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

‖ योगस्थः कुरु कर्माणि ‖
सर्बुद्धि व योग युक्त होकर कर करो
(Perform Actions while Stead fasting in the State of Yoga)

Scheme of Examination for Under-Graduate Programmes
**Bachelor of Computer Applications (BCA): SCHEME D**
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)

# Kurukshetra University Kurukshetra
## Scheme of Examination for Undergraduate programmes
## Subject: BCA
## According to
## Curriculum Framework for Undergraduate Programmes
**as per NEP 2020** (Multiple Entry-Exit, Internships and Choice Based Credit System)

| Sem | Course Type | Course Code | Nomenclature of paper | Credits | Contact hours | Internal marks | End term Marks | Total Marks | Duration of exam (Hrs) T + P |
|---|---|---|---|---|---|---|---|---|---|
| 1 | CC-A1 | B23-CAP-101 | Problem Solving through C | 3 | 3 | 20 | 50 | 70 | 3 |
| | | | Practical | 1 | 2 | 10 | 20 | 30 | 3 |
| | CC-B1 | B23-CAP-102 | Foundations of Computer Science | 3 | 3 | 20 | 50 | 70 | 3 |
| | | | Practical | 1 | 2 | 10 | 20 | 30 | 3 |
| | CC-C1 | B23-CAP-103 | Logical Organization of Computer | 3 | 3 | 20 | 50 | 70 | 3 |
| | | | Practical | 1 | 2 | 10 | 20 | 30 | 3 |
| | CC-M1 | B23-CAP-104 | Mathematical Foundations for Computer Science-I | 1 | 1 | 10 | 20 | 30 | 3 |
| | | | Practical | 1 | 2 | 5 | 15 | 20 | 3 |
| | MDC1 | To be taken from other department | | | | | | | |
| | SEC1 | To be taken from SEC Pool | | | | | | | |
| | VAC1 | To be taken from VAC Pool | | | | | | | |
| | AEC1 | To be taken from AEC Pool | | | | | | | |
| 2 | CC-A2 | B23-CAP-201 | Object Oriented Programming using C++ | 3 | 3 | 20 | 50 | 70 | 3 |
| | | | Practical | 1 | 2 | 10 | 20 | 30 | 3 |

| Course | Subject Code | Subject Name |
|--------|--------------|--------------|
| BCA 1st | 102 | Foundation of Computer Science |
| BCA 1st | 103 | Logical Organization of Computer |
| BCA 1st | 104 | Mathematics |
| BCA 1st | 101 | C Programming |
| BCA 1st | B23-SEC-103 | Basic it Tools |
| BCA 1st | B23-VAC-101 | Human Values and Ethics (50% students) |
| BCA 1st | B23-VAC-201 | Environmental Studies (50% students) |
| BCA 1st | B-AEC-E101 | English language & Communication |
| BCA 1st | B23-POL-104 | Political Science - Indian Polity |

# DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
## KURUKSHETRA UNIVERSITY, KURUKSHETRA

| Session: 2023-24 | | | |
|---|---|---|---|
| **Part A - Introduction** | | | |
| Subject | BCA | | |
| Semester | I | | |
| Name of the Course | Problem Solving through C | | |
| Course Code | B23-CAP-101 (Common with B23-CAI-101, B23-CDS-101, B23-CTS-101) | | |
| Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC) | CC | | |
| Level of the course (As per Annexure-I | 100-199 | | |
| Pre-requisite for the course (if any) | | | |
| Course Learning Outcomes(CLO): | After completing this course, the learner will be able to: <br> 1. learn the basics of C program, data types and input/output statements. <br> 2. understand different types of operators, their hierarchies and also control statements of C. <br> 3. implement programs using arrays and strings. <br> 4. get familiar with advanced concepts like structures, union etc. in C language. <br><br> 5*. to implement the programs based on various concepts of C. | | |
| Credits | Theory | Practical | Total |
| | 3 | 1 | 4 |
| Contact Hours | 3 | 2 | 5 |
| **Max. Marks:100(70(T)+30(P))** <br> **Internal Assessment Marks:30(20(T)+10(P))** <br> **End Term Exam Marks: 70(50(T)+20(P))** | **Time: 3 Hrs.(T), 3Hrs.(P)** | | |
| **Part B- Contents of the Course** | | | |

