Khandesh College Education Society's

**Institute of Management and Research, Jalgaon**

(An Autonomous Institute affiliated to Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon and Recognized by AICTE, New-Delhi)

NEP-2020 Based CBCS

# PROGRAM STRUCTURE AND SYLLABUS

Of

## Bachelor of Computer Applications (BCA)

(2024-2028)

Department of BCA

School of Computer Applications

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**ABOUT THE PROGRAMME**

**Eligibility Criteria:**

**Candidate must have passed 10+2 H.S.C. (from any stream) exam of Maharashtra State or its equivalent Examination**

Or

Candidate must have passed 10+2 M.C.V.C. course from Maharashtra State Education Board.

**Only candidates who have appeared for MAHB- BBA/BCA/BMS/BBM are eligible for admission process to this course.**

**Admission Process:**

1. A Common Entrance Examination procedure will be adopted for admission to BCA First Year Course.
    a. **Eligibility for Appearing for Appearing MAH-B.BCA/BBA/BMS/BBM – CET.**
        - Passed 10 + 2 (HSC) or its equivalent examination (As per the AICTE APH 2024 - 2027)
        - Candidates appearing for 10 + 2 (HSC) or its equivalent examination are also eligible to appear for CET
    b. Online registration of application and uploading of required documents by the Candidate for admission on website
2. Documents verification and confirmation of Application Form for Admission by online mode.
3. Display of the provisional merit list for Maharashtra State/All India candidates on website.
4. Submission of grievances if any, for all type of Candidates
5. Display of the Final Merit lists of Maharashtra State/All India candidates on website

## PROGRAMME STRUCTURE & CREDIT DISTRIBUTION

**Vision**

To be a leading institution recognized for excellence in educating students with a strong foundation in state-of-the-art computer application courses, preparing them to contribute to technological advancements and socio-economic development worldwide.

**Mission**

1. Deliver top-tier education in computer applications, seamlessly integrating theoretical knowledge with practical expertise.
2. Facilitate global industry exposure for students through robust linkages with diverse organizations.
3. Instill professional ethical values and a sense of corporate social responsibility in students.
4. Provide a dynamic platform for skill development through extracurricular activities and workshops focused on modern tools and techniques.
5. Foster a research-oriented mindset and nurture innovation by encouraging students to undertake pioneering projects that address real-world challenges.

**Name of the Programmes:**

Bachelor in Computer Applications(BCA),
Bachelor in Computer Applications (BCA-Honours) and
Bachelor in Computer Applications (BCA-Honours with Research)

**Objective of the program:**

1. Develop a deep understanding of computer science and its real-world applications, including programming languages, data structures and algorithms, computer networks, databases, and software engineering.
2. Gain practical experience in software development by designing, implementing, and testing software systems using industry-standard tools and technologies.
3. Build critical thinking and problem-solving skills to tackle complex challenges in computer science and develop innovative solutions with cutting-edge technologies.
4. Develop effective communication, collaboration, and teamwork skills to work effectively in diverse and interdisciplinary environments.
5. Acquire knowledge and skills in emerging areas of computer science, such as artificial

intelligence, machine learning, computer vision, cybersecurity, and big data analytics, to stay current with the rapidly evolving technological landscape.

**Description of the Programme:**

The Bachelor of Computer Applications (BCA) program is designed to provide students with a comprehensive understanding of the field of computer science and its applications in various industries. BCA program incorporates the recently implemented National Education Policy (NEP) of 2020, which aims to transform the Indian education system and promote holisticdevelopment among students.

- BCA program is structured to equip students with the necessary knowledgeand skills in computer science, programming, software development, and information technology. It offers a blend of theoretical concepts and practical training, enabling students to apply their learning to real-world scenarios.
- The Programme will be of 3 or 4 years' duration with multiple exit and entry options. Students of this Programme can exit after 1st year with a certificate, after 2nd year with an Diploma, after 3rd year witha Bachelor's Degree. After 4th year, a student can be awarded with Bachelor's Degree (Honors). Bachelor's Degree (Honors) with Research will be awarded, in case a student secures 75% and above in all semesters.
- Students will be given opportunities for multidisciplinary and interdisciplinary education through options to choose courses of their interests from other schools/departments within the institute.
- The total credits for 3-year BCA will be 132 credits and thatfor 4-year BCA (Hons with Research) degree, the credits will be 176.
- 20% of the courses may be offered online from SWAYAM.
- Academic Bank of Credits (ABC) will be established to facilitate Transfer of Credits. The credits earned at various levels will get credited into a digitalized ABC. Students can use their earned credits to take admission inanother institution to further continue their studies for the remaining year/s of their graduation.
- The Academic Calendar for this Programme of the institute will be synchronized to allow students of a particular UG Programme to study a course or courses from another UG Programme to meet the credit requirement of a semester. The commencement and closure of semesters and examinations for UG Programme will be planned in a uniform manner for declaration of results and awarding grades after a semester/year.

**The Programme Highlights:**

Program Highlights: Bachelor of Computer Applications (BCA) Program:

- **Discipline-Specific Courses (Core Major Courses):** The BCA program places a strong emphasis on core major courses that form the foundationof computer science and applications. These courses provide in-depth knowledge and understanding of essential subjects such as programminglanguages, database management, software engineering, web development, data structures, algorithms, and computer networks.
- **Interdisciplinary Minor Courses (IDC):** The BCA program recognizes the importance of interdisciplinary learning and offers students the opportunity to explore other related fields. Through eight interdisciplinary minor courses, students can broaden their horizons and gain insights from areas such as mathematics, statistics, business management, or communication.
- **Generic/Open Elective Course (OE):**
  i. It is to be offered in I and/or II year
  ii. Faculty-wise baskets of OE shall be prepared by University/ Autonomous Colleges.
  iii. OE is to be chosen compulsorily from faculty other than that of the Major. Further, Students will be able to earn maximum 4 Credits in this Vertical through International/National/Zone/State/University level participation and achievements in co-curricular and academic activities.
- **Vocational Skill Course (VSC):** Wherever applicable vocational courses will include skills based on advanced laboratory practical of Major and/or Minor. A student is required to successfully complete the 'vocational skill course' as mentioned in the schemes of teaching, learning and evaluation, examination. This course must be a course corresponding to the major and/ or Minor subject selected by a student.
- **Ability Enhancement Courses (AEC**): AEC courses are designed to enhance students' abilities and competencies beyond their core subject knowledge. In the BCA program, students will engage in three AEC courses, which focus on areas such as communication skills, logical reasoning, analytical thinking, and entrepreneurial skills. These coursesconsist of eight hours of instruction each.

- **Skill Enhancement Courses (SEC**): In the rapidly evolving field of computer applications, it is essential for students to acquire industry- relevant skills. The BCA program offers three skill enhancement coursesto help students develop specific technical skills in areas such as programming frameworks, software tools, data analytics, or cybersecurity. Each SEC course involves nine hours of instruction.
- **Common Value-Added Courses (VAC):** The BCA program recognizes the importance of holistic development and incorporates three common value- added courses. These courses cover topics such as personality development, ethics, sustainability, and social responsibility. Byparticipating in these courses, students cultivate a sense of social consciousness and ethical decision-making. Each VAC course comprises six hours of instruction.
- **Value Education Course (VEC):** A student is required to undergo and successfully complete the Value Education Courses like yoga, environment, cleanliness etc.
- **Field Project (FP) / On the Job Training (OJT) /Community Engagement Project (CEP) / Research Project (RP):** A student is required to undergo and successfully complete this course under the guidance of supervisor/mentor assigned by the HEI. This course must be corresponding to the major. This course must be completed at the HEI where the student has taken admission and transfer of credit is not permissible for this type of course. The project and internship component consists of 16 weeks, ensuring students gain practical industry experience.
- **Department Electives (DSE):** To cater to individual interests and specialization within the field of computer applications, the BCA program offers four department electives. These elective courses allow students todelve deeper into specific areas of computer science, such as artificial intelligence, mobile app development, cloud computing, or data science. The number of hours of instruction for each DSE course may vary based on the chosen elective.
- **Indian Knowledge System (IKS):** Gain an understanding of Indian Knowledge System. Develop an ability to apply the IKS to societal challenges faced today in areas such as holistic health, governance, public administration and sustainable living.
- **Co-Curricular Course (CC):** A student is required to select a Co-Curricular Courses like NSS, Sports, Cultural etc. This course must be completed at the Higher Education Institute (HEI) where the student has taken admission and transfer of

credit is not permissible for this type of course.

- **Community engagement and service (CEP):**

  By incorporating these diverse components into the BCA program, aim to provide students with a well-rounded education, equipping them with the necessary knowledge, skills, and practical experience to excel in the field of computer applications

**Pedagogy for BCA Program:**

The Bachelor of Computer Applications (BCA) program adopts a student-centered and practical approach to learning, ensuring that students actively engage in the learning process and develop a strong foundation in computer science and applications. The pedagogy is designed to be simple yet effective, promoting holistic development and preparing students for successful careers in the field of computer applications.

- **Interactive Classroom Sessions**: The program fosters interactive classroom sessions where students actively participate in discussions, ask questions, and engage in problem-solving exercises. The faculty encourages student involvement and creates a supportive learning environment.
- **Hands-on Lab Sessions**: Practical sessions in well-equipped computer labs are an integral part of the BCA program. Students get hands-on experience with programming languages, software development tools, and other technologies. Lab exercises and projects allow them to apply theoretical concepts and gain practical skills.
- **Case Studies and Real-world Examples**: The pedagogy includes the use of case studies and real-world examples to demonstrate the application of concepts. By analyzing real-life scenarios and exploring practical solutions, students develop critical thinking and problem-solving skills.
- **Project-based Learning**: The BCA program incorporates project-based learning, where students work on individual or group projects that simulate real-world scenarios. This approach enhances their teamwork, communication, and project management abilities while applying their knowledge to solve complex problems.
- **Industry Interaction**: The program encourages industry interaction through guest lectures, workshops, and industry visits. Professionals from the IT industry share their experiences, insights, and current trends, giving students a glimpse into the

practical aspects of the field.

- **Internships and Practical Training**: The BCA program emphasizes internships and practical training opportunities. Students have the chance to work with industry partners, gaining hands-on experience, and applying their skills in real work environments. This exposure enhances their understanding of industry practices and prepares them for future employment.
- **Continuous Assessments**: Regular assessments, including quizzes, assignments, and presentations, help evaluate students' progress and understanding of the subject matter. Feedback is provided to guide their learning and address any gaps in understanding.
- **Technology Integration**: The program leverages technology as a learning tool. Online resources, educational software, and virtual labs are utilized to enhance students' understanding of concepts and provide additional learning opportunities.
- **Mentoring and Guidance**: Faculty members act as mentors, providing individual guidance and support to students. They assist in setting academic goals, clarifying doubts, and offering career advice to ensure students' overall growth and success.
- **Collaborative Learning**: The BCA program promotes collaborative learning through group projects, discussions, and peer-to-peer interactions. Students learn from each other, exchange ideas, and develop teamwork and communication skills.

The pedagogy of the BCA program aims to create a dynamic and engaging learning environment, enabling students to acquire theoretical knowledge, practical skills, and a problem-solving mindset. By incorporating these simple yet effective teaching strategies, the program equips students with the necessary competencies to thrive in the field of computer applications.

**Three Year BCA Programme:**

The total credits for 3-year BCA will be 132. Following types of courses will be offered for a 3-Year BCA Programme.

- 14 Discipline-specific Major Courses (48 credits)
- 2 Discipline Specific Electives (8 credits)
- 5 Minor Courses (18 credits)
- 6 Open Electives (12 credits)
- 4 Ability Enhancement Courses (8 credits)

- 3 Skills Enhancement Courses (6 credits)
- 2 Value Education Courses (4 credits)
- 4 Vocational Skill Courses (8 credits)
- 1 Indian Knowledge System (2 credits)
- 4 Co-curricular courses (8 credits)
- 1 Community Engagement and Project (2 credits)
- 1 On Job Training (4 credits)
- 2 Field Project (4 credits)

**Four Year BCA (Hons./ Hons. with Research) Programme**

The 4-year BCA (Hons with Research) degree will be 176 credits. Following types of courses will be offered for a 4-Year BCA(H) Programme:

- 22/20 Discipline-specific Major Courses (76 credits)
- 4 Discipline Specific Electives (16 credits)
- 1 Research Methodology (4 credit)
- 5 Minor Courses (18 credits)
- 6 Open Electives (12 credits)
- 4 Ability Enhancement Courses (8 credits)
- 3 Skills Enhancement Courses (6 credits)
- 2 Value Education Courses (4 credits)
- 4 Vocational Skill Courses (8 credits)
- 1 Indian Knowledge System (2 credits)
- 4 Co-curricular courses (8 credits)
- 1 Community Engagement and Project (2 credits)
- 2 On Job Training (8 credits)
- 2 Field Project (4 credits)
- 2 Research Project (12 credits) {For only Hons. with Research}

**Outcome Based Approach to Education (OBE):**

As per the National Higher Education Qualification Frameworks (NHEQF), students are expected to possess the quality & characteristics of the graduate of aProgramme of the study, including learning outcomes relating to the disciplinary areas, learning generic outcomes that are expected to be acquired by a graduate oncompletion of the Programme.

OBE is an educational model that forms the base of a quality education system.There is no specified style of teaching or assessment in OBE. All educational activities carried out in OBE should help the students to achieve the set goals. The faculty may adapt the role of an instructor, trainer, facilitator, and/or mentor based on the outcomes targeted. OBE enhances the traditional methods and focuses onwhat the institute provides to the students. It shows the success by making or demonstrating outcomes using statements 'able to do' in favor of students. It provides clear standards for observable and measurable outcomes.

