admitted From 2023-2024)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS KURUKSHETRA UNIVERSITY, KURUKSHETRA

<table>
<tr><th colspan="5">Session: 2023-24</th></tr>
<tr><th colspan="5">Part A - Introduction</th></tr>
<tr><td>Subject</td><td colspan="4">BCA</td></tr>
<tr><td>Semester</td><td colspan="4">II</td></tr>
<tr><td>Name of the Course</td><td colspan="4">Object Oriented Programming using C++</td></tr>
<tr><td>Course Code</td><td colspan="4">B23-CAP-201</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="4">CC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="4">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="4">B23-CAP-101</td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="4">After completing this course, the learner will be able to:
1. learn the input/output statements and functions in C++.
2. get familiar with OOPS concepts along with constructors and destructors in C++ language.
3. Learn the various concepts of operator overloading and inheritance.
4. get familiar with concepts of virtual functions and exception handling in C++ language.
5*. implement the programs based on various concepts of C++.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td colspan="2">Total</td></tr>
<tr><td>3</td><td>1</td><td colspan="2">4</td></tr>
<tr><td>Contact Hours</td><td>3</td><td>2</td><td colspan="2">5</td></tr>
<tr><td colspan="3">Max. Marks:100(70(T)+30(P))
Internal Assessment Marks:30(20(T)+10(P))
End Term Exam Marks: 70(50(T)+20(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><th colspan="5">Part B- Contents of the Course</th></tr>
<tr><td colspan="5"><u>Instructions for Paper-Setter</u>
The examiner will set a total of nine questions. Out of which, the first question will be compulsory. The remaining eight questions will be set from four units selecting two questions from each unit. The examination will be of three-hour duration. All questions will carry equal marks. The first question will comprise short answer-type questions covering the entire syllabus.
The candidate will have to attempt five questions, selecting one from each unit. First</td></tr>
</table>

question will be compulsory.
The practicum will be evaluated by an external and an internal examiner. The examination will be of three-hour duration.

Unit	Topics	Contact Hours
I	**Input Output in C++**: Unformatted and Formatted I/O Operations. I/O using insertion and extraction operators and streams in C++. **Functions**: Declaration and Definition, return values, arguments, passing parameters by value, call by reference, call by pointer, Recursion, Inline Functions, Function overloading. Pointers, structures, and union in C++.	11
II	**Object-oriented features of C++**: Class and Objects, Data hiding & encapsulation, abstraction, Data Members and Member Functions, accessing class members, empty class, local class, global class, Scope Resolution Operator and its Uses, Static Data Members, Static Member Functions, Structure vs Class, Friend function and friend class. **Constructors and Destructors**: Constructors, Instantiation of objects, Default constructor, Parameterized constructor, Copy constructor and its use, Destructors, Dynamic initialization of objects.	12
III	**Operator Overloading:** Overloading unary and binary operators: arithmetic operators, manipulation of strings using operators. **Inheritance**: Derived class, base class, Accessing the base class member, Inheritance: multilevel, multiple, hierarchical, hybrid; Virtual base class, Abstract class.	11
IV	Virtual Functions, pure virtual functions; Polymorphism & its types **Exception Handling in C++**: exception handling model, exception handling constructs - try, throw, catch, Order of catch blocks, Catching all exceptions, Nested try blocks, handling uncaught exceptions.	11

V*	Practicum:
	Students are advised to do laboratory/practical practice not limited to but including the following types of problems:
	• Write a C++ program to print the following lines:
	  ◦ Your introduction
	  ◦ Your institute introduction
	• Write a program that accepts principle, rate, and time from the user and prints the simple interest.
	• Write a program to swap the values of two variables.
	• Write a program to check whether the given number is even or odd (using ?: ternary operator).
	• Write a program to check whether the given number is positive or negative (using?: ternary operator).
	• Write a program that inputs three numbers and displays the largest number using the ternary operator.
	• WAP to initialize data members of the class using the constructor.
	• Pass values to the constructor and initialize the members of that class to those values.
	• Create a class called cube with the data members Length, Breadth, Height
		30

	• Members functions:
	  • To accept the details.
	  • To calculate the volume of the cube.
	  • To display the details.
	• WAP to calculate the sum using constructor overloading.
	• WAP to demonstrate the use of destructor.
	• Create a C++ Program to show the order of constructor and destructor.
	• C++ Program to Find the Number of Vowels, Consonants, Digits, and White Spaces in a String
	• C++ Program to Multiply Two Matrices by Passing Matrix to Function
	• Increment ++ and Decrement -- Operator Overloading in C++ Programming
	• C++ Program to Add Two Complex Numbers
	• C++ Program to Show Function Overriding
	• C++ Program to Show Polymorphism in Class
	• C++ Program to Show Function Overloading
	• C++ Program to Show Inheritance	