## Instructions for Paper- Setter

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.

| 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.<br>Input/output: Formatted I/O Function-, Input Functions viz. scanf(), getch(), getche(), getchar(), gets(),<br>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,<br>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.<br>Functions: definition, prototype, function call, passing arguments to a function: call by value; call by reference, recursive functions.<br>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.<br>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:<br> Students are advised to do laboratory/practical practice not limited to, but including the following types of problems:<br>• To read radius of a circle and to find area and circumference<br>• To read three numbers and find the biggest of three<br>• To check whether the number is prime or not<br>• To read a number, find the sum of the digits, reverse the number and check it for palindrome<br>• To read numbers from keyboard continuously till the user presses 999 and to find the sum of only positive numbers<br>• To read percentage of marks and to display appropriate message (Demonstration of else-if ladder)<br>• To find the roots of quadratic equation<br>• 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:**<br>➢ **Theory**<br>  • Class Participation: 5<br>  • Seminar/presentation/assignment/quiz/class test etc.: 5<br>  • Mid-Term Exam: 10<br><br>➢ **Practicum**<br>  • Class Participation: 5<br>  • Seminar/Demonstration/Viva-voce/Lab records etc.: 5<br>  • 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.

## DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
## KURUKSHETRA UNIVERSITY, KURUKSHETRA

| Session: 2023-24 | | | |
|---|---|---|---|
| **Part A - Introduction** | | | |
| Subject | BCA | | |
| Semester | I | | |
| Name of the Course | Foundations of Computer Science | | |
| Course Code | B23-CAP-102 (Common with B23-CAI-101, B23-CDS-101, B23-CTS-101) | | |
| Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC) | CC | | |
| Level of the course (As per Annexure-I | 100-199 | | |
| Pre-requisite for the course (if any) | | | |
| Course Learning Outcomes(CLO): | After completing this course, the learner will be able to: <br> 1. understand the basics of computer <br> 2. learn about I/O devices and operating systems <br> 3. understand internet and its services <br> 4. learn about the threats and security concepts on computers <br><br> 5*. to understand the working of operating system, internet and security related concepts. | | |
| Credits | Theory | Practical | Total |
|  | 3 | 1 | 4 |
| Contact Hours | 3 | 2 | 5 |
| **Max. Marks:100(70(T)+30(P))** <br> **Internal Assessment Marks:30(20(T)+10(P))** <br> **End Term Exam Marks: 70(50(T)+20(P))** | **Time: 3 Hrs.(T), 3Hrs.(P)** | | |
| **Part B- Contents of the Course** | | | |

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### Instructions for Paper- Setter

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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

| Unit | Topics | Contact Hours |
|------|--------|---------------|
| | three-hour duration. | |
| 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:<br>• Starting with basics of Operating Systems and its functionalities<br>Computer Basics:<br>• Identify the various computer hardware<br>• Understanding the working of computer<br>• Understanding various types of software | 25 |

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

| Suggested Evaluation Methods ||
|---|---|
| **Internal Assessment:** <br> ➢ **Theory** <br>     • Class Participation: 5 <br>     • Seminar/presentation/assignment/quiz/class test etc.: 5 <br>     • Mid-Term Exam: 10 <br><br> ➢ **Practicum** <br>     • Class Participation: 5 <br>     • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 <br>     • 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.

## DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
## KURUKSHETRA UNIVERSITY, KURUKSHETRA

| Session: 2023-24 | | | |
|---|---|---|---|
| **Part A - Introduction** | | | |
| Subject | BCA | | |
| Semester | I | | |
| Name of the Course | Logical Organization of Computer | | |
| Course Code | B23-CAP-103 (Common with B23-CAI-101, B23-CDS-101, B23-CTS-101) | | |
| Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC) | CC | | |
| Level of the course (As per Annexure-I | 100-199 | | |
| Pre-requisite for the course (if any) | Basic Knowledge of Mathematics (10th Level) | | |
| Course Learning Outcomes(CLO): | After completing this course, the learner will be able to: <br> 1. understand number systems, error detecting correcting code and representations of numbers in a computer system. <br> 2. understand computer arithmetic and Boolean algebra and simplification of Boolean expressions. <br> 3. understand working of logic gates and design various combinational circuits using these logic gates. <br> 4. understand working of different types of flip-flops and design different types of registers. <br> _____ <br> 5*. to understand the practical aspects of logical organization of computer. | | |
| Credits | Theory | Practical | Total |
|  | 3 | 1 | 4 |
| Contact Hours | 3 | 2 | 5 |
| **Max. Marks:100(70(T)+30(P))** <br> **Internal Assessment Marks:30(20(T)+10(P))** <br> **End Term Exam Marks: 70(50(T)+20(P))** | **Time: 3 Hrs.(T), 3Hrs.(P)** | | |
| **Part B- Contents of the Course** | | | |
| **Instructions for Paper- Setter** <br> 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.

| 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 &amp; 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 &amp; 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: <ul><li>Problems based on Number System and their conversion.</li><li>Programs based on Number System conversion.</li></ul> Binary Arithmetic <ul><li>Problems based on Binary Arithmetic.</li></ul> | 25 |

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| | • Programs based on Binary Arithmetic.<br>• Problems based on Boolean Expression and their simplification<br>Logic Gates<br>• Understanding working of logic Gates.<br>Combinatorial Circuits:<br>• Designing and understanding various combinational circuits.<br>Sequential Circuits:<br>• Designing and understanding various sequential circuits. | |
|---|---|---|
| **Suggested Evaluation Methods** | | |
| **Internal Assessment:**<br>➢ **Theory**<br>• Class Participation: 5<br>• Seminar/presentation/assignment/quiz/class test etc.: 5<br>• Mid-Term Exam: 10<br><br>➢ **Practicum**<br>• Class Participation: 5<br>• Seminar/Demonstration/Viva-voce/Lab records etc.: 5<br>• 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:**<br>• M. Morris Mano, Digital Logic and Computer Design, Prentice Hall of India Pvt. Ltd.<br>• V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall.<br>• Andrew S. Tanenbaum, Structured Computer Organization, Prentice Hall of India Pvt. Ltd.<br>• Nicholas Carter, Schaum's Outlines Computer Architecture, Tata McGraw-Hill. | | |

*Applicable for courses having practical component.

## DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
## KURUKSHETRA UNIVERSITY, KURUKSHETRA

| Session: 2023-24 | |
|---|---|
| **Part A - Introduction** | |
| Subject | BCA |
| Semester | I |
| Name of the Course | Mathematical Foundations for Computer Science-I |
| Course Code | B23-CAP-104 (Common with B23-CAI-101, B23-CDS-101, B23-CTS-101) |
| Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC) | CC-M |
| Level of the course (As per Annexure-I | 100-199 |
| Pre-requisite for the course (if any) | |
| Course Learning Outcomes (CLO): | After learning this course student will be able:<br>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.<br>2. Have the knowledge of the basic concepts of complex numbers and acquire skills to solve linear quadratic equations.<br>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.<br>4. Understand the concept of differentiation<br>5. * Attain the skills to make use of the learnt concepts of Introductory Mathematics in multidisciplinary learning contexts and to know their applications |

| Credits | Theory | Practical | Total |
|---|---|---|---|
| | 1 | 1 | 2 |
| Contact Hours | 1 | 2 | 3 |

| | |
|---|---|
| **Max. Marks:50(30(T)+20(P))**<br>**Internal Assessment Marks:15(10(T)+5(P))**<br>**End Term Exam Marks:35(20(T)+15(P))** | **Time: 3 Hrs.(T), 3Hrs.(P)** |