**Four Levels of Outcomes from OBE**

1. Programme Educational Objectives (PEOs)
2. Programme Outcomes (POs)
3. Programme Specific Outcomes (PSOs)
4. Course Outcomes (COs)

**Graduate Attributes**

The graduate attributes include the learning outcomes that are specific to disciplinaryareas relating to the chosen field(s) of learning within the broad multidisciplinary & interdisciplinary learning outcomes that graduates of all Programmes should acquire & demonstrate.

| **Graduate Attributes** | |
|---|---|
| 1. | Disciplinary Knowledge |
| 2. | Critical Thinking & Problem Solving |
| 3. | Creativity & Innovation |
| 4. | Effective Communication |
| 5. | Research-related skills |
| 6. | Cooperation & Team Work |
| 7. | Global/Multicultural Competence |
| 8. | Ethics & Human Values |
| 9. | Lifelong Learning |
| 10. | Leadership Readiness |
| 11. | Community Engagement & Social Responsibilities |
| 12. | Digital literacy |

**Programme Educational Objectives (PEOs):**

Programme Educational Objectives (PEOs) are defined for the aspiring students about what they will achieve once they join the Programme. PEOs are about professional and career accomplishment after 3 or 4 years of graduation. PEOs are the written statements taken from different aspects like Knowledge, Skills & Ethics with focus on Career, Competency and Behavior. Three PEOs are recommended for BCA(H) Programme.

| **Program Educational Objectives (PEOs):** | |
|---|---|
| **PEO1.** | **Foundational Expertise:** Graduates will develop a comprehensive understanding of computer science principles, equipping them to apply their knowledge effectively in solving complex real-world problems. |
| **PEO2.** | **Professional Skills:** Graduates will cultivate strong communication abilities, teamwork skills, and adaptability, enabling them to work effectively in diverse and dynamic professional environments. |
| **PEO3.** | **Ethical and Social Responsibility:** Graduates will be committed to upholding high ethical standards and social responsibility, using their expertise to contribute positively to the community and society at large. |
| **PEO4.** | **Lifelong Learning:** Graduates will be motivated to pursue continuous learning and professional development, staying current with technological advancements and adapting to changes in their field. |
| **PEO5.** | **Leadership and Innovation:** Graduates will be prepared to take on leadership roles, demonstrating creativity and innovation in their approach to challenges in the technology sector. |

**Programme Outcomes (POs):**

A Programme outcome is broad in scope and defines what the students will be able to do at the end of the Programme. POs are defined in line with the graduate attributes as specified above. POs are to be specific, measurable and achievable.

| **Programme Outcomes (POs):** | |
|---|---|
| **PO1** | At the end of the program students understand, analyse and develop computer programs in the areas like Web Design, Database manipulation, Windows & Mobile Application. |

| | |
|---|---|
| **PO2** | At the end of the program students understand, object-oriented programming features through various programming languages. |
| **PO3** | At the end of the program students are able to create dynamic, Interactive webpage's using various web technologies. |
| **PO4** | At the end of the program students understand the use of structured query language and it syntax, transactions, database recovery and techniques for query optimization. |
| **PO5** | At the end of the program students are able to work in the IT sector as system engineer, software tester, junior programmer, web developer, system administrator, software developer etc. |
| **PO6** | If chosen particular elective at the end of the program students are able to analyze very large data sets in the context of real world problems using various data analytical tools. |
| **PO7** | If chosen particular elective it will help students to develop in depth understanding of the key technologies in AI, data mining & machine learning. |

**Mapping of PEOs with POs:**

| **MAPPING OF PEO WITH PO** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PEO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** |
| **PEO1** | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **PEO2** | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| **PEO3** | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **PEO4** | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **PEO5** | 2 | 2 | 2 | 2 | 3 | 3 | 3 |
| ***Level of correlation:*** *3-High, 2-Medium, 1-Low* | | | | | | | |

**Semester Wise Credit Distribution of Proposed BCA *[BCA (Honours) And BCA (Honours with Research)]* Program:**

# KCES's Institute of Management & Research
# Proposed Structure for BCA
# AY-2024-25

## GENERAL COURSE STRUCTURE & THEME

### A. Definition of Credit:

| | |
|---|---|
| 1 Hr. Lecture (L) per week | 1 Credit |
| 1 Hr. Tutorial (T) per week | 1 Credit |
| 1 Hr. Practical (P) per week | 0.5 Credit |
| 2 Hours Practical (P) per week | 1 Credit |

### B. Course code and definition:

| Course code | Definitions |
|---|---|
| L | Lecture |
| T | Tutorial |
| P | Practical |
| DSC | Discipline Specific Core Course |
| OE | Open Elective |
| VSC | Vocational Skill Courses |
| SEC | Skill Enhancement courses |
| AEC | Ability Enhancement Courses |
| VEC | Value Education Courses |
| IKS | Indian Knowledge System |
| CC | Co-curricular Course |
| Minor | Minor subject |
| FP | Field Project |
| CEP | Community Engagement and Project |
| DSE | Discipline Specific Elective |
| OJT | On Job Training: Internship/ Apprenticeship |
| RM | Research methodology |
| RP | Research Project |

| | |
|---|---|
| MOOCs | Massive Open Online Course |

**Course Level/Duration/System:** Undergraduate / Three or Four years/6 or 8 Semesters with multiple entry and exit. The following option will be made available to the students joining BCA Research Program:

a. **One year:** Under Graduate Certificate in Computer Applications
b. **Two years**: Under Graduate Diploma in Computer Applications
c. **Three years**: Bachelor in Computer Applications (BCA)
d. **Four years**:

- Bachelor in Computer Applications (BCA-Honours) and
- Bachelor in Computer Applications (BCA-Honours with Research)

Note: The students who are eligible for BCA (Honours with Research) shall have choice to pursue either BCA (Honours) or BCA (Honours with Research).

**C. Credit distribution:**

| Years | Level | Sem | Major(Core) Subjects | | Minor | OE | VSC, SEC (VSEC) | AEC, VEC, IKS | OJT, FP,CEP,CC,RP | Cum. Cr/ Semester | Degree/ Cumulative Credit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mandatory (DSC) | Elective (DSE) | | | | | | | |
| I | 4.5 | I | 4 – 6 (4+2) | | | 2+2 | VSC-2 SEC-2 | AEC-2 VEC-2 IKS-2 | CC-2 | 20-22 | 40-44 |
| | | II | 4 – 6 (4+2) | | 2 | 2+2 | VSC-2 SEC-2 | AEC-2 VEC-2 | CC-2 | 20-22 | |
| | | Cum.Cr. | **8 - 12** | | **2** | **8** | **8** | **10** | **4** | **40-44** | |
| Credit After I st Year | | | **8-12** | | **2** | **8** | **8** | **10** | **4** | **40** | **40 - 44** |
| II | 5 | III | 6 (4+2) – 8(2*4) | | 4 | 2 | VSC-2 | AEC-2 | FP-2 CC-2 | 20-22 | 40-44 |
| | | IV | 6 | | 4 | 2 | SEC-2 | AEC-2 | CEP-2 CC-2 | 20-22 | |
| | | Cum.Cr. | **8-12** | | **8** | 4 | 4 | 4 | **8** | **40-44** | |
| Credit After II nd Year | | | **20-22** | | **10** | **12** | **12** | **14** | **12** | **80-88** | **80 - 88** |
| III | 5.5 | V | 8(2*4) – 10(2*4+2) | 4 | 4-6 | | VSC-2-4 | | FP/CEP-2 | 20 | 40-44 |
| | | VI | 8(2*4) – 10(2*4+2) | 4 | 4 | | | | OJT-4 | 20 | |
| | | Cum.Cr. | **16-20** | **8** | **8-10** | | **2** | | **6** | **40-44** | |
| Credit After III rd Year | | | **36-48** | **8** | **18-20** | **12** | **14** | **14** | **18** | **120 - 132** | **120-132** |
| IV | 6 | VII | 12-14(2*4+2*2 or 3*4+2) | 4 | RM:4 | | | | | 20-22 | UG Honors Degree 40-44 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | VIII | 12-14(2*4+2*2 or 3*4+2) | 8 | | | | | OJT: 4 | 20-22 | |
| | | Cum.Cr. | **28** | **12** | | | | | 4 | **40-44** | |
| **Credit After IV th Year** | | | **64** | **16** | **18-20+4** | **12** | **8-10+6** | **8+4+2** | **22** | **160-176** | **160-176** |
| IV | 6 | VII | 8-10 (2*4+2 or 2*4) | 4 | RM:4 | | | | RP:4 | 20-22 | UG Honors with Research Degree 40-44 |
| | | VIII | 8-10 (2*4+2 or 2*4) | 4 | | | | | RP:8 | 20-22 | |
| | | Cum.Cr. | **16-20** | **8** | **4** | | | | **12** | | |
| **Credit After V th Year** | | | **52-68** | **16** | **18-20+4** | **12** | **8-10+6** | **8+4+2** | **8+6+4+12** | **160-176** | **160-176** |

## D. Category- wise distribution*

| Description | DSC | DSE | OE | Minor | VSC | SEC | AEC | VEC | IKS | OJT | FP | CEP | CC | RM | RP | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BCA | **48** | **8** | **12** | **18** | **8** | **6** | **8** | **4** | **2** | **4** | **4** | **2** | **8** | -- | -- | **132** |
| BCA (Honours) | **76** | **16** | **12** | **18** | **8** | **6** | **8** | **4** | **2** | **8** | **4** | **2** | **8** | **4** | -- | **176** |
| BCA (Honours with Research) | **68** | **16** | **12** | **18** | **8** | **6** | **8** | **4** | **2** | **4** | **4** | **2** | **8** | **4** | **12** | **176** |

**KCES's Institute of Management and Research, Jalgaon**
**An Autonomous Institute, Affiliated to KBC, North Maharashtra University, Jalgaon**

**Course:** Bachelor of Computer Application

**Academic Year:** 2024-25

| Class | Sem | Type | Course Code | Title | Credit | Teaching Hours per week | | Marks (Total 100) | | Exam Panel |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | T | P | Internal | External | |
| **BCA – First Year, SEMESTER – I, Level – 4.5** | | | | | | | | | | |
| FY BCA | I | DSC | BCA-DSC- 111 | Programming in C | 4 | 4 | -- | 40 | 60 | |
| | | DSC | BCA-DSC- 112 | Lab on Programming in C | 2 | -- | 2 | 20 | 30 | |
| | | OE | BCA-OE-113-A | Principles of Management | 2 | 2 | -- | 20 | 30 | |
| | | | BCA-OE-113-B | Principles of Accounting-I | | | | | | |
| | | OE | BCA-OE-114-A | Digital Marketing I | 2 | 2 | -- | 20 | 30 | |
| | | | BCA-OE-114-B | Personals Financial Planning-I | | | | | | |
| | | VSC | BCA-VSC-115 | Web Technology-I | 2 | -- | 2 | 20 | 30 | |
| | | SEC | BCA-SEC- 116 | Essentials of Information Technology | 2 | 2 | -- | 20 | 30 | |
| | | AEC | BCA-AEC-117 | Professional Communication – I | 2 | 2 | -- | 20 | 30 | |
| | | VEC | VEC-101 | Environment Science and Sustainability | 2 | 2 | -- | 20 | 30 | Common Subject as BBA/MCA(Integrated) |
| | | IKS | IKS-102 | Indian Knowledge System | 2 | 2 | -- | 20 | 30 | |
| | | CC | CC-100 | NSS/ Sports/Cultural Activities | 2 | -- | 2 | 50 | -- | |
| | | | | **Total Credits** | -- | **22** | | **550** | | |
| **BCA – First Year, SEMESTER – II, Level – 4.5** | | | | | | | | | | |
| FY BCA | II | DSC | BCA-DSC- 121 | OOPS with C++ | 4 | 4 | -- | 40 | 60 | |
| | | DSC | BCA-DSC- 122 | Lab on OOPs with C++ | 2 | -- | 2 | 20 | 30 | |
| | | Minor | BCA-MIN-123 | System Analysis and Design | 2 | 2 | -- | 20 | 30 | |
| | | OE | BCA-OE-124-A | Marketing Management | 2 | 2 | -- | 20 | 30 | |
| | | | BCA-OE-124-B | Principles of Accounting-II | | | | | | |
| | | OE | BCA-OE-125-A | Digital Marketing II | 2 | 2 | -- | 20 | 30 | |
| | | | BCA-OE-125-B | Personals Financial Planning-II | | | | | | |
| | | VSC | BCA-VSC-126 | Web Technology-II | 2 | -- | 2 | 20 | 30 | |
| | | SEC | BCA-SEC-127 | Operating System Concepts with Linux OS | 2 | 2 | -- | 20 | 30 | |
| | | AEC | BCA-AEC-128 | Professional Communication – II | 2 | 2 | -- | 20 | 30 | |
| | | VEC | VEC-201 | Indian Constitution | 2 | 2 | -- | 20 | 30 | Common Subject as BBA/MC |
| | | CC | CC-200 | NSS/ Sports/Cultural Activities | 2 | -- | 2 | 50 | -- | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | A(Integrated) |
| | | | | **Total Credits** | | | **22** | **550** | | |
| | **Total Credit : 44** | | | | | | | | | |
| | **Exit Option with UG Certificate** | | | | | | | | | |

**Exit Criteria after First Year of BCA Programme**
The students shall have an option to exit after 1st year of BCA Program and will be awarded with a **UG Certificate in Computer Applications**. The exiting students will complete 44 credits as per the University/AICTE schedule

**Re-entry Criteria in to Second Year (Third Semester)**
The student who takes an exit after one year with an award of certificate may be allowed to re-enter in to Third Semester for completion of the BCA Program as per the respective University /Admitting Body schedule after earning requisite credits (44 Credits) in the First year.

**KCES's Institute of Management and Research, Jalgaon**
**An Autonomous Institute, Affiliated to KBC, North Maharashtra University, Jalgaon**

**Course:** Bachelor of Computer Applications

**Academic Year:** 2025-26

| Class | Sem | Type | Course Code | Title | Credit | Teaching Hours per week | | Marks (Total 100) | | Exam Panel |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | T | P | Internal | External | |
| **BCA – Second Year, SEMESTER – III, Level – 5.0** | | | | | | | | | | |
| SY BCA | **III** | DSC | BCA-DSC-231 | Data & File Structures | 2 | 2 | -- | 20 | 30 | |
| | | DSC | BCA-DSC-232 | Lab on Data & File Structures | 2 | -- | 2 | 20 | 30 | |
| | | DSC | BCA-DSC-233 | Mathematical Foundation - I | 4 | 4 | -- | 40 | 60 | |
| | | Minor | BCA-MIN-234 | Management Information System-I | 4 | 4 | -- | 40 | 60 | |
| | | OE | BCA-OE235-A | Entrepreneurship Development | 2 | 2 | -- | 20 | 30 | |
| | | | BCA-OE235-B | Ecommerce & M-Commerce | | | | | | |
| | | VSC | BCA-VSC-236 | Lab on Web Technology-III | 2 | -- | 2 | 20 | 30 | |
| | | AEC | BCA-AEC-237 | Personality Development - I | 2 | 2 | -- | 20 | 30 | |
| | | FP | BCA-FP-238 | Field Project | 2 | -- | 2 | 20 | 30 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | CC | CC-300 | NSS/ Sports/Cultural Activities | 2 | -- | 2 | 50 | -- | Common Subject as BBA/ MCA( Integrated) |
| | | | | **Total Credits** | | | **22** | **550** | | |
| **BCA – Second Year, SEMESTER – IV, Level – 5.0** | | | | | | | | | | |
| SY BCA | **IV** | DSC | BCA-DSC-241 | Database Management Systems | 2 | 2 | -- | 20 | 30 | |
| | | DSC | BCA-DSC-242 | Lab on DBMS | 2 | -- | 2 | 20 | 30 | |
| | | DSC | BCA-DSC-243 | Mathematical Foundation - II | 4 | 4 | -- | 40 | 60 | |
| | | Minor | BCA-MIN-244 | Management Information System-II | 4 | 4 | -- | 40 | 60 | |
| | | OE | BCA-OE245-A | Basics of Tally | 2 | 2 | -- | 20 | 30 | |
| | | | BCA-OE245-B | Advanced Excel | | | | | | |
| | | SEC | BCA-SEC-246 | Networking Concepts | 2 | 2 | -- | 20 | 30 | |
| | | AEC | BCA-AEC-247 | Personality Development - II | 2 | 2 | -- | 20 | 30 | |
| | | CEP | CEP-401 | Community Engagement and Service | 2 | 2 | -- | 20 | 30 | Common Subject as BBA/ MCA( Integrated) |
| | | CC | CC-400 | NSS/ Sports/Cultural Activities | 2 | -- | 2 | 50 | -- | |
| | | | | **Total Credits** | | | **22** | **550** | | |
| **Total Credit : 88** | | | | | | | | | | |
| **Exit Option with UG Diploma** | | | | | | | | | | |

**Note:**
In the third Semester every student shall undergo minor field project.

**Exit Criteria after Second Year of BCA Programme**
The students shall have an option to exit after 2nd year of BCA Program and will be awarded with a **UG Diploma in Computer Application.** The exiting students will complete 88 credits per the University / Admitting Body schedule.

**Re-entry Criteria in to Third Year (Fifth Semester)**
The student who takes an exit after second year with an award of Diploma may be allowed to re-enter in to fifth Semester for completion of the BCA Program as per the respective University / Admitting Body schedule after earning requisite credits (88 Credits) in the Second year.