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	**End-Term Examination:** A three-hour exam for boththeory and practicum. **End Term Exam Marks: 70(50(T)+20(P))**

Part C-Learning Resources
Recommended Books/e-resources/LMS: • Herbert Schildt, C++, The Complete Reference, Tata McGraw-Hill • Robert Lafore, Object Oriented Programming in C++, SAMS Publishing • Bjarne Stroustrup, The C++ Programming Language, Pearson Education • Balaguruswami, E., Object Oriented Programming In C++, Tata McGraw-Hill. • Richard Johnson, An Introduction to Object-Oriented Application Development, Thomson Learning.

*Applicable for courses having practical components.

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS KURUKSHETRA UNIVERSITY, KURUKSHETRA

<table>
<tr><th colspan="4">Session: 2023-24</th></tr>
<tr><th colspan="4">Part A - Introduction</th></tr>
<tr><td>Subject</td><td colspan="3">BCA</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Introduction to Web Technologies</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-CAP-202</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="3">CC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3"></td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. learn the basics of web development.
2. understand different types of web pages and websites.
3. implement HTML and CSS for web page designing.
4. Understand the design of web crawlers and search engines.
5*. implement the programs based on various concepts of web development.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3</td><td>2</td><td>5</td></tr>
<tr><td colspan="2">Max. Marks:100(70(T)+30(P))
Internal Assessment Marks:30(20(T)+10(P))
End Term Exam Marks: 70(50(T)+20(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><th colspan="4">Part B- Contents of the Course</th></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.
Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.
Practicum will be evaluated by an external and an internal examiner. Examination will be of</td></tr>
</table>

three-hour duration.		
Unit	**Topics**	**Contact Hours**
I	Introduction to Internet and World Wide Web (WWW); Evolution and History of World Wide Web, Web Pages and Contents, Web Clients, Web Servers, Web Browsers; Hypertext Transfer Protocol, URLs; Searching, Search Engines and Search Tools. Web Publishing: Hosting website; Internet Service Provider; Planning and designing website; Web Graphics Design, Steps For Developing website	11
II	Creating a Website and Introduction to Markup Languages (HTML and DHTML), HTML Document Features & Fundamentals, HTML Elements, Creating Links; Headers; Text styles; Text Structuring; Text color and Background; Formatting text; Page layouts, Images; Ordered and Unordered lists; Inserting Graphics; Table Creation and Layouts; Frame Creation and Layouts; Working with Forms and Menus; Working with Radio Buttons; Check Boxes; Text Boxes, HTML5	12
III	Introduction to CSS (Cascading Style Sheets): Features, Core Syntax, Types, Style Sheets and HTML, Style Rule Cascading and Inheritance, Text Properties, CSS Box Model, Normal Flow Box Layout, Positioning, and other useful Style Properties; Features of CSS3.	11
IV	The Nature of JavaScript: Evolution of Scripting Languages, JavaScript-Definition, Programming for Non-Programmers, Introduction to Client–Side Programming, Enhancing HTML Documents with JavaScript. Static and Dynamic web pages	11
V*	Practicum: Students are advised to do laboratory/practical practice not limited to but including the following types of problems: • Create a web page using an ordered list and an unordered list. • Design a web page to show your institute with hyperlinks. • Create your resume on an HTML page. • Create a web page and divide the web page into four frames. In one frame create three links that will display different HTML forms in the remaining three frames respectively. • Create a web page to show the college record in the form of a table. • Write an HTML code to add internal CSS on a webpage • Design a blog-style personal website.	30

	• Design a web page to display your college with hyperlinks. • Write a JavaScript function to calculate the sum of two numbers. • Write a JavaScript program to find the maximum number in an array. • Write a JavaScript function to check if a given string is a palindrome (reads the same forwards and backward). • Write a CSS file and attach it to any 3 HTML webpages. • Use Div and span in a page and color two words with the same colors. • Using HTML, CSS create a styled checkbox with animation on state change • Design a web page that is like a compose page of e-mail. It should have: a) Text boxes for To, CC, and BCC respectively. b) Text field for the message. c) Send button. d) Option for selecting a file for attachment • After clicking the send button a new page should open with the display message "Message has been sent".	