**Part B-Contents of the Course**

| | **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: <br> Students are advised to do laboratory/practical practice not limited to, but including the following types of problems: <br> **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: <br> • Problems related to union, intersection, difference and complement of sets. <br> • Problems based on De Morgan's Laws. <br> • Problems related to Venn diagrams. <br> • Problems to find inverse of a matrix. <br> • Problems to find determinant of a square matrix of order 3. <br> • Problems to find nth term of A.P., G.P. and H.P. <br> • Problems to find sum of n terms of A.P., G.P. and H.P. <br> • Problems to find A.M., G.M. and H.M. of given numbers. <br> • Problems involving formulation and solution of quadratic equations in one variable. <br> • Problems to find first derivatives of functions. | 25 |
| | **Suggested Evaluation Methods** | |
| **Internal Assessment:** <br> ➢ **Theory** <br>   • Class Participation: 4 | | **End Term Examination:** <br> **A three hour exam** |

| | |
|---|---|
| • Seminar/presentation/assignment/quiz/class test etc.: NA<br>• Mid-Term Exam: 6<br><br>➢ **Practicum**<br>  • Class Participation: NA<br>  • Seminar/Demonstration/Viva-voce/Lab records etc.: 5<br>  • 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.

# DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
## KURUKSHETRA UNIVERSITY, KURUKSHETRA

| | |
|---|---|
| **Session: 2023-24** | |
| **Part A - Introduction** | |
| Subject | COMPUTER SCIENCE |
| Semester | I |
| Name of the Course | Basic IT Tools |
| Course Code | B23-SEC-103 |
| Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC) | SEC |
| Level of the course (As per Annex-ure-I | |
| Pre-requisite for the course (if any) | |
| Course Learning Outcomes(CLO): | After completing this course, the learner will be able to: <br> 1. Identify the basic components of computers and terminology <br> 2. acquaint with Operating System and its applications for both desktop and mobile devices <br> 3. Understand computer networks, and browse the internet, content search, email and collaborate with peers <br> 4. Use e-Governance applications; and use computer to improve existing skills and learn new skills <br><br> 5*. to implement various spreadsheet tools practically. |

| Credits | Theory | Practical | Total |
|---|---|---|---|
| | 2 | 1 | 3 |
| Contact Hours | 2 | 2 | 4 |

| | |
|---|---|
| **Max. Marks:75(50(T)+25(P))** <br> **Internal Assessment Marks:20(15(T)+5(P))** <br> **End Term Exam Marks:55(35(T)+20(P))** | **Time: 3 Hrs.(T), 3Hrs.(P)** |

| |
|---|
| **Part B-Contents of the Course** |
| **Instructions for Paper- Setter** <br> 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.

| Unit | Topics | Contact Hours |
|---|---|---|
| I | Introduction to Computer: Computer and Latest IT gadgets, Evolution of Computers & its applications, Basics of Hardware and Software, Application Software, Systems Software, Utility Software. Central Processing Unit, Input devices, Output devices, Computer Memory & storage, Mobile Apps. | 6 |
| II | Introduction to Operating System, Functions of the Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets, User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, Running an Application, Operating System Simple Setting, Changing System Date and Time, Changing Display Properties, To Add or Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management. | 6 |
| III | Introduction to Internet and World Wide Web, Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology, Internet, Applications of Internet, Website Address and URL, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.), Popular Search Engines, Searching on the Internet. | 6 |
| IV | E-mail: Using E-mails, Opening Email account, Mailbox: Inbox and Outbox, Creating and Sending a new E-mail, replying to an E-mail message, forwarding an E-mail message, searching emails, Attaching files with email, Email Signature. Social Networking: Facebook, Twitter, LinkedIn, Instagram, Instant Messaging (WhatsApp, Facebook Messenger, Telegram), Introduction to Blogs, Digital Locker. | 6 |
| V* | Practicum:<br>• Identify the various parts of computer<br>• Using computer/mobile software and hardware<br>• Use of operating system for various tasks such as file creation, directory creation, shortcut creation, using control panel, etc.<br>• Using Internet & various browsers.<br>• Identify the various hardware/software required for Internet<br>• How to create and use e-mail account<br>• Using Facebook, WhatsApp, Instagram, LinkedIn, Telegram<br>• Writing blogs | 25 |
| **Suggested Evaluation Methods** | | |