**KCES's Institute of Management and Research, Jalgaon**
**An Autonomous Institute, Affiliated to KBC, North Maharashtra University, Jalgaon**

**Course:** Bachelor of Computer Application

**Academic Year:** 2024-25

| Class | Sem | Type | Course Code | Title | Credit | Teaching Hours per week | | Marks (Total 100) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | T | P | Internal | External |
| **BCA – Third Year, SEMESTER – V, Level – 5.5** | | | | | | | | | |
| TY BCA | **V** | DSC | BCA-DSC-351 | Java Programming | 2 | 2 | -- | 20 | 30 |
| | | DSC | BCA-DSC-352 | Lab on Java Programming | 2 | -- | 2 | 20 | 30 |
| | | DSC | BCA-DSC-353 | Python Programming | 4 | 4 | -- | 40 | 60 |
| | | DSC | BCA-DSC-354 | Lab on Python Programming + AI/DA-I Lab 355(A) or 355(B) | 2 | -- | 2 | 20 | 30 |
| | | DSE | BCA-DSE-355(A) | Artificial Intelligence | 4 | 4 | -- | 40 | 60 |
| | | | BCA-DSE-355(B) | Data Analytics-I | | | | | |
| | | Minor | BCA-MIN-356 | Software Engineering | 4 | 4 | -- | 40 | 60 |
| | | VSC | BCA-VSC-357 | Lab on Deployment Technologies (Docker & Kubernetes) K8S/ Web pack | 2 | -- | 2 | 20 | 30 |
| | | FP /CEP | BCA-FP-358 | Field Project Analysis and Implementation (connected to 305) | 2 | -- | 2 | 20 | 30 |
| | | | | **Total Credits** | | | **22** | **550** | |
| **BCA – Third Year, SEMESTER – VI, Level – 5.5** | | | | | | | | | |
| TY BCA | **VI** | DSC | BCA-DSC-361 | Mobile Application development | 2 | 2 | -- | 20 | 30 |
| | | DSC | BCA-DSC-362 | Lab on Mobile Application development | 2 | -- | 2 | 20 | 30 |
| | | DSC | BCA-DSC-363 | Cloud Computing | 4 | 4 | -- | 40 | 60 |
| | | DSC | BCA-DSC-364 | Lab on 365(A) or 365(B) | 2 | -- | 2 | 40 | 60 |
| | | DSE | BCA-DSE-365(A) | Machine Learning | 4 | 4 | -- | 40 | 60 |
| | | | BCA-DSE-365(B) | Data Analytics-II | | | | | |
| | | Minor | BCA-M-366 | Enterprise Resource Planning | 4 | 4 | -- | 40 | 60 |
| | | OJT | BCA-OJT-367 | Industrial Training | 4 | -- | 4 | 20 | 30 |
| | | | | **Total Credits** | | | **22** | **550** | |
| **Total Credit : 132** | | | | | | | | | |
| **Exit Option with Bachelor of Computer Applications** | | | | | | | | | |

**Note:** Discipline Elective in Artificial Intelligence / Data Analytics-I in sem V.
Discipline Elective in Machine Learning / Data Analytics-II in sem VI

**Note:**

**Bachelor of Computer Applications Degree** will be awarded, if a student wishes to exit at the end of Third year.

**Exit Criteria after Third Year of BCA Programme**

The students shall have an option to exit after 3rd year of BCA Program and will be awarded with a Bachelor of Computer Applications.

**Re-entry Criteria in to Fourth Year (Seventh Semester)**

The student who takes an exit after third year with an award of BCA may be allowed to re-enter in to Seventh Semester for completion of the BCA (Honours) or BCA (Honours with Research) Program as per the respective University / Admitting Body schedule after earning requisite credits (132) in the Third year.

**Minimum eligibility criteria for opting the course in the fourth year will be as follows:**

- **BCA (Honours with Research):** Minimum 75% marks or equivalent CGPA in BCA Degree up to Sixth Semester.
- For **BCA (Honours):** BCA Degree

| **KCES's Institute of Management and Research, Jalgaon<br>An Autonomous Institute, Affiliated to KBC, North Maharashtra University, Jalgaon** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Course:** Bachelor of Computer Application | | | | | | | | | | |
| **BCA (Honours)** | | | | | | | | | | |
| **Class** | **Sem** | **Type** | **Course Code** | **Title** | **Credit** | **Teaching Hours per week** | | **Marks (Total 100)** | | |
| | | | | | | **T** | **P** | **Internal** | **External** | |
| **BCA (Honours) – Forth Year, SEMESTER – VII, Level – 6.0** | | | | | | | | | | |
| BCA | VII | DSC | BCA-DSCH-471 | Design and Analysis of Algorithm | 4 | 4 | -- | 40 | 60 | |
| | | DSC | BCA-DSCH-472 | Lab on Design and Analysis of Algorithm | 4 | -- | 4 | 40 | 60 | |
| | | DSC | BCA-DSCH-473 | Software Development Methodologies | 4 | 4 | -- | 40 | 60 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | DSC | BCA-DSCH-474 | Lab on 476(A) or 476(B) | 2 | -- | 2 | 20 | 30 | |
| | | RM | BCA-RMH- 475 | Research Methodology | 4 | 4 | | 40 | 60 | |
| | | DSE | BCA-DSEH-476(A) | Natural Language Processing | 4 | 4 | -- | 40 | 60 | |
| | | | BCA-DSEH-476(B) | Digital Image Processing - I | | | | | | |
| | | | | **Total Credits** | **22** | | | **550** | | |
| **BCA (Honours) – Forth Year, SEMESTER – VIII, Level – 6.0** | | | | | | | | | | |
| BCA | VIII | DSC | BCA-DSCH-481 | Data Warehousing and Mining | 4 | 4 | -- | 40 | 60 | |
| | | DSC | BCA-DSCH-482 | Lab on DWDM | 4 | -- | 4 | 40 | 60 | |
| | | DSC | BCA-DSCH-483 | Compiler Construction | 4 | 4 | -- | 40 | 60 | |
| | | DSC | BCA-DSCH-484 | Lab on 485(A) or 485(B) | 2 | -- | 2 | 20 | 30 | |
| | | DSE | BCA-DSEH-485(A) | Generative AI | 4 | 4 | -- | 40 | 60 | |
| | | | BCA-DSEH-485(B) | Digital Image Processing - II | | | | | | |
| | | OJT | BCA-OJTH-486 | On Job Training | 4 | -- | 4 | 40 | 60 | |
| | | | | **Total Credits** | **22** | | | **550** | | |
| **Total Credit : 176** | | | | | | | | | | |
| **Exit Option with UG Honours Degree** | | | | | | | | | | |

**KCES's Institute of Management and Research, Jalgaon**
**An Autonomous Institute, Affiliated to KBC, North Maharashtra University, Jalgaon**

**Course:** Bachelor of Computer Application

## BCA (Honours with Research)

| Class | Sem | Type | Course Code | Title | Credit | Teaching Hours per week | | Marks (Total 100) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | T | P | Internal | External | |
| **BCA (Honours with Research) – Forth Year, SEMESTER – VII, Level – 6.0** | | | | | | | | | | |
| BCA | VII | DSC | BCA-DSCR-471 | Research Domain 1 (Recent trends in NLP etc.) | 4 | 4 | -- | 40 | 60 | |
| | | DSC | BCA-DSCR-472 | Research Domain 2 (DIP etc.) | 4 | 4 | -- | 40 | 60 | |
| | | DSC | BCA-DSCR-473 | Lab on Tensorflow/ Matlab/ Weka / SPSS etc. | 2 | -- | 2 | 20 | 30 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | DSE | BCA-DSER-474(A) | Research Problem Formulation, Literature Survey, Data Collection Domain 1 | 4 | 4 | -- | 40 | 60 | |
| | | | BCA-DSER-474(B) | Research Problem Formulation, Literature Survey, Data Collection Domain 2 | | | | | | |
| | | RM | BCA-RMR-475 | Research Methodology | 4 | 4 | -- | 40 | 60 | |
| | | RP | BCA-RPR-476 | Minor Research Project(Paper publication in international conference) | 4 | -- | 4 | 40 | 60 | |
| | | | | **Total Credits** | **22** | | | **550** | | |
| **BCA (Honours with Research) – Forth Year, SEMESTER – VIII, Level – 6.0** | | | | | | | | | | |
| BCA | VIII | DSC | BCA-DSCR-481 | Research Domain 1 (Recent trends in NLP etc.) | 4 | 4 | -- | 40 | 60 | |
| | | DSC | BCA-DSCR-482 | Research Domain 2 (DIP etc.) | 4 | 4 | -- | 40 | 60 | |
| | | DSC | BCA-DSCR-483 | Lab on Tensorflow/Matlab/Weka/SPSS etc. | 2 | -- | 2 | 20 | 30 | |
| | | DSE | BCA-DSER-484(A) | Research Problem Formulation, Literature Survey, Data Collection , Model Development for Domain 1 | 4 | 4 | -- | 40 | 60 | |
| | | DSE | BCA-DSER-484(B) | Research Problem Formulation, Literature Survey, Data Collection , Model Development for Domain 2 | | | | | | |
| | | RP | BCA-RPR-486 | Major Research Project(Paper publication in journals/Patent) | 8 | -- | 8 | 80 | 120 | |
| | | | | **Total Credits** | **22** | | | **550** | | |
| **Total Credit : 176** | | | | | | | | | | |
| **Exit Option with UG Research Degree** | | | | | | | | | | |

The Dissertation work will start from the beginning of fourth year of BCA (Honours with Research) Program. Students of Fourth Year shall be assessed for Project Work and Research Internship Report and Viva –Voce and Dissertation (For Research Track).

| | |
|---|---|
| **3 Years BCA Program** | **Total Credits = 132** |
| **4 Years BCA (Honours) and BCA (Honours with Research)** | **Total Credits = 176** |

Note: Students can take extra credit course from their own department or from other department as per the Admitting Body / University norms.

# Semester I

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: I

## BCA-DSC-111 Programming in C

Course Title: Programming in C | Course Type: DSC

Course Code: BCA-DSC-111 | Total Credits: 04

Lectures: Tutorials: Practical: 4:0:0 | CIE Marks: 40

Lecture Hours: 48 Hours | ESE Marks: 60

**Course Description:**

The "Programming in C" course introduces students to the fundamental concepts of programming using the C language. It covers topics such as data types, operators, control structures, functions, arrays, pointers, and file handling. The course emphasizes problem-solving techniques and algorithmic thinking, providing a strong foundation for developing efficient and structured programs. Students will gain hands-on experience through practical exercises and projects, preparing them for more advanced programming courses and real-world applications.

**Course Objectives:**

- The objective of this course is to provide a broad overview of problem solving techniques and use of c language programming to solve these problems.
- To Know the Basics of Programming and to Understand how to use programming in day to day Applications.
- Explain use of appropriate data types, control statements.
- Demonstrate ability to use top-down program design.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | -- | -- | ✓ | -- | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Recall** fundamental concepts of C programming, including syntax, data types, operators |
| **CO2** | **Apply** appropriate control structures to solve problems such as decision making and repetitive tasks. |
| **CO3** | **Analyze** the concept of function scope, recursion, and the importance of modular programming. |
| **CO4** | **Evaluate** the effectiveness of different data handling techniques (e.g., arrays, pointers, string) in solving particular problems. |
| **CO5** | **Explain** the difference between structures and unions and their memory allocation |
| **CO6** | **Design** and implement complex C programs that integrate multiple concepts, such as file handling. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT -I Introduction to Programming in C**<br>1.1 History | 10 | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 1.2 Compilers and Interpreters<br>1.3 Structures of 'C' Programming<br>1.4 C Tokens, Keywords, Identifiers, Variables<br>1.5 Constant, Data Types, Variables and constants<br>1.6 Precedence and Associativity<br>1.7 Types of operators- arithmetic operators, relational operators, logical operators, Bit wise operators, increment, decrement operators, assignment operators, compound assignment operator, conditional expression, special operators.<br>1.8 Input and Output<br>1.9 Pre-processor directives in C | | |
| 2 | **UNIT –II Control structures**<br>2.1 Decision making structures<br>2.2 If, if else<br>2.3 Nested If –else<br>2.4 Switch<br>2.5 Control structures<br>2.6 While<br>2.7 Do-while<br>2.8 For<br>2.9 Nested for loop<br>2.10 Other statements: break, continue. Goto and exit. | 08 | **CO2** |
| 3 | **UNIT –III FUNCTIONS**<br>3.1 Basic types of Function-Built in Functions, User Define Functions<br>3.2 Declaration and Definition<br>3.3 Return Keyword<br>3.4 Function argument (formal arguments, local arguments)<br>3.5 Function with default argument<br>3.6 Parameter passing, Call by value, Call by reference<br>3.7 Storage classes<br>3.8 Recursion | 08 | **CO3** |
| 4 | **UNIT-IV ARRARY, POINTERS AND STRING**<br>4.1 Array declaration, initialization<br>4.2 Types – one, two and multidimensional<br>4.3 What is Pointer? Pointer declaration, initialization.<br>4.4 Pointers arithmetic, Pointer to pointer, Arrays of pointers, pointer to function.<br>**STRING**<br>4.5 Declaration and initialization<br>4.6 Standard library functions<br>4.7Manipulating Strings<br>4.8 Strings and pointers<br>4.9 Array of strings | 08 | **CO4** |
| 5 | **UNIT-V STRUCTURE AND UNION**<br>5.1 Structure Basics<br>5.2 Creating structures<br>5.3 Accessing structure members (dot Operator)<br>5.4 Array of structures<br>5.5 Nested structures | 08 | **CO5** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 5.6 Pointer to structure<br>5.7 Self-referential structure<br>5.8 Union<br>5.9 Difference between structure and union. | | |
| 6 | **UNIT - VI FILE HANDLING**<br>6.1 Types of Files<br>6.2 Random Access to File<br>6.3 File handling functions in C<br>6.4 Operations on files<br>6.5 File opening modes<br>6.6 File reading mode<br>6.7 Writing to file | 06 | **CO6** |

## REFERENCE BOOKS:


1. Structured Programming approach using C – Forouzan and Gilberg, Thomson learning Publications
2. Programming in C – E Balaguruswamy, McGraw Hill Education publication.
3. The C Programming language – 2nd Edition Brian W. Kernighan and Dennis M. Ritchie, Prentice Hall
4. Complete C Reference – Herbert Schildt, McGraw Hill Education publication.


## Mapping of Course Outcomes to Program Outcomes:

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 1 | 1 | 2 | 1 | 1 |
| **CO2** | 3 | 2 | 1 | 1 | 2 | 1 | 1 |
| **CO3** | 3 | 3 | 1 | 1 | 3 | 1 | 1 |
| **CO4** | 3 | 2 | 1 | 1 | 2 | 1 | 1 |
| **CO5** | 3 | 3 | 1 | 1 | 3 | 2 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | ✓ | | | ✓ |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-27

## SEMESTER: I

## BCA-DSC-112 Lab on Programming in C

Course Title: Lab on Programming in C — Course Type: DSC

Course Code: BCA-DSC-112 — Total Credits: 02

Lectures: Tutorials: Practical: 0:0:2 — CIE Marks: 20

Lecture Hours: 24 Hours — ESE Marks: 30

**Course Description:**

The "Programming in C" course introduces students to the fundamental concepts of programming using the C language. It covers topics such as data types, operators, control structures, functions, arrays, pointers, and file handling. The course emphasizes problem-solving techniques and algorithmic thinking, providing a strong foundation for developing efficient and structured programs. Students will gain hands-on experience through practical exercises and projects, preparing them for more advanced programming courses and real-world applications.