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	**End-Term Examination:** A three-hour exam for both theory and practicum. **End Term Exam Marks: 70(50(T)+20(P))**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.
- Ramesh Bangia, Multimedia and Web Technology, Firewall Media.
- Thomas A. Powell, Web Design: The Complete Reference, Tata McGraw-Hill
- Wendy Willard, HTML Beginners Guide, Tata McGraw-Hill.
- Deitel and Goldberg, Internet and World Wide Web, How to Program, PHI
- David Flanagan, JavaScript: The Definitive Guide: The Definitive Guide.
- Kogent Learning, Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML, AJAX – Black Book, Wiley India Pvt. Ltd.

*Applicable for courses having practical components.

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS KURUKSHETRA UNIVERSITY, KURUKSHETRA

<table>
<tr><th colspan="4">Session: 2023-24</th></tr>
<tr><th colspan="4">Part A - Introduction</th></tr>
<tr><td>Subject</td><td colspan="3">BCA</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Concepts of Operating Systems</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-CAP-203</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="3">CC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3"></td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. understand the basic concepts of operating systems and their services along with process management.
2. understand the concept of process scheduling and acquire knowledge of process synchronization.
3. learn about memory management and virtual memory concepts.
4. learn to work with directory structure and security aspects.
5*. implement the programs based on the operating system.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3</td><td>2</td><td>5</td></tr>
<tr><td colspan="2">Max. Marks:100(70(T)+30(P))
Internal Assessment Marks:30(20(T)+10(P))
End Term Exam Marks: 70(50(T)+20(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><th colspan="4">Part B- Contents of the Course</th></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question</td></tr>
</table>

will comprise short answer-type questions covering the entire syllabus.
The candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.
The practicum will be evaluated by an external and an internal examiner. The examination will be ofthree-hour duration.

Unit	Topics	Contact Hours
I	Introductory Concepts: Operating System, Functions and Characteristics, Historical Evolution of Operating Systems, Operating System Structure. Types of Operating System: Real-time, Multiprogramming, Multiprocessing, Batch processing. Operating System Services, Operating System Interface, Service System Calls, and System Programs. Process Management: Process Concepts, Operations on Processes, Process States, and Process Control Block. Inter-Process Communication.	11
II	CPU Scheduling: Scheduling Criteria, Levels of Scheduling, Scheduling Algorithms, Multiple Processor Scheduling, Algorithm Evaluation. Synchronization: Critical Section Problem, Semaphores, Classical Problem of Synchronization, Monitors. Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery.	12
III	Memory Management Strategies: Memory Management of Single-user and Multiuser Operating Systems, Partitioning, Swapping, Contiguous Memory Allocation, Paging and Segmentation; Virtual Memory Management: Demand Paging, Page Replacement Algorithms, Thrashing.	11
IV	Implementing File System: File System Structure, File System Implantation, File Operations, Type of Files, Directory Implementation, Allocation Methods, and Free Space Management. Disk Scheduling algorithm - SSTF, Scan, C- Scan, Look, C-Look. SSD Management.	11
V*	Practicum: Students are advised to do laboratory/practical practice not limited to but including the following types of problems: • Working with various operating systems, and performing different operations using operating systems. • Write a program to print file details including owner access permissions, and file access time, where file name is given as argument. • Write a program to copy files using system calls.	30

	• Write a program to implement the FCFS scheduling algorithm. • Write a program to implement the Round Robin scheduling algorithm. • Write a program to implement the SJF scheduling algorithm. • Write a program to implement a non-preemptive priority-based scheduling algorithm • Write a program to implement preemptive priority-based • scheduling algorithm. • Write a program to implement the SRJF scheduling algorithm. • Write a program to calculate the sum of n numbers using the thread library. • Write a program to implement first-fit, best-fit, and worst-fit allocation strategies.	

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	**End-Term Examination:** A three-hour exam for both theory and practicum. **End Term Exam Marks: 70(50(T)+20(P))**

Part C-Learning Resources
Recommended Books/e-resources/LMS: • Silberschatz A., Galvin P.B.,and Gagne G., Operating System Concepts, John Wiley & Sons. • Godbole, A.S., Operating Systems, Tata McGraw-Hill Publishing Company, New Delhi. • Deitel, H.M., Operating Systems, Addison- Wesley Publishing Company, New York. • Tanenbaum, A.S., Operating System- Design and Implementation, Prentice Hall of India, New Delhi.

*Applicable for courses having practical components.