| Internal Assessment:<br>➢ **Theory** | End Term Examination:<br>A three hour ex- |
|---|---|

| | |
|---|---|
| • Class Participation: 4<br>• Seminar/presentation/assignment/quiz/class test etc.:4<br>• Mid-Term Exam: 7<br>➢ **Practicum**<br>    • Class Participation: 2<br>    • Seminar/Demonstration/Viva-voce/Lab records etc.:3<br>    • Mid-Term Exam:   NA | am for both theory and practicum. |

**PartC-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
- Ram, B., Computer Fundamentals, Architecture & Organization, New Age International (P) Ltd.

*Applicable for courses having practical component.

<table>
<tr><td colspan="2" align="center"><strong>VAC</strong><br><strong>Session: 2023-24</strong></td></tr>
<tr><td colspan="2" align="center"><strong>Part A – Introduction</strong></td></tr>
<tr><td>Subject</td><td>Philosophy</td></tr>
<tr><td>Semester</td><td>First</td></tr>
<tr><td>Name of the Course</td><td>Human Values and Ethics</td></tr>
<tr><td>Course Code</td><td>B- VAC 101</td></tr>
<tr><td>Course Type:<br>(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)</td><td>VAC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td>100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td>N.A</td></tr>
</table>

| 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.<br>301.2.    the Human Values and Ethics<br>301.3.    the theories of Integrated Personality and Well-being<br>301.4.    the Professional Ethics and Global Citizenship |

| | Theory | Practical | Total |
|---|---|---|---|
| Credits | 02 | 00 | 02 |
| Contact Hours | 02 | 00 | 02 |

| **Max. Marks:-50**<br>**Internal Assessment Marks:-15End**<br>**Term Exam Marks:-35** | **Time:-3 hrs.** |
|---|---|

<div align="center">

**Part B-Contents of the Course**

</div>

<div align="center">

**Instructions for Paper- Setter**

</div>

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<br><br>• 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.)<br>• Classification of Value Education: understanding Personal Values, Social Values,<br>• Moral Values & Spiritual Values; Understanding the difference between ideology andvalues.<br>• Understanding Harmony with self, Society and Nature.<br>• Practical: Debate and discussion on the need and nature of value education;<br>• Students should be encouraged to find and analyze suitable case studies to<br>• Understand various types of values. | 8 |

| | | |
|---|---|---|
| II | **Human Values and Ethics**<br><br>• Meaning and nature of human values; Significance of human values in life;<br>• Relation between values and ethics.<br>• Relevance of Human values: Integrity Empathy, Loksangrah, Brahmvihara.<br>• Theory of Naya (Jainism), Deontology, Virtue Ethics, Utilitarianism<br><br>• **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**<br><br>• Understanding the relationship among: Self, Identity and Personality.<br>• Understanding Integrated Personality – with the three gunas theory of Sankhya, thefour<br>• Antah-karanas (inner instruments) in Yoga, and Panchkosha (five sheaths) in Upanishad.<br>• Approaching comprehensive understanding of well-being and its relation to Happiness.<br>• **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**<br><br>• Nature, characteristics and scope of professional ethics; Types of Professional Ethics<br>• Professional Values: Trusteeship, Inclusiveness, Commitment, Sustainability, Accountability, Transparency, Impartiality.<br>• Values for Global Citizenship: Equality, Justice, and Human Dignity.<br>• Nature and need of competency based education; Types of Competencies, Core<br>• Competencies: communication, teamwork, planing and achieving goals, Functional<br>• Competencies: analytical thinking, knowledge sharing and learning, decision making, partnership building. | 7 |