**Course Objectives:**

- The objective of this course is to provide a broad overview of problem solving techniques and use of c language programming to solve these problems.
- To Know the Basics of Programming and to Understand how to use programming in day to day Applications.
- Explain use of appropriate data types, control statements.
- Demonstrate ability to use top-down program design.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | -- | -- | ✓ | -- | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** fundamental concepts of C programming, including syntax, data types, operators |
| **CO2** | **Develop** C programs using control structures for decision-making and iteration |
| **CO3** | **Analyze** the concept of function scope, recursion, and the importance of modular programming. |
| **CO4** | **Evaluate** the effectiveness of different data handling techniques (e.g., arrays, pointers, string) in solving particular problems. |
| **CO5** | **Describe** the memory allocation differences between structures and unions. |
| **CO6** | **Create** and execute intricate C programs that combine several ideas, such file handling. |

| **Assignment No. 1 Input-Output ,Variables, Operators and Data Types** |
|---|
| 1. Write a Simple Program to Take Input from the User and Display Output on the Screen.<br>2. Declaring and Using Different Types of Variables in C and Demonstrate the Scope and Lifetime of Local and Global Variables |

3. Create a program that demonstrates the use of arithmetic and relational operators by comparing two user-provided numbers and displaying the results of various operations.
4. Write and Execute a Program on Use of Bitwise Operators

**Assignment No. 2 Decision Making and Looping Structures**

1. W.A.P to check the number is even or odd.
2. W.A.P to find greatest number from given three numbers.
3. W.A.P to check the given number is prime number or not.
4. W.A.P to demonstrate Sum of Natural Numbers.
5. W.A.P to check given number is Armstrong number or not.

**Assignment No. 3 Functions**

1. W.A.P to find factorial of given number by using user defined function.
2. Write a program to define a function that takes two numbers and returns their sum, difference and multiplication
3. Implement a function that takes two integers as input and returns the greatest common divisor (GCD) of the two numbers.
4. Create a function that calculates the area of a rectangle. The dimensions (length and width) are passed as formal arguments, while the area is calculated using a local variable.
5. Write a program that swaps two numbers using call by value and another using call by reference.
6. Write and Execute a Program on Recursive functions that returns Fibonacci series of given range.

**Assignment No.4 Array and Pointer**

1. Write a C program that adds the elements of an array and displays the sum.
2. Create a program that takes an array of integers, calculates the sum and average of its elements using pointers, and prints the results.
3. Write C program that includes a function to find the maximum element in a 2D matrix and returns its value along with its position (row and column indices)
4. Write a program that demonstrates pointer arithmetic by accessing and modifying array elements using pointer expressions.
5. Write a program where a pointer points to the first element of an array. Use pointer arithmetic to access and modify elements of the array.
6. Create a function that accepts an array and its size as arguments, and prints the elements of the array.
7. Write a C Program to demonstrate all the string functions.

**Assignment No.5 Structure and Union**

1. Define a structure to represent a student with fields for name, age, and grade. Write a program to input and display these details.
2. Create a structure to represent a book with fields for title, author (as another structure), and publication year. Implement a program to input and display the book details.
3. Define a union that can store an int, float, or char. Create an instance of this union, set a value, and print the value. Demonstrate how setting one member affects the others.
4. Implement a program to print the size of a structure and a union with the same members. Compare and explain the differences in size.

**Assignment No.6 File Handling**

1. Write a program to open a file for writing, write a few lines of text to it, close the file, and then reopen it to read and display the contents.

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | ✓ | | ✓ | ✓ |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: I

## BCA-OE-113-A Principles of Management

Course Title: Principles of Management — Course Type: OE

Course Code: BCA-OE-113-A — Total Credits: 02

Lectures: Tutorials: Practical: 2:0:0 — CIE Marks: 20

Lecture Hours: 24 Hours — ESE Marks: 30

**Course Description:**

The course provides a comprehensive introduction to the fundamental concepts and practices of management. It explores the essential functions of management, including planning, organizing, leading, and controlling, and examines how these functions are applied in various organizational settings. Students will learn about key management theories, decision-making processes, and the roles and responsibilities of managers.

**Course Objectives:**

The subject aims to provide the student with:

- To be able to understand the Foundations of Management
- To learn the Processes of Forecasting, Planning, and Organizing.
- To develop Skills in Coordination and Decision-Making.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | -- | -- | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | Students will be **able** to define and describe the nature, features, and functions of management, and critically assess whether management is a science, art, or profession. |
| **CO2** | Students will **demonstrate** the ability to effectively forecast, plan, and organize by applying the principles and processes learned to real-world management scenarios. |
| **CO3** | Students will **develop** the ability to coordinate activities and make informed decisions within an organizational context, ensuring alignment with strategic goals and efficient management operations. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **Unit 1. Nature and Process of Management**<br>1.1. Definition, Nature and Features of Management<br>1.2. Management-Science or Art<br>1.3. Management as Profession<br>1.4. Functions of Management<br>1.5. Nature of Management Functions | 8 | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 1.6 Functions at Various Management Levels | | |
| 2 | **Unit 2. Planning & Organizing**<br>2.1. Meaning, Definition & Importance of Planning<br>2.2. Essentials of Effective Planning<br>2.3. Steps of Planning<br>2.4. Meaning, Objectives of organizing<br>2.5. Meaning, Definition & Importance Staffing, Directing and Controlling | 8 | **CO2** |
| 3 | **Unit 3. Co-ordination & Decision making**<br>3.1. Co-Ordination<br>3.2. The Essence of Management<br>3.3. Techniques of Effective Co–Ordination<br>3.4. Meaning of decision making<br>3.5. Process of decision making | 8 | **CO3** |

## REFERENCE BOOKS:


1. Principles of Management: T. Ramasamy, Himalaya.
2. Principles of Management: Dr. K Natarajan &Dr. K. P. Ganeshan. Himalaya.
3. Management Process: Koontz& O'Donnell, Tata-McGraw-Hill publishers Delhi.
4. Management of System: By A. K. Gupta & J. K. Sharma, Mac-Millan Publication, Delhi.
5. Principles of Management: Prakash Kothari, B. J. Lathi, Atharv Publication, Jalgaon.
6. Management & Organizational Behavior–By P. SubbaRao, Himalaya publication.
7. Business Organization & Management–By R.N. Gupta, Sultan Chand &Sons publication, Delhi


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| **CO2** | 2 | 2 | 3 | 2 | 3 | 1 | 1 |
| **CO3** | 2 | 2 | 3 | 2 | 3 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation.** | ✓ | ✓ | ✓ | | | ✓ |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | | | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: I

## BCA-OE-113-B Principles of Accounting-1

Course Title: Principles of Accounting-I
Course Type: OE
Course Code: BCA-OE-113-B
Total Credits: 02
Lectures: Tutorials: Practical: 2:0:0
CIE Marks: 20
Lecture Hours: 24 Hours
ESE Marks: 30

**Course Description:**

An accountant is a financial expert specializing in personal and commercial finances. Accountant training teaches the measurement and management of economic data to assist investors, managers, business owners, and other persons in making informed financial decisions. An accounting system is a system that is employed in a company to organize financial information. It can be either manual or computerized. The main reason why you should be using an accounting system is to keep track of expenses, income, and other activities**.** The course will review foundational accounting principles and concepts that account for current assets, current liabilities, long-term liabilities, and owners' equity. Students will also complete a basic journal statement analysis**.**

**Course Objectives:**

- To familiarize students with the mechanics of preparation of financial statements, understanding
- Corporate financial statements, their analysis and interpretation, role of IFRS in accounting
- Discipline, and the concept of management quality analysis and wealth creation**.**

### Teaching/ Evaluation Pedagogy

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | -- | ✓ | -- | -- | -- | ✓ | -- |

### Course Outcomes: At the end of the Course, the Student will be able to:

| | |
|---|---|
| **CO1** | **Understand** the meaning, features and the importance of accounting. Basic accounting concepts and terminologies. Analyze the role and benefits of Book-Keeping. Will be able to know the latest accounting standards. |
| **CO2** | **Understand** fundamental concepts of financial accounting. |
| **CO3** | **Create** accounting documents. And **Analyze** the effect of each transaction. Become familiar with the standard form and arrangement of Journal entries. Calculate GST on purchase of goods. And GST on sale of goods. Prepare Journal Entries correctly. |

| *SN* | *Contents of Module* | *Hrs.* | ***COs*** |
|---|---|---|---|
| 1 | **Unit – I Introduction to Book-keeping and Accountancy**<br>1.1 Meaning, Definition and Objectives<br>1.2 Importance of Book-keeping.<br>1.3 Difference between Book-keeping and Accountancy.<br>1.4 Meaning and Definition of Accountancy | 10 | CO1 |

| *SN* | *Contents of Module* | *Hrs.* | ***COs*** |
|---|---|---|---|
| | 1.5 Basis of Accounting System. Advantages of Financial Accounting, Limitations of Financial Accounting, Users of accounting information.<br>1.6 Qualitative characteristics of accounting information.<br>1.7 Basic Accounting Terminologies.<br>1.8 Accounting Concepts, Conventions and Principles.<br>1.9 Accounting Standards (AS) and IFRS. | | |
| 2 | **Unit – II Meaning and Fundamentals of Double Entry Book-keeping & Fundamentals of accounting.**<br>2.1 Meaning and Definition of Double entry Book-keeping System<br>2.2 Methods of Recording Accounting Information (Indian, Single, Double)<br>2.3 Advantages of Double entry Book-keeping system.<br>2.4 Classification of Accounts.<br>2.5 Golden Rules of Debit and Credit (Traditional Approach)<br>2.6 Modern Approach of Rules of Accounts.<br>2.7 Illustrations.<br>2.8 Accounting Equations.<br>2.9 Accounting Concepts – Entity concept- Dual Aspect concept – Accounting Period Concept – Going concern Concept – cost Concept – money Measurement Concept – Matching Concept – Realization – accrual Concept – Rupee Value Concept.<br>2.10 Terms used in accounting: Debtors, Creditors, Bill Receivable, Bills Payable, Credit Note, Debit Note, Petty Cash, Contra Entry, Trade Discount, Cash Discount, Suspense A/c. | 8 | CO1, CO2 |
| 3 | **Unit – III Journal**<br>3.1 Meaning, Importance and Utility of Accounting Documents.<br>3.2 Meaning, Definition, Importance and Utility of Journal.<br>3.3 Specimen of Journal.<br>3.4 Recording of Journal entries with GST. | 6 | CO1, CO3 |

**REFERENCE BOOKS:**


1. Robert N. Anthony, David F. Hawkins, Kenneth A. Merchant. Accountancy- text and cases. McGraw Hill Education (India) Private Limited, New Delhi.
2. Fundamentals of Accounting by Dr. S.N. Maheshwari, Dr.S.K. Maheshwari- Vikas Publishing House(ISBN-139788180544491).
3. Financial accounting: By Jane Reimers (Pearson Education) ISBN: 9780136115274.
4. Book - Keeping and Accountancy Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune - 411 004


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO2** | 1 | 1 | 1 | 1 | 2 | 2 | 2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **CO3** | 1 | 1 | 1 | 1 | 3 | 2 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | | | ✓ |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: I

## BCA-OE-114-A - Digital Marketing-I

| | |
|---|---|
| Course Title: Digital Marketing – I | Course Type: OE |
| Course Code: BCA-OE-114-A | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course introduces students to the fundamentals of digital marketing. It focuses on essential concepts and strategies, including search engine optimization (SEO), social media marketing, content marketing, and email marketing, to build a strong digital presence and engage with customers effectively.

**Course Objectives:**

The course aims to provide a thorough understanding of digital marketing's core principles, including its various components such as SEO, social media, content marketing, and email marketing. Students will learn how to design and manage effective digital marketing campaigns, using real-world examples to apply their knowledge. The course also covers key tools and techniques, such as analytics platforms and SEO tools, to enhance digital marketing efforts. Additionally, students will develop skills to analyze campaign performance using data-driven insights, enabling them to optimize strategies for improved engagement, conversion rates, and return on investment (ROI).

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | -- | ✓ | -- | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** the core principles of digital marketing**.** |
| **CO2** | **TO Gain** insights into various digital marketing tools and techniques. |
| **CO3** | **To Develope** skills to analyze digital marketing performance and optimize strategies. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **1** | **Unit – 1 Introduction to Digital Marketing**<br>1.1 Overview of Digital Marketing<br>1.2 Key Differences between Digital and Traditional Marketing<br>1.3 The Digital Marketing Landscape<br>1.4 Importance of Digital Marketing in the Modern Business Environment<br>1.5 Digital Marketing Channels and Types<br>1.6 The Digital Consumer and Customer Journey<br>1.7 Digital Marketing Strategy and Planning | **8** | **CO1** |
| **2** | **Unit – 2 Search Engine Optimization (SEO)**<br>2.1 Understanding Search Engines | **8** | **CO2** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 2.2 SEO Strategies and Best Practices<br>2.3 On-Page SEO Techniques<br>2.4 Off-Page SEO Techniques<br>2.5 Tools for SEO Analysis and Monitoring<br>2.6 Common SEO Mistakes to Avoid<br>2.7 Future Trends in SEO | | |
| **3** | **Unit – 3 Social Media and Content Marketing**<br>3.1 The Role of Social Media in Digital Marketing<br>3.2 Content Creation and Curation Strategies<br>3.3 Social Media Advertising and Analytics<br>3.4 Building and Engaging an Online Community<br>3.5 Influencer Marketing on Social Media<br>3.6 Social Media Listening and Reputation Management<br>3.7 Future Trends in Social Media and Content Marketing | **8** | **CO3** |

## REFERENCE BOOKS:


1. Vandana, Ahuja; Digital Marketing, Oxford University Press India (November, 2015).
2. Menon, Arpita; Media Planning and Buying; McGraw Hill (1st Edition, 2010)
3. Arnold, George; Media Writer's Handbook: A Guide to Common Writing and Editing Problems; McGraw-HillEducation; (5thedition, 2008)
4. Ryan, Damian; Understanding Digital Marketing: marketing strategies for engaging the digital generation; Kogan Page(3rd Edition, 2014).


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 3 | 1 | 2 | 2 | 1 |
| **CO2** | 2 | 2 | 3 | 1 | 2 | 3 | 2 |
| **CO3** | 2 | 2 | 3 | 1 | 3 | 3 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Utilize | Develop |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | | ✓ | ✓ |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: I

## BCA-OE-114-B Personal Financial Planning-I

| | |
|---|---|
| Course Title: Personal Financial Planning-I | Course Type: OE |
| Course Code: BCA-OE-114-B | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course will help students organize their financial lives by learning and implementing selected principles of accounting, finance, and management. The course will address value and risk determination by dealing specifically with the analysis of one's financial status, goal setting and planning, and decision-making. Risk analysis, savings and investment principles, taxes, debt management, retirement, and estate considerations are areas, which guide the financial management of individuals and businesses alike.