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS KURUKSHETRA UNIVERSITY, KURUKSHETRA

<table>
<tr><th colspan="4">Session: 2023-24</th></tr>
<tr><th colspan="4">Part A - Introduction</th></tr>
<tr><td>Subject</td><td colspan="3">BCA</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Mathematical Foundations for Computer Science-II</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-CAP-204</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="3">CC-M</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3"></td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After learning this course student will be able to:
1. Understand the concept of integration.
2. Acquire cognitive and technical knowledge about a variety of methods of representation of statistical data
3. Understand methods of measure of central tendency. Analyze the problem and apply the best measure of central tendency to draw inferences from the available data.
4. Understand the concept of correlation, and correlation methods and conclude about the type of correlation for the available data. Comprehend the skills of curve fitting.
5. * Attain a range of cognitive and technical skills to integrate various functions. Have the technical and practical skills required for selecting and using suitable methods for data representation and measurement of central tendency.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>1</td><td>1</td><td>2</td></tr>
<tr><td>Contact Hours</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td colspan="2">Max. Marks:50(30(T)+20(P))
Internal Assessment Marks:15(10(T)+5(P))
End Term Exam Marks:35(20(T)+15(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><th colspan="4">Part B-Contents of the Course</th></tr>
</table>

Instructions for Paper-Setter

The examiner will set a total of nine questions. Out of which the first question will be compulsory. The remaining eight questions will be set from four units selecting two questions from each unit. The examination will be of three-hour duration. All questions will carry equal marks. The first question will comprise short answer-type questions covering the entire syllabus. The candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.

The practicum will be evaluated by an external and an internal examiner. The examination will be of three-hour duration.

Unit	Topics	Contact Hours
I	Integration of simple algebraic, trigonometric, and exponential functions. **Presentation of data**: Frequency distribution and cumulative frequency distribution, Diagrammatic and graphical presentation of data, Construction of bar, Pie diagrams, Histograms, Frequency polygon, Frequency curve, and Ogives.	4
II	**Measures of central tendency**: Arithmetic mean, Median, Mode, Geometric mean, and Harmonic mean for ungrouped and grouped data. **Measures of dispersion**: Concept of dispersion, Mean deviation and its coefficient, Range, Variance and its coefficient, Standard deviation.	4
III	**Correlation**: Concept and types of correlation, Methods of finding correlation: Scatter diagram, Karl Pearson's coefficients of correlation, Rank correlation.	3
IV	**Linear regression**: Principle of least square, Fitting of a straight line, Two lines of regression, Regression coefficients.	4
V*	**Practicum**: Students are advised to do laboratory/practical practice not limited to, but including the following types of problems: **Problem Solving**- Questions related to the practical problems based on the following topics will be worked out and a record of those will be maintained in the Practical Note Book: • Demonstrate skills in finding integration of simple functions. • Representation of data using Bar and pie diagrams. • Representation of data using Histogram, Frequency polygon, Frequency curves, and Ogives. • Problems to compute measures of central tendency. • Problems to calculate measures of dispersion. • Problem to calculate Karl Pearson's coefficient of correlation. • Problem to fit the straight line for the given data. • Problem to find lines of regression.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: NA • Mid-Term Exam: 6 ➢ **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	**End Term Examination:** **A three-hour exam for both theory and practicum.** **End Term Exam Marks:35(20(T)+15 (P))**

Part C-Learning Resources

Text /Reference Books:

- S.C. Gupta and V.K. Kapoor (2014). Fundamentals of Mathematical Statistics, S. Chand & Sons, Delhi.
- R.V. Hogg, J. W. McKean and A. T. Craig (2013). Introduction to Mathematical Statistics (7 th edition), Pearson Education.
- J. V. Dyke, J. Rogers and H. Adams (2011). Fundamentals of Mathematics, Cengage Learning.
- A.S. Tussy, R. D. Gustafson and D. Koenig (2010). Basic Mathematics for College Students. Brooks Cole.
- G. Klambauer (1986). Aspects of calculus. Springer-Verlag.

*Applicable for courses having practical components.

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
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<table>
<tr><th colspan="4">Session: 2023-24</th></tr>
<tr><th colspan="4">Part A - Introduction</th></tr>
<tr><td>Subject</td><td colspan="3">COMPUTER SCIENCE</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Cloud Computing Skills</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-SEC-201</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)</td><td colspan="3">SEC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3"></td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3"></td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. Get acquainted with the term Cloud computing.
2. Understand various types of free and commercial clouds.
3. Understands various types of cloud services like SaaS. PaaS and IaaS.
4. Know how the Cloud Computing is changing software industry
5*. to create and use Cloud.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>2</td><td>1</td><td>3</td></tr>
<tr><td>Contact Hours</td><td>2</td><td>2</td><td>4</td></tr>
<tr><td colspan="2">Max. Marks:75(50(T)+25(P))
Internal Assessment Marks:20(15(T)+5(P))
End Term Exam Marks: 55(35(T)+20(P))</td><td colspan="2">Time: 3 Hrs.(T), 3Hrs.(P)</td></tr>
<tr><th colspan="4">Part B- Contents of the Course</th></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
Examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. Examination will be of three-hour duration. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus.
Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory.</td></tr>
</table>