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

| 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. |

| 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:** 3 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:**<br>Multidisciplinary nature of environmental studies; Scope and importance; Concept of sustainability and sustainable development.<br>**Ecosystems:**<br>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**<br>Land resources: Land degradation and soil erosion.<br>Forest resources: Importance of forests, deforestation: causes and impacts on environment.<br>Water resources: Use and over- exploitation of surface and ground water.<br>Energy resources: Renewable and non- renewable energy sources.<br>**Biodiversity and Conservation:**<br>Definition and its types, Endangered and endemic species of India.<br>Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation biodiversity: *In-situ* and *Ex-situ* conservation of biodiversity.<br>Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational values. | 9 |

| III | **Environmental pollution** <br> Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution. <br> Solid waste management: Sources, methods of disposal: Landfill, incineration and composting. <br> Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. <br> **Environmental Policies & Practices** <br> 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:** <br> Human population growth: Impacts on environment, human health and welfare. <br> Resettlement and rehabilitation of project affected person. <br> Disaster management: floods, earthquake, cyclones, landslides and drought. <br> Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. | 7 |

| Suggested Evaluation Methods | |
|---|---|

| Internal Assessment:15 marks <br> ➢ **Theory** <br> • Class Participation: 4 marks <br> • Seminar/presentation/assignment/quiz/class test etc.: 4marks <br> • Mid-Term Exam: 7 marks | **End Term Examination:** <br> 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-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 |

# KURUKSHETRA UNIVERSITY KURUKSHETRA
### Established by the State Legislature Act XIII of 1956
### ('A⁺' Grade NAAC Accredited)

## Undergraduate Programme (Political Science) Syllabus, Semester-I

| MDC-1 | | | |
|---|---|---|---|
| **Session 2023-2024** | | | |
| **Part-A Introduction** | | | |
| Subject | **Political Science** | | |
| Semester | **I** | | |
| Name of the Course | **Indian Polity - I** | | |
| Course Code | **B23-POL-104** | | |
| Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC | **MDC** | | |
| 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:<br><br>1. Comprehend the salient features of the Indian Constitution and develop an understanding of Fundamental Rights and duties.<br><br>2. Develop an understanding of the powers, position and functions of the Union Executive<br><br>3. Comprehend the functioning of the Union legislature.<br><br>4. Comprehend the functioning of the Indian judicial system. | | |
| Credits | **Theory** | **Tutorial** | **Total** |
| | 2 | 1 | 3 |
| Contact Hours | 2 per week | 1 per week | 3 per week |
| **Max. Marks:** 75<br>**Internal Assessment Marks:** 25<br>**End Term Exam Marks:** 50 | **Time: 3 Hours** | | |
| **Part-B Contents of the Course** | | | |
| **Instructions for Paper Setters** | | | |

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.

2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus.

3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory

| Unit | Topics | Contact Hours |
|------|--------|---------------|
| | question. | |
| | 4. Each question will carry 10 marks. | |
| I | Indian Constitution: Salient Features, Fundamental Rights and Fundamental Duties | 09 |
| II | Union Executive: President, Prime Minister and Council of Ministers | 09 |
| III | Union Legislature: Lok Sabha and Rajya Sabha | 09 |
| IV | Judiciary: Supreme Court, Judicial Review and Judicial Activism | 09 |
| | **Tutorial** | 09 |
| **Suggested Evaluation Methods** | | |

| Internal Assessment: 25 Marks | End Term Examination: |
|-------------------------------|----------------------|
| Class Participation: **05**<br>Seminar/Presentation/Assignment/Quiz/Class Test etc: **07**<br>Mid Term Exam: **13** | **50** |

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| **Part-C Learning Resources** |
|-------------------------------|
| **Recommended Books:**<br><br>• Austin, G. (1966). The Indian Constitution: Corner Stone of a Nation. Oxford, Oxford University Press.<br>• Austin, G. (2000). Working a Democratic Constitution: The Indian Experience. Delhi, Oxford University Press.<br>• Basu, D. D. (1994). An Introduction to the Constitution of India. New Delhi, Prentice Hall.<br>• Bhushan, R., & Katju, M. (2012). Supreme but not Infallible: Essays In Honour of The Supreme Court of India. Hay House India.<br>• Pylee, M. V. (1998). An Introduction to the Constitution of India. New Delhi. |