**Course Objectives:**

- To provide the student with an understanding of the personal financial planning and its relevance to modern management practices.
- It covers introduction, investment management and risk analysis.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | -- | ✓ | -- | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** the fundamental concepts of Personal financial planning. |
| **CO2** | **Analyze** and **apply** knowledge and theories of financial planning. |
| **CO3** | **Apply** skills for effective decision-making in financial planning |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **1** | **Unit – 1 Introduction to Financial Planning**<br>**1.1 Introduction:** Meaning and concept of Finance<br>- Meaning of Financial Planning<br>- Importance of Financial Planning<br>- Financial Goals –Types of Financial goals.<br>- Types of Investors<br>- Financial Planning Strategies<br>- Budgeting Income and Payments<br>**1.2 Introduction-** Meaning of savings<br>- Benefits of savings<br>- Financial Discipline<br>- Meaning and objectives of Investment | **8** | **CO1 & CO2** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | - Types of Investment<br>- Steps of Investment Process | | |
| **2** | **Unit 2- 2.1 Risk and Portfolio Management**<br>- Concept of Risk and Types of Risk<br>- Portfolio Formation<br>- Portfolio Diversification<br>- Benefits of Portfolio Diversification.<br>**2.2 Building and Maintaining Good Credit:**<br>- Credit Basics and Debt Management,<br>- Sources of Debt,<br>- Credit Report and Scores. | **8** | **CO1 & CO2** |
| **3** | **Unit – 3 Investment Planning**<br>**3.1 Basics of Investment:** Concept and characteristics of Bond<br>- Gold Bonds<br>- Benefits and drawbacks of Investing in Gold Bond<br>- Real Estate – Meaning and Characteristics<br>- Types of Real Estate<br>- Mutual Funds<br>- Advantages and Disadvantages of Mutual Funds<br>- Mutual Fund Schemes<br>- Investment in Fixed Income Instruments<br>- Digital currency – Types, advantages and disadvantages | **8** | **CO1, CO2 & CO3** |

## REFERENCE BOOKS:


1. Halan, M. "*Let's Talk Money: You've Worked Hard for It, Now Make It Work for You*" Harper Collins Publishers, New York.
2. *Indian Institute of Banking & Finance. "Introduction to Financial Planning"* Taxmann Publication, New Delhi.
3. Keown A.J. "Personal Finance" Pearson, New York.
4. Madura, J. "Personal Finance", Pearson
5. Pandit , A. "*The Only Financial Planning Book that You Will Ever Need" Network 18 Publications Ltd.*, Mumbai.
6. Sinha, M. "Financial Pfanning: *A Ready Reckoner*" McGraw Hill Education, New York.
7. Tripathi, V. "*Fundamentals of Investment*" Taxmann Publication, New Delhi.


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO2** | 1 | 1 | 1 | 1 | 2 | 3 | 2 |
| **CO3** | 1 | 1 | 1 | 1 | 3 | 3 | 3 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Utilize | Develop |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | ✓ | | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor OF Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: I

## BCA-VSC-115 Web Technology-I

Course Title: Web Technology-I — Course Type: VSC

Course Code: BCA-VSC-115 — Total Credits: 02

Lectures: Tutorials: Practical: 0:0:2 — CIE Marks: 20

Lecture Hours: 24 Hours — ESE Marks: 30

**Course Description:**

This course focuses on the foundational aspects of web development, specifically HTML and CSS. Students will learn to create well-structured, styled web pages, gaining practical skills essential for web design. The course includes hands-on practice to reinforce theoretical knowledge.

**Course Objectives:**

- **Master HTML Fundamentals:** Understand HTML structure, create semantic documents, and implement forms and tables.
- **Develop Advanced CSS Skills:** Style HTML with CSS, use Flexbox and Grid for layouts, and apply transitions, animations, and transforms.
- **Implement Responsive Design Techniques:** Design responsive web pages with media queries and adaptive layouts.
- **Utilize LESS for Efficient Styling:** Use LESS features like variables, mixins, and nesting to simplify and organize CSS.
- **Apply Sass for Advanced Styling Solutions:** Leverage Sass variables, mixins, and functions for modular and maintainable styling.
- **Integrate LESS and Sass into Workflow:** Compare LESS and Sass, and integrate them into development workflows using build tools.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | -- | ✓ | -- | ✓ | ✓ |

**Course Outcomes:**

| | |
|---|---|
| **CO1** | **Create and style responsive, semantic web pages** using HTML, CSS, LESS, and Sass, employing advanced techniques for modern web design. |
| **CO2** | **Utilize LESS and Sass** to write efficient, modular, and maintainable CSS, integrating them effectively into web development workflows. |
| **CO3** | **Debug, optimize, and apply best practices** in web design and development to produce high-quality, performant, and accessible websites. |

**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 3 | 2 | 3 | 1 | 1 |
| **CO2** | 3 | 2 | 3 | 2 | 3 | 1 | 1 |
| **CO3** | 3 | 2 | 3 | 2 | 3 | 2 | 1 |

**Assessment Pattern**

| Bloom's Category | Remember | Understand | Apply | Analyze | Utilize | Develop |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | | | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | | | |

**Practical Assignments:**

| | |
|---|---|
| 1 | Basic HTML Page Creation: Create a simple HTML page with headings, paragraphs, and lists |
| 2 | Hyperlink Implementation: Add internal and external links to an HTML document. |
| 3 | Image Embedding: Insert and style images And Form within an HTML page. |
| 4 | Table Creation: Design a table to display structured data. |
| 5 | Style a Web Page with Basic CSS<br>• Apply CSS to style text, backgrounds, and margins of a simple HTML page. |
| 6 | Create a Box Layout<br>• Use CSS to create a layout with multiple boxes (e.g., a three-column layout) with different background colors and padding. |
| 7 | Design a Basic Button with Hover Effects<br>• Style a button with different states (normal, hover, active) using CSS. |
| 8 | Develop a Simple Footer Layout<br>• Create a footer with multiple columns and style it with CSS for a clean and organized appearance. |
| 9 | Use LESS Variables for Colors<br>• Define and apply variables in LESS for colors to standardize the color scheme across multiple elements. |
| 10 | Implement a LESS Mixins for Buttons<br>• Create a mixin in LESS for button styles and use it to apply consistent button styling. |
| 11 | Apply Nesting in LESS<br>• Use LESS nesting to write CSS for a simple navigation menu, demonstrating how nested rules are structured. |
| 12 | Build a Responsive Layout with LESS<br>• Develop a basic responsive layout using LESS, with media queries for different screen sizes |
| 13 | Create and Use Sass Variables<br>• Define variables in Sass for colors, fonts, and sizes, and apply them to style a simple HTML page. |
| 14 | Implement Sass Mixins for Reusable Styles<br>• Develop mixins in Sass for common styling patterns, such as border-radius or box-shadow. |

| | |
|---|---|
| 15 | Design a Simple Grid System with Sass<br>• Build a basic grid system using Sass, applying it to create a simple layout with columns. |
| 16 | Apply a Basic Sass Function for Color Manipulation<br>• Use a Sass function to adjust color brightness or contrast and apply it to different elements on a page. |

## REFERENCE BOOKS:


1. "HTML and CSS: Design and Build Websites" by Jon Duckett
2. "Responsive Web Design with HTML5 and CSS" by Ben Frain
3. "Mastering LESS" by Pradeep Gohil
4. "Sass for Web Designers" by Dan Cederholm (Indian Edition)

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor OF Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: I

## BCA-SEC-116-Essentials of Information Technology

| | |
|---|---|
| Course Title: Essentials of Information Technology | Course Type: SEC |
| Course Code: BCA-SEC-116 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

Fundamentals of Computer course provides a basics of computer system and data representations. It covers fundamental concepts, theories, and Solving example essential for understanding basic computer knowledge & number system. Students will be understanding the concepts different input, output devices and memory management techniques & Implementing Algorithms & flowchart to solving examples. Also understand different types of transmission media's in networking, Transmission Path and Internet applications as well as different topologies.

**Course Objectives:**

1. To Understand the basics of computer system, number system.
2. To Understand the concepts different input, output devices and memory concepts & design Algorithms & flowchart.
3. Introduction to the different transmission media's in networking, Transmission Path and Internet applications, LAN, MAN, WAN, Wireless Networks &Switching techniques as well as different topologies

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | -- | -- | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** the basics of computer & **Data representation** |
| **CO2** | **Describe** concepts different input, output devices and memory & **Analyze** Algorithms & flowchart. |
| **CO3** | **Describe** concepts of basic Computer Network. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **1** | **Unit – I Introduction to Computer System & Data representation**<br>1.1. History & generation of computer<br>1.2. Definition of computer<br>1.3. Computer Language<br>1.4. Block diagram of computer system<br>1.5. Types of computers<br>1.6. Definition- Software, Hardware, Firmware, Translators, Compiler, Interpreter, Loader and Linder, Compiler<br>1.7. Introduction to Number system: decimal, binary, octal and hexadecimal, Conversion in Number System. | 8 | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **2** | **Unit – II Memory Management & Designing Algorithm with Flowchart**<br>2.1 What is and Memory Management<br>2.2 Types of Memory Primary- RAM, ROM, PROM, EPROM<br>2.3 Secondary- Magnetic Disk, Hard Disk and CD, Pen drive.<br>2.4 Algorithm, Program Development steps- Algorithms<br>**2.5** Flowchart, Flowchart symbols ,Examples of Specification for converting Algorithms and flowchart into Programs basic (Minimum 5) | 8 | **CO2** |
| 3 | **Unit – III Fundamental of Networking and Internet Services**<br>3.1 Computer Net<br>3.2 work: Definition of Computer Network<br>3.3 Types of Networks: LAN, MAN, WAN.<br>3.4 Topologies: Star, Tree, Bus, Ring, Mesh, Fully Connected.<br>3.5 Wired and Wireless Networks<br>3.6 Internet: History of Internet<br>3.7 Working of Internet<br>3.8 Use of Internet, Applications of Internet | 8 | **CO3** |

## REFERENCE BOOKS:


1. Fundamentals of computer - V. Raja Raman, (PHI Publication)/**SBW**10:812034011
2. Computer Networks - Andrew S. Tanenbaum , Fourth Edition. /**SBWnumber**0130661023
3. Computer and studies a first course - Roger Hunt and John Shelley, (PHI Publication)/**SBW**10:0131646737
4. Cloud Computing for Dummies -Hurwitz Judith S. and Daniel Kirsch.


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 2 | 2 | 3 | 2 | 2 |
| **CO2** | 3 | 2 | 2 | 2 | 3 | 2 | 2 |
| **CO3** | 3 | 2 | 2 | 2 | 3 | 2 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | - | ✓ | ✓ | - |
| **End Semester Examination (60)** | ✓ | ✓ | - | ✓ | ✓ | - |

**Practical Assignments:**

1. To study of Introduction & Installation of Operating System (Linux and Windows).
2. Run different commands of MS DOS - CD, DIR, Date, Time, COPY, REN, CLS, MD, RD, etc.
3. Study different web Browsers- Internet Explorer, Fire fox, downloading of files
4. Study different Various Components of Computer.
5. Study of various computer Network Devices.
6. Create your E-Mail ID on any free E-Mail Server.

7. Login through your E-Mail ID and do the following:
    a. Read your mail
    b. Compose a new Mail
    c. Send the Mail to one person
    d. Send the same Mail to various persons
    e. Forward the Mail
    f. Delete the Mail
    g. Send file as attachment
8. Demonstrate the usage of various storage devices (data copying, CD/DVD burning)
9. Create and demonstrate of text formatting, tables, shapes, smart-arts, charts.
10. Create a spreadsheet which will demonstrate use of aggregate function.
11. Create and demonstrate power point presentation with animation
12. Prepare a presentation with five slides including animation and documentation report of it.

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Applications
B.C.A. (BACHELOR OF COMPUTER APPLICATION) PROGRAMME BATCH 2024-28

## SEMESTER: I

## BCA-AEC-117 Professional Communication - I

Course Title: Professional Communication - I
Course Code: BCA-AEC-117
Lectures: Tutorials: Practical: 2:0:0
Lecture Hours: 24 Hours

Course Type: AEC
Total Credits: 02
CIE Marks: 20
ESE Marks: 30

**Course Description:**

This course provides students with a foundational understanding of communication principles, focusing on the essential elements, channels, and processes involved in effective communication. The course explores various types and levels of communication, along with formal and informal channels, emphasizing their advantages and disadvantages. Students will learn to identify and overcome common barriers to communication and apply both interactive and non-interactive techniques to enhance their communication effectiveness. The course also covers the fundamentals of written communication and e-correspondence, including the structure and function of business letters, office memorandums, circulars, and emails, with a focus on technology-enabled communication tools and email etiquette.

**Course Objectives:**

- To understand the fundamental concepts, nature, and processes involved in communication, including various channels and media, and their significance in professional settings.
- To develop the ability to identify and overcome barriers to communication and apply effective communication strategies in both interactive and non-interactive contexts.
- To master the principles of written communication, with a focus on business correspondence and e-correspondence, including the effective use of technology and adherence to professional etiquette.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| -- | ✓ | ✓ | -- | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Demonstrate** a clear understanding of the essential elements and levels of communication, including the advantages and disadvantages of different communication types and channels. |
| **CO2** | **Apply** strategies to enhance communication effectiveness by overcoming barriers, utilizing listening skills, and employing interactive techniques for better professional interaction. |
| **CO3** | **Create** well-structured business letters, memorandums, and emails that adhere to professional standards, using appropriate technology and maintaining proper etiquette in e-correspondence. |

| *SN* | *Contents of Module* | *Hrs* | ***Cos*** |
|---|---|---|---|
| **1** | **Unit – I Introduction to essentials of Communication**<br>1.1. Concept, Nature and Process of communication<br>1.2. Channel and Importance<br>1.3. Media for Communication | **9** | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***Cos*** |
|---|---|---|---|
| | 1.4. Types of communication- Advantages and Disadvantages<br>1.5. Channels: Formal & Informal<br>1.6. Levels of Communication<br>1.7. Direction of Communication: Downward, upward, Lateral & Diagonal | | |
| **2** | **Unit – II Effective Communication: Barriers to Communication and its solutions**<br>2.1 Effective Communication: Barriers to Communication and its solutions<br>2.2 Interactive and Non-Interactive Techniques of Communication<br>2.3 Listening as a tool of Communication<br>2.4 Guidelines for effective communication | **5** | **CO2** |
| **3** | **Unit – III Written Communication and E-Correspondence**<br>3.1 Nature and functions of business correspondence<br>3.2 Types of correspondence, purpose and use of business correspondence<br>3.3 Need and Importance of Business Letters<br>3.4 Parts of Business letters, Layout of business letters<br>3.5 Technology for Communication<br>3.6 Office Memorandum, Office Circulars, Notices and Orders<br>3.7 Effective IT Communication Tools.<br>3.8 Electronic Mail: Advantages, Safety and Smartness in Email<br>3.9 Email Etiquettes | **10** | **CO3** |

**REFERENCE BOOKS:**


1. Business Communication: Neha Nigam, Digital Publishing House
2. Business Communication: R. C B, Ane Books Pvt. Ltd
3. Text Book of Communication Skills: D. Amutha & S. Vithya, Manglam Publications, 2023


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| **CO2** | 2 | 2 | 2 | 1 | 2 | 1 | 1 |
| **CO3** | 3 | 2 | 3 | 2 | 3 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Utilize | Develop |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | | ✓ | | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | | |

# Semester II

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: II

## BCA-DSC-121 OOPS with C++

Course Title: OOPS with C++ | Course Type: DSC

Course Code: BCA-DSC-121 | Total Credits: 04

Lectures: Tutorials: Practical: 4:0:0 | CIE Marks: 40

Lecture Hours: 48 Hours | ESE Marks: 60

**Course Description:**

This course introduces students to the Object-Oriented Paradigm using C++. It covers essential concepts of OOP, including encapsulation, inheritance, and polymorphism, and how these concepts can be implemented in C++. The course also emphasizes practical programming skills and problem-solving techniques.