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

Unit	Topics	Contact Hours
I	Basic Concepts of Cloud Computing Computer Network Basics. Concepts of Distributed Systems. Concepts of Cloud Computing and its Necessity. Cloud Service Providers in use and their Significance.	6
II	Cloud Infrastructure Cloud Pros and Cons. Cloud Delivery Models. Cloud Deployment Models.	6
III	Cloud Storage Management Concept of Virtualization and Load Balancing. Overview on Virtualization used for Enterprise Solutions. Key Challenges in managing Information. Identifying the problems of scale and management in big data.	6
IV	Building Cloud Networks Designing and Implementing a Data Center-Based Cloud Installing Open Source Cloud service. Amazon Web Services (AWS). Google Cloud Platform.	6
V*	Practicum: • Creating & using Amazon(AWS) Account • Creating & using Google Account	25

Suggested Evaluation Methods

Internal Assessment:

➢ **Theory**
- Class Participation: 4
- Seminar/presentation/assignment/quiz/class test etc.: 4
- Mid-Term Exam: 7

➢ **Practicum**
- Class Participation: 2
- Seminar/Demonstration/Viva-voce/Lab records etc.: 3
- Mid-Term Exam: NA

End Term Examination: A three hour exam for both theory and practicum.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Cloud Computing: Concepts, Technology & Architecture By Thomas Erl, Ricardo
- Cloud computing a practical approach Anthony T.Velte, Toby J.Velte Robert Elsenpeter, TATA McGraw-Hill, New Delhi– 2010
- Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online -Michael Miller-Que2008
- Moving to Cloud by Dinkar Sitaram, Geetha Manjunath, Publication: Syngress Elsevier Inc, 2014(2ndEdition)
- Cloud Computing Second Edition by Dr Kumar Saurabh, Publication Willy INDIA (2013)
- Cloud Computing Bible by Barrie Sosinsky, Publisher Willy INDAI (2014)
- Cloud computing for Dummies-Judith Hurwitz, Robin Bloor, Marcia Kaufman, Fern Halper, Wiley Publishing, Inc, 2010
- Cloud Computing(Principles and Paradigms),Edited by Rajkumar Buyya, James Broberg, Andrzej Goscinski, John Wiley & Sons, Inc. 2011

*Applicable for courses having practical component.

Part A - Introduction			
Subject	**Business Administration**		
Semester	**II**		
Name of the Course	**Entrepreneurship & Start-ups**		
Course Code	**B23-BBA-MDC-204**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-2**		
Level of the course (As per Annexure-I	**Introductory-Level**		
Pre-requisite for the course (if any)	**None**		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept of Entrepreneur and Entrepreneurship. 2. Role of Institutions in promotion of Entrepreneurship culture. 3. Government Support for the startups. 4. Various stakeholders involved in a startup. 5*.		
Credits	Theory	Practical	Total
	3	**0**	**3**
Contact Hours	**45**	**0**	**45**
Max. Marks: **75** Internal Assessment Marks: **25** End Term Exam Marks: **50**		Time: **3 Hours**	

Part B- Contents of the Course

Instructions for Paper- Setter

The Paper-Setter shall set *nine* questions in all and the question paper shall be divided into two parts. **Part 'A'** shall comprise *four* short answer type questions from the whole of the syllabus carrying 2.5 marks each, which shall be compulsory. **Part 'B'** shall comprise *eight* questions (*two* questions from each unit) carrying 10 marks each and the student will be required to attempt *four* questions selecting *one* question from each unit.

Unit	Topics	Contact Hours
I	Entrepreneurship: Meaning and Significance, Relationship between Entrepreneurship Development and Economic Development, Qualities of entrepreneurs and Entrepreneurial Competencies, Types of Entrepreneurs.	12
II	Entrepreneurial support system; Family Business and their contribution to Entrepreneurship Role of Educational Institutions in promoting the Entrepreneurship culture	11
III	Role of Government, Promotional Agencies and Institutions in Entrepreneurship Development, Incentives and Various Financial Schemes available for Entrepreneurs.	11
IV	Opportunity Identification process; Business plan, Start-Up India Initiative Major Players/stakeholders in Startup Ecosystem – Mentors, Incubators, Investors, Accelerators, Government Bodies.	11
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** ● Class Participation: **05** ● Seminar/presentation/assignment/quiz/class test etc.: **07** ● Mid-Term Exam: **13** ➢ **Practicum** ● Class Participation: ● Seminar/Demonstration/Viva-voce/Lab records etc.: ● Mid-Term Exam:	End Term Examination: **50**

Part C-Learning Resources
Recommended Books/e-resources/LMS: 1. Kumar, Arya (2012); *Entrepreneurship*, Pearson, New Delhi. 2. Shukla, MB, (2011), *Entrepreneurship and Small Business Management*, Kitab Mahal, Allahabad. 3. Sahay A., A. Nirjar (2006), *Entrepreneurship: Education, Theory and Practice*, Excel Books, New Delhi. 4. Panda S.C. (2008) *Entrepreneurship Development.* Anmol Publications.

*Applicable for courses having practical component.

VAC Session: 2023-24	
Part A – Introduction	
Subject	Philosophy
Semester	First
Name of the Course	Human Values and Ethics
Course Code	B- VAC 101
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	N.A

Course Learning Outcomes (CLO):	After completing this course, the learner will be able to know/understand: 301.1. the Need, Content and Process for Value Education. 301.2. the Human Values and Ethics 301.3. the theories of Integrated Personality and Well-being 301.4. the Professional Ethics and Global Citizenship		
	Theory	Practical	Total
Credits	02	00	02
Contact Hours	02	00	02
Max. Marks:-50 **Internal Assessment Marks:-15End** **Term Exam Marks:-35**		**Time:-3 hrs.**	

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (7x1) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equalmarks.

Unit	Topics	Contact Hours
I	Course Introduction - Need, Content and Process for Value Education • Understanding the need, content and process for Value Education. (Students should be aware of the difference among skills, values and ethics and their respective needsin life.) • Classification of Value Education: understanding Personal Values, Social Values, • Moral Values & Spiritual Values; Understanding the difference between ideology andvalues. • Understanding Harmony with self, Society and Nature. • Practical: Debate and discussion on the need and nature of value education; • Students should be encouraged to find and analyze suitable case studies to • Understand various types of values.	8

II	Human Values and Ethics • Meaning and nature of human values; Significance of human values in life; • Relation between values and ethics. • Relevance of Human values: Integrity Empathy, Loksangrah, Brahmvihara. • Theory of Naya (Jainism), Deontology, Virtue Ethics, Utilitarianism • **Practical:** Students should be divided in small groups and should be motivated to reflect upon their values. Teacher should make an environment to make them realizethat everyone has a set of values arisen from their family, social, cultural, religious, and political contexts, some of which correspond to more "human" and "universal" frameworks. This exercise is to encourage students to articulate their values and put them into conversation with values from other contexts.	8
III	Integrated Personality and Well-being • Understanding the relationship among: Self, Identity and Personality. • Understanding Integrated Personality – with the three gunas theory of Sankhya, thefour • Antah-karanas (inner instruments) in Yoga, and Panchkosha (five sheaths) in Upanishad. • Approaching comprehensive understanding of well-being and its relation to Happiness. • **Practical**: Bhrumadhya Dhyan, Chakra Dhyan, Preksha Dhyan, Sakshi Bhava Dhyan, Vipassana, Yog Nidra, Partipakshabhava (yogic way of cognitive restructuring)	7
IV	Professional Ethics and Global Citizenship • Nature, characteristics and scope of professional ethics; Types of Professional Ethics • Professional Values: Trusteeship, Inclusiveness, Commitment, Sustainability, Accountability, Transparency, Impartiality. • Values for Global Citizenship: Equality, Justice, and Human Dignity. • Nature and need of competency based education; Types of Competencies, Core • Competencies: communication, teamwork, planing and achieving goals, Functional • Competencies: analytical thinking, knowledge sharing and learning, decision making, partnership building.	7