**Course Objectives:**

- To understand the principles and benefits of the Object-Oriented Paradigm.
- To learn the syntax and structure of the C++ programming language.
- To explore the concepts of classes, objects, inheritance, and polymorphism.
- To develop the ability to solve problems using OOP techniques in C++.
- To enhance skills in writing, testing, and debugging C++ programs.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | -- | -- | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| CO1 | **Understanding** the Object-Oriented Paradigm. |
| CO2 | **Understanding** in C++ Controls, Pointers, and Functions |
| CO3 | **Demonstration** Classes and Objects in C++ |
| CO4 | **Apply** inheritance concepts to solve programming problems |
| CO5 | **Explain** and apply polymorphism in C++ to enhance code flexibility and functionality. |
| CO6 | **Demonstrate** the use of Templates & Exception Handling and file handling in C++. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **Unit 1: Introduction and Basics of OOP**<br>1.1 Introduction to Object-Oriented Paradigm<br>1.2 Need for Object-Oriented Programming | 6 | CO1 |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 1.3 Characteristics of Object-Oriented Programming (Encapsulation, Abstraction, Inheritance, Polymorphism)<br>1.4 Difference between Structured Programming and OOP | | |
| 2 | **Unit 2: C++ Controls, Pointers & Functions**<br>2.1 Input/Output in C++ (cin, cout, iostream)<br>2.2 Data Types and Operators (Arithmetic, Relational, Logical, Bitwise)<br>2.3 Control & Conditional Statements (if, else, switch, loops)<br>2.4 Pointer Variables (Declaration, Initialization, Dereferencing, Arrays), Pointer Arithmetic<br>2.5 Function and its Components,<br>Parameter Passing Mechanisms (Pass by Value, Reference, Pointer)<br>- Pointer as Function Argument<br>- Recursive Functions | 8 | CO2 |
| 3 | **Unit 3: Objects and Classes**<br>3.1 Class Declaration in C++ (Data Members, Member Functions)<br>3.2 Constructors (Default, Parameterized, Copy)<br>3.3 Destructors<br>3.4 Difference between Classes and Structures<br>3.5 Friend Class and Friend Function | 8 | CO3 |
| 4 | **Unit 4: Inheritance**<br>4.1 Inheritance: Definition and Concept (Base and Derived Classes)<br>4.2 Types of Inheritance (Single, Multiple, Multilevel, Hierarchical, Hybrid)<br>4.3 Visibility Modes (Public, Private, Protected)<br>4.4 Virtual Base Class<br>4.5 Benefits of Inheritance (Reusability, Extensibility, Maintenance) | 8 | CO4 |
| 5 | **Unit 5: Operator Overloading**<br>5.1 Operator Overloading: Definition<br>5.2 Unary Operator Overloading<br>5.3 Binary Operator Overloading (+, -, *, ==)<br>5.4 Rules for Operator Overloading (Precedence, Associativity)<br>5.5 Operator Overloading using Friend Functions<br>5.6 Function Overloading | 10 | CO5 |
| 6 | **Unit 6: Virtual Functions, Templates & Exception Handling & File Handling**<br>6.1 Virtual Functions (Polymorphism, Overriding)<br>6.2 Pure Virtual Functions (Abstract Classes)<br>6.3 Function Templates (Generic Programming)<br>6.4 Exception Handling Constructs (try, catch, throw)<br>6.5 Introduction to File System (File Modes, File Streams)<br>6.6 Basic Read and Write File Functions | 8 | CO6 |

**REFERENCE BOOKS:**

1. Object-Oriented Programming in C++ – E. Balagurusamy, Tata McGraw-Hill.
2. C++: The Complete Reference – Herbert Schildt, McGraw-Hill Education.

3. Programming in C++ – Ashok N. Kamthane, Pearson Education.
4. The C++ Programming Language – Bjarne Stroustrup, Addison-Wesley.

**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO2 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO5 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| CO6 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |

**Assessment Pattern**

| Bloom's Category | Remember | Understand | Apply | Analyse | Evaluate | Create |
|---|---|---|---|---|---|---|
| Continuous Internal Evaluation (40) | ✓ | ✓ | - | ✓ | ✓ | - |
| End Semester Examination (60) | ✓ | ✓ | - | ✓ | ✓ | - |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Applications
B.C.A. (BACHELOR OF COMPUTER APPLICATION) PROGRAMME BATCH 2024-28

## SEMESTER: II

## BCA-DSC-122 Lab on OOPS with C++

Course Title: Lab on OOPS with C++ | Course Type: DSC
Course Code: BCA-DSC-122 | Total Credits: 02
Lectures: Tutorials: Practical: 0:0:2 | CIE Marks: 20
Lecture Hours: | ESE Marks: 30

**Course Description:**

This course introduces students to the Object-Oriented Paradigm using C++. It covers essential concepts of OOP, including encapsulation, inheritance, and polymorphism, and how these concepts can be implemented in C++. The course also emphasizes practical programming skills and problem-solving techniques.

**Course Objectives:**

- To understand the principles and benefits of the Object-Oriented Paradigm.
- To learn the syntax and structure of the C++ programming language.
- To explore the concepts of classes, objects, inheritance, and polymorphism.
- To develop the ability to solve problems using OOP techniques in C++.
- To enhance skills in writing, testing, and debugging C++ programs.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | -- | -- | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| CO1 | **Understand the** basic programming skills including variables, control structures, functions, and arithmetic operations etc |
| CO2 | **Understand and apply** OOP principles like encapsulation, inheritance, and polymorphism, including implementing classes with constructors/destructors, function overloading, and operator overloading. |
| CO3 | **Learn** advanced techniques including dynamic memory management, exception handling, and file operations, enabling effective memory management and error handling. |
| CO4 | **Understand** basic data structures such as arrays and strings. |
| CO5 | **Understand** Pointer and Memory Management |

| Sr. No. | Practical List |
|---|---|
| 1 | Write a program to check whether a number is even or odd using if-else. |
| 2 | Write a program to calculate the sum and average of three numbers using control structure. |
| 3 | Write a program to determine whether a number is prime or composite. |

| | |
|---|---|
| 4 | Write a program to calculate the sum, difference, product, and quotient of two integers. |
| 5 | Write a program to demonstrate use of function overloading. (e.g., area of a circle, rectangle, and triangle). |
| 6 | Write a program to demonstrate encapsulation using of class. |
| 7 | Write a program to demonstrate the use of different types of constructors and a destructor in a class. |
| 8 | Write a program to demonstrate single inheritance. |
| 9 | Write a program to demonstrate multiple inheritance. |
| 10 | Write a program to demonstrate use of unary operator overloading. |
| 11 | Write a program to demonstrate use of binary operator overloading. |
| 12 | Write a program to demonstrate use of friend function. |
| 13 | Write a program to demonstrate use of virtual function. |
| 14 | a) Write a program to demonstrate the use of a pointer to pointer.<br>b) Write a program to create pointers that point to objects and access their members.<br>c) Write a program to demonstrate the use of pointers to functions. |
| 15 | Write a program to demonstrate use of Exception Handling. |
| 16 | a) Write a program to find the largest and smallest elements from an array.<br>b) Write a program to sort an array in ascending and descending order. |
| 17 | Write a program to concatenate two strings and find the length of a string. |
| 18 | Write a program to calculate the factorial of a number using recursion |
| 19 | Write a program that demonstrates different types of polymorphism (e.g., method overriding). |
| 20 | Write a program to demonstrate use of File Handling. |
| 21 | Write a program to allocate and deallocate memory dynamically using pointers. |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | ✓ | | ✓ | ✓ |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor OF Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: II

## BCA-MIN-123 System Analysis and Design

| | |
|---|---|
| Course Title: System Analysis and Design | Course Type: Minor |
| Course Code: BCA-MIN-123 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

The objective of the course is to provide the necessary background and experience in developing a System so that a student can enter in the professional community in the capacity of a system analyst or programmer. This course provides the student with a practical approach to systems analysis and design using a blend of traditional developments and current technologies. The student will learn how to apply established and evolving methodologies for the analysis, design, and development of an information system.

**Course Objectives:**

- To understand the fundamental concepts of systems, their analysis, and design.
- To apply systematic approaches to problem-solving in the context of system development.
- To equip students with the skills necessary to model, analyze, and design complex systems.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | -- | -- | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** systems and their development through the System Development Life Cycle (SDLC). |
| **CO2** | **Develop** various system models, including DFDs, ERDs, and Use Case Diagrams. |
| **CO3** | **Design** efficient systems with robust testing and maintenance. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **1** | **Unit – 1 Overview of System Analysis and Design**<br>**1.1 Introduction to Systems Concepts**: Definition and characteristics of a system, Types of systems (open, closed, physical, abstract), Subsystems and system boundaries<br>**1.2 System Development Life Cycle (SDLC)**: Phases of SDLC: Planning, Analysis, Design, Implementation, and Maintenance, Advantages and limitations of SDLC, Role of system analysts and stakeholders<br>**1.3 Problem Identification and Feasibility Analysis**: Identifying system requirements, Types of feasibility studies: Technical, Economic, Legal, Operational, and Schedule feasibility, Feasibility report and its components | **8** | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **2** | **Unit – 2 System Modelling and Design Techniques**<br>**2.1 Data Flow Diagrams (DFD):** Levels of DFD: Context, Level 0, and Level 1, Symbols and rules used in DFDs, Constructing DFDs for system analysis<br>**2.2 Entity-Relationship Diagrams (ERD):** Components of ERD: Entities, Attributes, Relationships, Cardinality and participation constraints, Normalization techniques (1NF, 2NF, 3NF) and their importance in database design<br>**2.3 Use Case Diagrams:** Actors, Use Cases, and System Boundaries, Relationships in use case diagrams: Include, Extend, Generalization, Creating use case diagrams for system scenarios | **8** | **CO2** |
| **3** | **Unit – 3 System Design, Implementation, and Testing**<br>**3.1 System Design Strategies:** Structured vs. Object-Oriented Design, Modular Design: Coupling and Cohesion, Input/output Design: User interface design principles and guidelines<br>**3.2 Database Design:** Introduction to database design: Conceptual, Logical, and Physical design**,** Database normalization: Importance and application**,** designing relational databases and implementing schemas<br>**3.3 System Testing and Implementation:** Types of testing: Unit, Integration, System, and Acceptance testing**,** System implementation strategies: Direct cutover, Parallel, Phased, and Pilot implementation**,** Post-implementation review and maintenance | **8** | **CO3** |

**REFERENCE BOOKS:**


1. "Systems Analysis and Design" by Kenneth E. Kendall, Julie E. Kendall
2. "Modern Systems Analysis and Design" by Jeffrey A. Hoffer, Joey F. George, and Joseph S. Valacich
3. "Systems Analysis and Design" by Alan Dennis, Barbara Haley Wixom, and Roberta M. Roth


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 3 | 1 | 2 | - | - |
| **CO2** | 2 | 3 | 2 | 2 | 3 | 2 | 1 |
| **CO3** | 1 | 2 | 3 | 3 | 2 | 3 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Utilize | Develop |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: II

### BCA-OE-124-A Marketing Management

| | |
|---|---|
| Course Title: Basics of Marketing | Course Type: Open Elective (OE) |
| Course Code: BCA-OE-124-A | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

The "Fundamentals of Marketing" course provides an overview of key marketing concepts and practices. It covers the definition, nature, scope, and importance of marketing, contrasting it with selling and exploring functional areas and the marketing process. The course examines the role of a marketing manager in the modern business environment and delves into the marketing environment, including micro and macro factors, as well as segmentation, targeting, and positioning strategies. Additionally, it explores the marketing mix, focusing on product development, pricing, distribution channels, and promotional strategies.

**Course Objectives:**

The subject aims to provide the student with:

- To know and understand the concepts, principles, process and environment of marketing.
- To understand the need and importance of market segmentation, targeting and positioning.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | -- | ✓ | ✓ | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | Define the fundamental concepts of marketing, including its definition, nature, scope, process and importance **(Remember).** |
| **CO2** | Explain the concept of the marketing environment, segmentation, targeting and positioning **(Understand).** |
| **CO3** | Explain the concept of the marketing mix and its components, commonly referred to as the 4Ps (Product, Price, Place, and Promotion). **(Understand).** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **1** | **Unit 1: Introduction:**<br>1.1 Definition, Nature, scope and importance of marketing.<br>1.2 Selling Vs Marketing<br>1.3 Functional areas of Marketing<br>1.4 Marketing Process<br>1.5 Role of a Marketing Manager in the current scenario. | **8** | **CO1** |
| **2** | **Unit 2: Marketing Environment and Segmentation, Targeting and Positioning:**<br>2.1 Concept of marketing environment and importance of marketing environmental analysis. | **8** | **CO2** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 2.2 Micro-environment and Macro-environment<br>2.3 Meaning, concepts, benefits and limitations of segmentation<br>2.4 Bases for Segmenting Consumer Markets<br>2.5 Concept of Product Positioning and Differentiation | | |
| **3** | **Unit 3: Marketing Mix**<br>3.1 Concept of Marketing mix.<br>3.2 Product – Concept, Levels of product (core benefit, basic product, expected product, augmented product and potential product), Product Life Cycle.<br>3.3 Price – Concept, significance, factors affecting price.<br>3.4 Place (Channel of distribution) – Meaning, importance, Types of distribution channels; Factors affecting choice of distribution channel.<br>3.5 Promotion – Nature, importance, Elements of Promotional Mix (Advertising, Publicity, Public Relations, Sales Promotion, Personal Selling and Direct Marketing). | **8** | **CO3** |

## REFERENCE BOOKS:


1. Marketing Management- S.A. Sherlekar, Himalaya Publishing House.
2. Principles of Marketing (A South Indian Perspective)- Philip Kotler, Gary Amrstrong, Prafulla Agnihotri, Ehsan, Pearson.
3. Marketing Management – RajanSaxena – Tata McGraw Hill.
4. Basics of Marketing Management – R.B. Rudani - S. Chand & Company Ltd.
5. Marketing Management – Ramaswamy, Namakumari 4th edition – Macmillion.
6. Principles of Marketing, R.K. Mittal, A. Sharma, V.K. Global Pub. Pvt. Ltd, New Delhi.
7. Principles of Marketing M K Nabi, K C Raut, Vrinda Publications (P) Ltd


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 2 | 1 |
| **CO2** | 2 | 2 | 2 | 1 | 1 | 2 | 2 |
| **CO3** | 2 | 2 | 3 | 1 | 1 | 2 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | | | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | | |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: II

### BCA-OE-124-B Principles of Accounting-II

| | |
|---|---|
| Course Title: Principles of Accounting-II | Course Type: Open Elective (OE) |
| Course Code: BCA-OE-124-B | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

An accountant takes you through the fundamentals of accounting and explains concepts like revenue, costs, assets, liabilities and equity through a series of ground breaking business simulations. Accounting principles serve several purposes. They ensure that all publicly-traded companies are reporting their transactions and data in the same way so the information can be compared accurately between companies. Accounting equips you with knowledge and skills that are important to every organization. From traditional roles such as auditors and tax professionals, to specialized positioning in accounting, financial analysis, and consulting, an accounting degree will unlock a rewarding career path for you.