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **4** • Seminar/presentation/assignment/quiz/class test etc.:**4** • Mid-Term Exam: **7** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **35**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. R. R. Gaur R Sangal G P Bagaria (2009): A Foundation Course in Human Values and Professional Ethics,Excel Books.
2. D.R. Kiran (2014) Professional Ethics and Human Values, McGraw Hill Education (India).
3. Happiness and Well-Being, NIOS Module V (Health and well-being)
4. Kiran Kumar K. Salagame (2016): Meaning and Well-Being: Indian Perspectives, Journal of Constructivist Psychology
5. Dan P. McAdams, Kali Trzesniewski, Jennifer Lilgendahl, Veronica Benet-Martinez, Richard W. Robins (2021) Self and Identity in Personality Psychology, Personality Science, 2021, Vol. 2, Article e6035, https://doi.org/10.5964/ps.603
6. S. K. Kiran Kumar (2003): An Indian conception of well being, in Henry, J. (Ed) European PositivePsychology Proceedings 2002. Leicester, UK: British Psychological Society.
7. Vivian L Vignoles (2017): Identity: Personal and Social, Chapter to appear in Oxford Handbook of Personality and Social Psychology (2nd ed.), edited by Kay Deaux and Mark Snyder.
8. Wong, S.-C. (2020). Competency Definitions, Development and Assessment: A Brief Review.International Journal of Academic Research in Progressive Education and Development, 9(3), 95–114.

VAC 2 B23-VAC-201

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Environmental Science</td></tr>
<tr><td>Semester</td><td colspan="3">I/ II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Environmental Studies</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-VAC-201</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC
/VOC/DSE/PC/AEC/VAC)</td><td colspan="3">VAC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. Understand the concept of environmental studies, sustainable development and ecosystem.
2. Learn about the various natural resources and about biodiversity and its conservation.
3. Know about the types of pollution, solid waste management, global environmental issues and environmental laws.
4. Understand the concept of population growth and its impacts on environment and disaster management.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>2</td><td>NA</td><td>2</td></tr>
<tr><td>Contact Hours</td><td>2</td><td>NA</td><td>2</td></tr>
<tr><td colspan="2">Max. Marks: 50
Internal Assessment Marks: 15
End Term Exam Marks: 35</td><td colspan="2">Time: 3 hours</td></tr>
</table>

Part B- Contents of the Course		
Instructions for Paper- Setter Total number of questions set will be nine. Questions no. 1 is compulsory covering the entire syllabus. Two questions will be set from each unit. Students have to attempt five questions in all, selecting one question from each unit including the compulsory question. Each question is of 7 marks. All questions carry equal marks. Final theory exam time allowed will be of 3 hours.		
Unit	**Topics**	**Contact Hours**
I	**Introduction to environmental studies:** Multidisciplinary nature of environmental studies; Scope and importance; Concept of sustainability and sustainable development. **Ecosystems:** Definition, structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs, Major ecosystems types: Forest ecosystem, Grassland ecosystem, Desert ecosystem and Aquatic ecosystem (lakes, rivers, oceans).	6
II	**Natural resources: Renewable and Non- renewable Resources** Land resources: Land degradation and soil erosion. Forest resources: Importance of forests, deforestation: causes and impacts on environment. Water resources: Use and over- exploitation of surface and ground water. Energy resources: Renewable and non- renewable energy sources. **Biodiversity and Conservation:** Definition and its types, Endangered and endemic species of India. Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation biodiversity: *In-situ* and *Ex-situ* conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational values.	9

III	**Environmental pollution** Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution. Solid waste management: Sources, methods of disposal: Landfill, incineration and composting. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. **Environmental Policies & Practices** Environmental laws: Environment (Protection) Act, 1986, Air (Prevention & Control of Pollution) Act, 1981, Water (Prevention and control of Pollution) Act, 1974.	8
IV	**Human Communities and the Environment:** Human population growth: Impacts on environment, human health and welfare. Resettlement and rehabilitation of project affected person. Disaster management: floods, earthquake, cyclones, landslides and drought. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.	7

Suggested Evaluation Methods

Internal Assessment:15 marks ➢ **Theory** • Class Participation: 4 marks • Seminar/presentation/assignment/quiz/class test etc.: 4marks • Mid-Term Exam: 7 marks	**End Term Examination:** Theory: 35 marks (Written exam)

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Kaushik, A & Kaushik, C.P. 2022. Perspectives in Environmental Studies. New Age International Pvt Ltd, New Delhi.
2. Bharucha, E. 2021. A Textbook of Environmental Studies for Undergraduate Courses, Orient Blackswan Pvt Ltd.
3. Goswami, P., Mandal, J. & Singh, S. 2022. A Textbook on Environmental Studies, Ashok book stall, Assam.
4. Joshi, P.C. & Joshi, N. 2009. A Text Book of Environmental Science. APH Publishing Corporation.
5. Basu, M. & Xavier Savarimuthu, S.J. 2017. Fundamentals of Environmental Studies. Cambridge University Press.
6. Singh, R.P. & Islam, Z. 2012. Environmental Studies. Concept Publishing Company.