**Course Objectives:**

- Introduce accounting in ledger and balance sheet.
- Identify the basics of financial accounting through the accounting cycle for service and merchandise business.
- Apply the theoretical foundation of financial accounting (concepts, assumptions, and principles) and the financial statements of a profit seeking enterprise.
- Perform the different steps of the accounting cycle for service and merchandising businesses.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | -- | ✓ | -- | -- | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Able** to post recording from Books of original entries to Ledger. Balancing of various ledger accounts.<br>**Able** to prepare Trial Balance.<br>**Understand** the meaning and need of Subsidiary Books.<br>**Able** to prepare and balance different types of Cash Book. |
| **CO2** | **Understand** effects of Rectification of Errors.<br>**Able** to detect the errors and rectify them.<br>Meaning and need of Suspense A/c. |
| **CO3** | **Able** to understand Meaning, Objective and Importance of Final Accounts.<br>**Able** to Prepare Trading A/c, Profit and Loss A/c and Balance sheet with competency.<br>**Able** to understand effects of adjustments. |

| *SN* | *Contents of Module* | *Hrs.* | ***COs*** |
|---|---|---|---|
| 1 | **Unit – I Ledger & Subsidiary Books.** | 10 | **CO1** |

| | | | |
|---|---|---|---|
| | 1.1 Meaning, Definition and Importance of Ledger.<br>1.2 Specimen of Ledger.<br>1.3 Posting of entries from Journal/Subsidiary Books to Ledger.<br>1.4 Balancing of Ledger Accounts.<br>1.5 Preparation of Trial Balance.<br>1.6Introduction, Meaning and need for maintaining Subsidiary Books.<br>1.7 Cash Book with Cash Column<br>1.8 Cash Book with Cash and Bank Columns.<br>1.9 Simple and Analytical Petty Cash Book under Imprest System.<br>1.10 Purchase Book. Purchase Return Book. Sales Book. Sales Return Book<br>1.11 Journal Proper | | |
| 2 | **Unit – II Rectification of Errors.**<br>2.1 Meaning & Effects of errors<br>2.2 Types of Errors<br>2.3 Detection & Rectification of errors<br>2.4 Preparation of Suspense Account | 5 | **CO2** |
| 3 | **Unit – III Final Accounts of a Proprietary concern.**<br>9.1 Meaning, Objectives and Importance of Final Accounts.<br>9.2 Preparation of Trading Account.<br>9.3 Preparation of Profit and Loss Account<br>9.4 Preparation of Balance Sheet<br>9.5 Effects of following adjustments:-<br>Closing stock<br>Outstanding Expenses<br>Prepaid Expenses<br>Depreciation on assets<br>Bad debts and R.D.D. Discount on Debtors and Creditors<br>Income received in advance<br>Accrued Income<br>Goods distributed as free sample<br>Goods withdrawn by proprietor for Personal use.<br>Interest on capital<br>Interest on Drawings | 9 | **CO3** |

**REFERENCE BOOKS:**


1. Robert N. Anthony, David F. Hawkins, Kenneth A. Merchant. Accountancy- text and cases. McGraw Hill Education (India) Private Limited, New Delhi.
2. Fundamentals of Accounting by Dr. S.N. Maheshwari, Dr.S.K. Maheshwari- Vikas Publishing House
3. (ISBN-139788180544491).
4. Financial accounting: By Jane Reimers (Pearson Education) ISBN: 9780136115274.
5. Book - Keeping and Accountancy Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune - 411 004


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **CO1** | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **CO2** | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **CO3** | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | | | ✓ |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: II

### BCA-OE-125-A Digital Marketing-II

| | |
|---|---|
| Course Title: Digital Marketing - II | Course Type: MDE |
| Course Code: BCA-OE-125-A | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course introduces students to the fundamentals of digital marketing. It focuses on essential concepts and strategies, including search engine optimization (SEO), social media marketing, content marketing, and email marketing, to build a strong digital presence and engage with customers effectively.

**Course Objectives:**

The course aims to provide a thorough understanding of digital marketing's core principles, including its various components such as SEO, social media, content marketing, and email marketing. Students will learn how to design and manage effective digital marketing campaigns, using real-world examples to apply their knowledge. The course also covers key tools and techniques, such as analytics platforms and SEO tools, to enhance digital marketing efforts. Additionally, students will develop skills to analyze campaign performance using data-driven insights, enabling them to optimize strategies for improved engagement, conversion rates, and return on investment (ROI).

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | -- | ✓ | -- | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** the strategic role of content in digital marketing and how it influences customer engagement and brand visibility. |
| **CO2** | **Understand** and **apply** mobile marketing strategies to reach and engage mobile users effectively. |
| **CO3** | **Develop** proficiency in using digital marketing analytics to track and measure campaign performance. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **1** | **Unit – 1 : Content Marketing and Email Marketing**<br>1.1 The Role of Content in Digital Marketing<br>1.2 Types of Content (Blogs, Videos, Infographics, etc.) Content Creation Process<br>1.3 Content Marketing Channels SEO for Content Marketing<br>1.4 Repurposing and Syndicating Content<br>1.5 Building and Segmenting an Email List<br>1.6 Crafting Effective Email Campaigns Email Marketing Automation<br>1.7 Tools for Email Campaigns (e.g., Mailchimp, Constant Contact)<br>1.8 A/B Testing in Email Marketing Measuring Email Marketing | **8** | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | Success | | |
| **2** | **Unit 2: Mobile Marketing and E-commerce**<br>1.1 Mobile Marketing Strategies<br>1.2 Mobile Advertising Formats<br>1.3 Mobile SEO and User Experience<br>1.4 Introduction to E-commerce marketing<br>1.5 Role of Digital Marketing in E-commerce<br>1.6 Conversion Rate Optimization (CRO)<br>1.7 E-commerce Tools and Platforms | **8** | **CO2** |
| **3** | **Unit 3: Analytics, Trends, and Future of Digital Marketing**<br>1.1Digital Marketing Analytics<br>1.2 Importance of Data in Digital Marketing<br>1.3 Overview of Google Analytics<br>1.4 Tracking and Measuring Digital Campaigns<br>1.5 Advanced Data Analysis Techniques<br>1.6 Emerging Trends in Digital Marketing<br>1.7 Capstone Project and Presentations<br>• Students Work in Groups to Develop a Comprehensive Digital Marketing Plan<br>• Presentation of the Plan to the Class<br>• Feedback and Evaluation | **8** | **CO3** |

**REFERENCE BOOKS:**

1. Vandana, Ahuja; Digital Marketing, Oxford University Press India (November, 2015).
2. Menon, Arpita; Media Planning and Buying; McGraw Hill (1st Edition, 2010)
3. Arnold, George; Media Writer's Handbook: A Guide to Common Writing and Editing Problems; McGraw-HillEducation; (5thedition, 2008)
4. Ryan, Damian; Understanding Digital Marketing: marketing strategies for engaging the digital generation; Kogan Page(3rd Edition, 2014).

**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 3 | 1 | 2 | 2 | 1 |
| **CO2** | 2 | 2 | 3 | 1 | 2 | 2 | 1 |
| **CO3** | 2 | 2 | 3 | 1 | 3 | 3 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Utilize | Develop |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | | ✓ | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | ✓ | |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: II

## BCA-OE-125-B Personal Financial Planning-II

| | |
|---|---|
| Course Title: Personal Financial Planning-II | Course Type: OE |
| Course Code: BCA-OE-125-B | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course will help students organize their financial lives by learning and implementing selected principles of accounting, finance, and management. The course will address value and risk determination by dealing specifically with the analysis of one's financial status, goal setting and planning, and decision-making. Risk analysis, savings and investment principles, taxes, debt management, retirement, and estate considerations are areas, which guide the financial management of individuals and businesses alike.

**Course Objectives:**

The subject aims to provide the student with an understanding of the personal financial planning and its relevance to modern management practices. It covers introduction, investment management and risk analysis.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | -- | ✓ | -- | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** the fundamental concepts of Personal financial planning. |
| **CO2** | **Analyse** and **apply** knowledge and theories of financial planning. |
| **CO3** | **Apply** skills for effective decision-making in financial planning |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **1** | **Unit – 1 Personal Tax Planning**<br>1.1 Concept of Tax structure in India<br>1.2 Personal Tax Planning<br>1.3 Need for Tax Planning<br>1.4 Objectives and Advantages of Tax Planning<br>1.5 Concept of Tax Exemptions<br>1.6 Exemption of Allowances<br>1.7 Concept of Tax Deductions<br>1.8 Benefits and Allowances of Tax Deductions<br>1.9 Tax Exemptions vs Tax Deductions<br>2. Tax Avoidance vs Tax Evasion. | **8** | **CO1 & CO2** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| **2** | **Unit – 2 Insurance Planning**<br>2.1 Introduction of Insurance: Types of Insurance<br>2.2 Concept of Life Insurance<br>2.3 Benefits and types of Life Insurance<br>2.4 How to claim Life insurance?<br>2.5 Factors affecting Life Insurance Policy.<br>2.6 Concept, features and benefits of Health Insurance<br>2.7 Best Health Insurance Plans available in India<br>2.8 Concept and benefits of Property Insurance<br>2.9 Types of Property Insurance | **8** | **CO1 & CO2** |
| **3** | **Unit – 3 Retirement Benefits Planning**<br>3.1 Meaning of Retirement<br>3.2 Saving for your retirement<br>3.3 Methods to save for retirement<br>3.4 Retirement planning goals<br>3.5 Process of Retirement planning<br>3.6 Pension Plans available in India. | **8** | **CO1, CO2 & CO3** |

## REFERENCE BOOKS:


1. Halan, M. "*Let's Talk Money: You've Worked Hard for It, Now Make It Work for You*" Harper Collins Publishers, New York.
2. *Indian Institute of Banking & Finance. "Introduction to Financial Planning"* Taxmann Publication, New Delhi.
3. Keown A.J. "Personal Finance" Pearson, New York.
4. Madura, J. "Personal Finance", Pearson
5. Pandit , A. "*The Only Financial Planning Book that You Will Ever Need" Network 18 Publications Ltd.*, Mumbai.
6. Sinha, M. "Financial Pfanning: *A Ready Reckoner*" McGraw Hill Education, New York.
7. Tripathi, V. "*Fundamentals of Investment*" Taxmann Publication, New Delhi.


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **CO2** | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **CO3** | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Utilize | Develop |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | ✓ | | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor OF Computer Application) PROGRAMME BATCH 2024-28

## SEMESTER: II

## BCA-VSC-126 Web Technology-II

| | |
|---|---|
| Course Title: Web Technology-II | Course Type: VSC |
| Course Code: BCA-VSC-126 | Total Credits: 2 |
| Lectures: Tutorials: Practical: 0:0:2 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Overview:**

This course focuses on client-side scripting with JavaScript and front-end web development using the Bootstrap framework. The course emphasizes practical skills, enabling students to create dynamic, responsive web pages.

**Course Objectives:**

- **Understand and apply fundamental JavaScript concepts** to create interactive and dynamic web applications.
- **Develop server-side applications** using Node.js and Express.js to handle HTTP requests, manage data, and implement RESTful APIs.
- **Utilize Bootstrap for responsive web design** to build visually appealing and mobile-friendly websites with ease.
- **Integrate JavaScript, Node.js, Bootstrap, and Express.js** to build full-stack web applications, ensuring seamless interaction between front-end and back-end components.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | -- | ✓ | -- | ✓ | -- |

**Course Outcomes:**

| | |
|---|---|
| **CO1** | **Develop interactive and dynamic web applications** using JavaScript for front-end functionality |
| **CO2** | **Create and manage server-side applications** with Node.js and Express.js for robust backend solutions. |
| **CO3** | **Design responsive and visually appealing web pages** using Bootstrap, ensuring cross-device compatibility. |

**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 3 | 2 | 3 | 2 | 2 |
| **CO2** | 3 | 2 | 3 | 3 | 3 | 2 | 2 |
| **CO3** | 3 | 2 | 3 | 2 | 3 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | - | ✓ | ✓ | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| **End Semester Examination (30)** | ✓ | ✓ | - | ✓ | ✓ | - |

**Practical Assignments:**

| | |
|---|---|
| 1 | Basic JavaScript Program: Write a simple JavaScript program to perform arithmetic operations. |
| 2 | Control Structures: Implement a JavaScript program using if-else statements and loops |
| 3 | JavaScript Functions: Create and invoke functions that perform specific tasks. |
| 4 | Event Handling: Develop a web page where JavaScript responds to user events (e.g., button clicks). |
| 5 | Perform a practical on node js installation . |
| 6 | **Set Up a Basic Node.js Server**<br>• Create a basic HTTP server using Node.js that responds with "Hello, World!" to any request. |
| 7 | **Create a REST API with Node.js**<br>• Develop a basic REST API using Node.js that performs CR (Create, Read) operations on a simple data set. |
| 8 | **Create a REST API with Node.js**<br>• Develop a basic REST API using Node.js that performs UD ( Update, Delete) operations on a simple data set. |
| 9 | Perform a practical on bootstrap setup |
| 10 | Bootstrap Grid Layout: Create a responsive web page layout using Bootstrap's grid system. |
| 11 | Bootstrap Components: Implement a navigation bar and modal using Bootstrap components. |
| 12 | **Create a Bootstrap Form**<br>• Design a form using Bootstrap's form components with input and styling. |
| 13 | **Set Up a Basic Express.js Server**<br>• Create a basic Express.js server that serves static files and handles basic routing. |
| 14 | **Build a Simple Blog with Express.js**<br>• Develop a simple blogging application using Express.js with routes for viewing, adding |
| 15 | **Build a Simple Blog with Express.js**<br>• Develop a simple blogging application using Express.js with routes for updating |
| 16 | **Build a Simple Blog with Express.js**<br>• Develop a simple blogging application using Express.js with routes for deleting posts. |

## REFERENCE BOOKS:


1. "JavaScript: The Good Parts" by Douglas Crockford
2. "Bootstrap 5: From Zero to Hero" by Dorianer Orozco
3. Learning Node.js Development" by Andrew Mead

# KCES's Institute of Management and Research (Autonomous), Jalgaon

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Applications
B.C.A. (BACHELOR OF COMPUTER APPLICATION) PROGRAMME BATCH 2024-28

## SEMESTER: II

## BCA- SEC-127 Operating System concepts with Linux

Course Title: Operating System concepts with Linux — Course Type: SEC
Course Code: BCA-SEC-127 — Total Credits: 02
Lectures: Tutorials: Practical: 2:0:0 — CIE Marks: 20
Lecture Hours: 24 Hours — ESE Marks: 30

**Course Description:**

This course will introduce our students to recall the basic concepts of operating system and its functions. It will focus on Linux operating systems. Throughout this course, students will also learn about alternative operating systems, like Windows, Linux etc. The course will begin with basic concepts of an operating systems, its components, architecture diagram etc. Over the course of the subsequent units, we will discuss the history of Linux, features, benefits of Linux etc. with students in detail. They will also learn each of the major components of an operating system and explore basic commands of Linux. The class will conclude with a discussion of various Shell Programs and Linux programs.