English

Semester-IV

Nomenclature of the Course: **English Language and Communication Skills: Level 4**

Course Code: **B23-AEC-411**

Course Type: **AEC-4**

Level of the Course: **200-299**

Credits: 2 (Theory 2)

Total Marks: 50

End Term Exam Marks: 35

Internal Assessment Marks: 15

Exam Time: 3 Hrs.

Workload: Theory 2 hours

Course Learning Outcomes

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

E401.1. The students will enhance their vocabulary by learning formation of words.

E401.2. They will learn the various types of sentences.

E401.3. They will comprehend the public speaking techniques and art of oratory.

E401.4. They will learn practical use of coherence in writing and contextual vocabulary

Contents of the Course:

Unit I: Vocabulary Building

Word formation and understating word roots, prefixes, and suffixes

Unit II: Types of Sentences and Transformation of Sentences

Unit III: Public Speech, Persuasion Techniques

Various Aspects of Conversation: Starting a Conversation/Controlling a Conversation

Unit IV: Coherence and Unity in a Paragraph, Transition Words and Phrases

Learning Contextual Vocabulary through Reading a Passage or Literary Text

Suggested Readings:

Lewis, Norman. *Word Power Made Easy: The Complete Handbook for Building a Superior Vocabulary*. Anchor, 2014.

Nida, Eugene A. *Morphology: The Descriptive Analysis of Words*. University of Michigan Press, 1965.

Tortora, Christina. *Understanding Sentence Structure: An Introduction to English Syntax.* John Wiley & Sons, 2018.

Instructions to the Paper Setters:

1. Question No 1 will be compulsory and will have 7 parts based on all the four Units and the students will be required to attempt all the 7.
2. Question No 2 and 3 will be set on Unit-I covering the entire Unit. Students will be required to attempt any one.
3. Question No 4 and 5 will be set on Unit-II covering the entire Unit. Students will be required to attempt any one.
4. Question No 6 and 7 will be set on Unit-III covering the entire Unit. Students will be required to attempt any one.
5. Question No. 8 and 9 will be based on Unit-IV. Students will be required to attempt any one of these.

Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

i.	Class Participation	4 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
iii.	Mid-Term Exam	7 Marks Total 15 Marks

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	SECOND		
Name of the Course	Understanding of Mobiles and Computer Systems		
Course Code	B23-ELE-204		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-2		
Level of the course	100-199		
Pre-requisite for the course (if any)	B.A. & B.Com. Ist Sem.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Identify the different parts of Computer or Laptop systems. 2. Know about various backup systems and cable connections 3. Learn about different printers available 4. Understand the Setting of Internet Connection with computer/Laptop systems 5. Hands-on with the different parts and peripherals of computer		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60
Max. Marks: 75 (50 Theory + 25 Practical) Internal Assessment Marks: 15 Theory + 5 Practical End Term Exam Marks: 35 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.
3. Medium of examination may be Hindi/English.

Unit	Topics	Contact Hours

I	Identification of various parts of Computer/ Laptop, Understanding the computer configuration/Laptop configuration and Mobile Configuration	8
II	Power Backup: Inverter, UPS, Dry Battery Various Interfacing Cables, connectors and converters for computer, Laptop and Mobile	8
III	Printer Scanner Configuration Projector: Types of Projectors and their Installation	7
IV	Setting Up of Internet Connection: Wired & Wi-fi Setting Up of a complete ICT solution using Computer/laptop and Mobile and interactive Panel	7
V*	**Note:** A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. 1. Introduction of Computer Peripherals (input devices, output devices etc) 2. Disassembling computer system. 3. Reassembling computer system 4. Familiarization with Motherboard and its Components. 5. Troubleshooting and Repairing of Keyboard and Scanner. 6. Troubleshooting and Repairing of Printer 7. Troubleshooting and Repairing of Speaker and Web camera.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 15 Marks** • Class Participation: **4 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **4 Marks** • Mid-Term Exam: **7 Marks** ➢ **Practicum 5 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **5 Marks** • Mid-Term Exam:		**End Term Examination:** **35 Marks** **20 Marks**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Computer Fundamentals by Pradeep K. Sinha BPB Publications
2. IBM PC & Clones: Hardware Trouble Shooting and Maintenance by B.Govindarajalu, Tata McGraw Hill
3. PC Upgrade & Repair Bible , Wiley India.
4. PC Systems, Installation and Maintenance, Second Edition by R. P. Beales,
5. PC Upgrade & Repair Black Book by Ron Gilster.
6. Computer Installation and Servicing by D Balasubramanian