**Course Objectives:**
The subject aims to provide the student with an understanding of operating System basic concepts and its architecture, components etc. It also covers Linux operating System, its benefits. Students also learn the Linux commands to implement shell programming applications so that they can develop their own applications in Linux.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | -- | ✓ | -- | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | To recall the basic concepts of Operating System like it's definition, types etc. |
| **CO2** | To Understand Components of OS and its architecture, Process state and learn basic Linux commands. |
| **CO3** | To Apply the Linux commands to implement the Shell Programming applications. |

| *SN* | *Contents of Module* | *Hrs* | *COs* |
|---|---|---|---|
| **1** | **Unit-1: Introduction**<br>**1.1** Introduction of an Operating System<br>**1.2** Components of an OS<br>**1.3** Types of Operating System: Batch OS, Time-Sharing OS, Distributed OS, Network OS, Real-Time OS.<br>**1.4** Architecture of Linux system<br>**1.5** Process and States of Process | **6** | **CO1 CO2** |
| **2** | **2. Linux Operating System**<br>**2.2** Brief History of Linux<br>**2.3** features of Linux OS | **6** | **CO2 CO3** |

| *SN* | *Contents of Module* | *Hrs* | *COs* |
|---|---|---|---|
| | **2.4** Benefits of Linux<br>**2.5** Basic commands of Linux: pwd, cd, ls, more, less, echo, clear, kill, ps, man, cal, date, who, who am I, wc, mkdir, rmdir, rm, sort. | | |

## REFERENCE BOOKS:


1. Peterson Silberschats, Galvin (2005), Operating System Concepts, Addition Wesley Publication. ISBN-10: 8126554274 ISBN-13: 978-8126554270
2. Peterson, (2007), Linux: Complete Reference, 6th Edition, TMH, ISBN: 9780070222946
3. Foster Johnson Welch, Anderson,(2006),Beginning Shell Scripting, Wiley India (Wrox), ISBN:9780764597916


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 |
|---|---|---|---|---|---|
| **CO1** | 1 | --- | --- | ---- | ----- |
| **CO2** | --- | 1 | 2 | ---- | ---- |
| **CO3** | --- | ---- | 2 | --- | 3 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Utilize | Develop |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | | | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | | | |

| | **Practical Assignments:** |
|---|---|
| 1 | Demonstration of Linux commands with attributes: - pwd, cd, ls, more, less, echo, clear, kill, ps, man, cal, date, who, who am I, wc, mkdir, rmdir, rm, sort. |
| 2 | Write a shell script to display student information |
| 3 | Write a shell script to display addition of three number from runtime user input |
| 4 | Write a shell script to display first 20 terms of Fibonacci series. |
| 5 | Write a shell script to display current time of system and display the message according to the time. |
| 6 | Write a shell script to check the user is login or not and say hello. |
| 7 | Write a shell script to calculate factorial of a number. |
| 8 | Write a shell script to check number is divisible by 7 or not. |
| 9 | Write a shell script to check number is prime or not. |
| 10 | Write a shell script to check number is palindrome or not. |
| 11 | Write a shell script to check number is Armstrong or not. |
| 12 | Write a shell script to check number is even or odd. |

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FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Applications
B.C.A. (BACHELOR OF COMPUTER APPLICATION) PROGRAMME BATCH 2024-28

## SEMESTER: II

## BCA-AEC-128 Professional Communication - II

| | |
|---|---|
| Course Title: Professional Communication - II | Course Type: AEC |
| Course Code: BCA-AEC-128 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course is designed to enhance students' proficiency in public speaking, presentation, cross-cultural communication, and business correspondence. The course covers effective negotiation, telephonic communication, and interview techniques, along with strategies for making impactful presentations. Students will also explore the dynamics of cross-cultural communication and the use of technology-enabled tools to facilitate professional interactions. Additionally, the course provides practical guidelines for writing business letters, resumes, and cover letters, ensuring that students can create professional documents that meet industry standards.

**Course Objectives:**

- To develop skills in public speaking and presentation, focusing on effective negotiation, telephonic communication, interviews, group discussions, and delivering impactful presentations.
- To understand and apply the principles of cross-cultural communication, leveraging technology-enabled communication tools to improve professional interactions in a globalized environment.
- To master the techniques of writing business correspondence, including crafting various types of business letters, creating professional resumes, and writing effective cover letters

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | -- | ✓ | -- | ✓ | -- |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Demonstrate** proficiency in public speaking and presentation, effectively conducting negotiations, participating in interviews, and contributing to group discussions. |
| **CO2** | **Apply** cross-cultural communication strategies and utilize technology-enabled communication tools to enhance professional interactions in diverse cultural settings. |
| **CO3** | **Create** well-structured business documents, including business letters, resumes, and cover letters, following industry standards and best practices. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **Unit – I Public Speaking and Presentation**<br>1.1. Effective Negotiation: Elements, Process and General Guidelines<br>1.2. Telephonic Conversation<br>1.3. Conducting & Facing Interviews<br>1.4. Conducting & Participating in Group Decisions<br>1.5. Essentials for Presentation | 12 | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 1.6. Making Presentations: Content and Organizing<br>1.7. Delivering a Presentation | | |
| 2 | **Unit – II Cross-Cultural Communication and Technology-Enabled Communication**<br>2.1 Concept of Cross-Cultural Communication<br>2.2 Factors affecting Cross-Cultural Communication<br>2.3 Strategies and Tips to improve Cross-Cultural Communication<br>2.4 Technology-Enabled Communication<br>2.5 Technology-Based Communication tools: Advantages and Disadvantages | 6 | **CO2** |
| 3 | **Unit – III Writing Business Correspondence and Documents**<br>3.1 Principles of Writing Business Letters<br>3.2 Kinds of Business Letters<br>3.3 The Resume: Structure, Format<br>3.4 To-Do & Not-To-Do<br>3.5 Instructions for Effective Resume<br>3.6 Uncovering the Cover Letters | 6 | **CO3** |

## REFERENCE BOOKS:


1. Business Communication: Neha Nigam, Digital Publishing House
2. Business Communication: R. C B, Ane Books Pvt. Ltd
3. Text Book of Communication Skills: D. Amutha & S. Vithya, Manglam Publications, 2023


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| **CO2** | 2 | 1 | 2 | 1 | 2 | 2 | 2 |
| **CO3** | 3 | 2 | 3 | 2 | 3 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation (20)** | ✓ | ✓ | - | ✓ | ✓ | - |
| **End Semester Examination (30)** | ✓ | ✓ | - | ✓ | ✓ | - |

# Semester III

**KCES's Institute of Management and Research (Autonomous), Jalgaon**
FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application
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## SEMESTER: III
## BCA-DSC-231 - Data & File Structure

| | |
|---|---|
| Course Title: Data & File Structure | Course Type: DSC |
| Course Code: BCA-DSC-231 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**
This course offers a comprehensive introduction to data structures, covering both linear and non-linear structures essential for efficient data management and algorithm development. It begins with foundational concepts such as data types, abstract data types (ADTs), and algorithm design techniques. Students will explore arrays, sorting and searching methods, stacks, queues, and various types of linked lists. The course further delves into non-linear structures like trees and graphs, including traversal techniques and algorithms such as Kruskal's for minimum spanning trees. Practical applications and memory representations are emphasized to strengthen problem-solving skills.

**Course Objectives:**
1. To understand the concepts of data structures and algorithm design methods.
2. To implement and use of sequential data structures such as arrays, searching and sorting.
3. To understand and implement data structure like stack, queue and link list.
4. To learn non-linear data structures Tree and Graph, their algorithms and applications.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Demonstrate** understanding of fundamental data structures and algorithm design techniques, Sorting and Searching. |
| **CO2** | **Implement** and **apply** linear data structures such as stacks, queues, and linked lists in solving computational problems. |
| **CO3** | **Analyze** and **implement** non-linear data structures like trees and graphs, along with their associated algorithms and real-world applications. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT -I Introduction to Data Structure:**<br>1.1 Data<br>1.2 Data Structure Concepts<br>1.3 Types of data structures, Data types<br>1.4 ADT (Abstract Data Type)<br>1.5 Algorithm, Algorithm Design Techniques. Array, Representations of Array in memory and Operations on array. | 8 | CO1 |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 1.6 **Sorting:** Bubble Sort, Selection Sort, Insertion Sort. Merge sort. Quick sort.<br>1.7 **Searching:** Linear and Binary search. | | |
| 2 | **UNIT –II Linear Data Structure**<br>2.1 **Stack:** Introduction, Operations on stack – PUSH, POP, Traverse, Applications of Stack- Infix to Postfix, Evaluation of Postfix expression, Recursion.<br>2.2 **Queue:** Introduction, Operations on queue – Insert, Delete, Traverse, Types of Queues - Circular Queue, Priority Queue and DeQueue.<br>2.3 **Linked List:** Introduction, Dynamic representation, Types – Singly, doubly, singly circular, doubly circular. | 8 | CO2 |
| 3 | **UNIT –III Non-Linear Data Structure**<br>3.1 **Tree:** Concept, Tree Data Structure, Tree Terminology, Binary Tree – Representation in memory. Types of tree: Full, Complete. Traversal: Non-Recursive - Inorder, Preorder, Postorder,<br>3.2 **Graph:** Concept, Graph Terminologies, Representation in memory: Adjacency List, Adjacency Matrix, Path Matrix, Weighted Matrix. Spanning Tree, Minimum Spanning Tree Problem-Kruskal's Algorithm. | 8 | CO3 |

## REFERENCE BOOKS:


1. Horowitz, Sahni, Mehta, (2008), Fundamentals of Data Structures in C++, 2nd Edition, Universities Press, , ISBN 10: 8173716064 ISBN 13: 9788173716065
2. Schaum's Outline of Data Structures with C++ ISBN-10: 0071353453
3. Data Structure: Balucha ISBN: 978-93-833-0383-0 4


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 3 | 1 | 1 | 2 | 2 | 2 |
| **CO2** | 3 | 3 | 1 | 1 | 3 | 2 | 2 |
| **CO3** | 3 | 3 | 1 | 2 | 3 | 3 | 3 |

**Assessment Pattern**

| Bloom's Category | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | ✓ | | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | | |

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**SEMESTER: III**

# BCA-DSC-232 – Lab on Data & File Structures

| | |
|---|---|
| Course Title: Lab on Data & File Structure | Course Type: DSC |
| Course Code: BCA-DSC-232 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 0:0:2 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course offers a comprehensive introduction to data structures, covering both linear and non-linear structures essential for efficient data management and algorithm development. It begins with foundational concepts such as data types, abstract data types (ADTs), and algorithm design techniques. Students will explore arrays, sorting and searching methods, stacks, queues, and various types of linked lists. The course further delves into non-linear structures like trees and graphs, including traversal techniques and algorithms for minimum spanning trees. Practical applications and memory representations are emphasized to strengthen problem-solving skills.

**Course Objectives:**

1. To understand the concepts of data structures and algorithm design methods.
2. To implement and use of sequential data structures such as arrays, searching and sorting.
3. To understand and implement data structure like stack, queue and link list.
4. To learn non-linear data structures Tree and Graph, their algorithms and applications.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Demonstrate** understanding of fundamental data structures and algorithm design techniques, Sorting and Searching. |
| **CO2** | **Implement** and **apply** linear data structures such as stacks, queues, and linked lists in solving computational problems. |
| **CO3** | **Analyze** and **implement** non-linear data structures like trees and graphs, along with their associated algorithms and real-world applications. |

**Practical Assignments:**

| | |
|---|---|
| 1 | Implementation of Array operations Insertion, Deletion and Display. |
| 2 | Implementation of Stack using array . |
| 3 | Implementation of infix to postfix using stack . |
| 4 | Implementation of Queue using array. |
| 5 | Implementation of Linear Link List. |
| 6 | Implementation of Linear Search. |
| 7 | Implementation of Binary Search. |

| | |
|---|---|
| 8 | Implementation of Bubble sort. |
| 9 | Implementation of Selection sort. |
| 10 | Implementation of Insertion sort. |
| 11 | Implementation of Quick sort. |
| 12 | Implementation of Merge sort. |
| 13 | Implementation of Binary Search Tree. |
| 14 | Implementation of In-order, Pre-order and Post-order Traversals. |
| 15 | Implement the program for graph representation in memory. |

## REFERENCE BOOKS:


4. Horowitz, Sahni, Mehta, (2008), Fundamentals of Data Structures in C++, 2nd Edition, Universities Press, , ISBN 10: 8173716064 ISBN 13: 9788173716065
5. Schaum's Outline of Data Structures with C++ ISBN-10: 0071353453
6. Data Structure: Balucha ISBN: 978-93-833-0383-0 4


**Assessment Pattern**

| Bloom's Category | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | ✓ | | ✓ |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | | ✓ |

**KCES's Institute of Management and Research (Autonomous), Jalgaon**

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

**SEMESTER: III**

**BCA-DSC-233 Mathematical Foundation - I**

| | |
|---|---|
| Course Title: Mathematical Foundation - I | Course Type: SYBCA |
| Course Code: BCA DSC-233 | Total Credits: 04 |
| Lectures: Tutorials: Practical: 4:0:0 | CIE Marks: 40 |
| Lecture Hours: 48 Hours | ESE Marks: 60 |

**Course Description:**

This course focuses on Mathematics oriented toward Computer Science. Students will learn to analyse problems and solve them using concepts of mathematics. The course consists of fundamental concepts of Mathematics like Logic, Sets, Matrix, Functions, Relations.

**Course Objectives:**

1. Understand the concepts of mathematical logic to solve problems
2. Understand sets; apply operations on sets and algebraic structures.
3. Apply the mathematical concepts such as relations and functions.
4. Analyze the matrix and determinants.
5. To understand and represent data graphically.

**Teaching/ Evaluation Pedagogy:**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** mathematical logic to solve problems. |
| **CO2** | **Apply** operations on sets and algebraic structures. |
| **CO3** | **Apply** the mathematical concepts such as relations and functions. |
| **CO4** | **Analyze** the matrix and determinants. |
| **CO5** | **Apply** the concepts graph theory. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT-I Mathematical logic**<br>1.1 Meaning of Statement<br>1.2 Primitive and Compound Statements<br>1.3 Truth Values of a Statement<br>1.4 Logical Operations<br>1.5 Truth Tables & Construction of Truth Tables<br>1.6 Equivalence of Logical Statements<br>1.7 Tautology and Contradiction | 8 | **CO1** |
| 2 | **UNIT–II Sets**<br>2.1 Meaning of a Set<br>2.2 Methods of Describing a Set -Tabular Form, Set Builder Form<br>2.3 Types of a Set: Finite Set, Infinite Set, Empty Set, Subset,<br>2.4 Universal Set, Equal Sets, Overlapping Sets, Disjoint Sets, Complementary Set. Operations on Sets: Union of Sets, Intersection of Sets, Difference of Sets, Cartesian Product of two | 8 | **CO2** |

| SN | Contents of Module | Hrs | COs |
|---|---|---|---|
| | Sets<br>2.5 Venn Diagrams | | |
| 3 | **UNIT - III Relation and Function**<br>3.1 Relations: and Their Properties, n-ary Relations and Their Applications, Representing Relations, Closures of Relations, Equivalence Relations, Congruence Relation.<br>3.2 Function: Meaning of a Function, Methods of Describing a Function, Meaning of Domain, Codomain, Image, and Range of a Function.<br>3.3 Types Of a Function: One-One Function, One Two Functions, Many-One Function, Constant Function, Identity Function, Polynomial Function, Linear Function, Rational Function, Exponential Function, Logarithmic Function, Explicit And Implicit Functions, Even Function, Odd Function, Composite Function | 8 | **CO3** |
| 4 | **UNIT –IV Matrices**<br>4.1 Meaning and Order of Matrix<br>4.2 Types of Matrix<br>4.3 Equality of Matrices,<br>4.4 Multiplication of Matrix by A Scalar.<br>4.5 Addition of Matrices<br>4.6 Subtraction of Matrices<br>4.7 Multiplication of Matrices | 8 | **CO4** |
| 5 | **UNIT -V Determinants**<br>5.1 Algebra of Matrices.<br>5.2 Evaluation of Second and Third Order Determinants<br>5.3 Minor, Cofactor of an Element Adjoint of Matrix,<br>5.4 Meaning of Inverse of a Matrix,<br>5.5 Matrix Inversion by Adjoint Method. | 8 | **CO5** |
| 6 | **UNIT-VI Graph Theory**<br>6.1 Introduction of a Graph<br>6.2 Foundational Concepts: **Vertices and Edges, Graph Types, Paths, Cycles, Walks and Trees**<br>6.3 **Shortest Path Algorithms**<br>6.4 **General Rules for Graphical Representation of Data**<br>6.5 **Principles of Graphical Representation**<br>6.6 Applications | 8 | **CO5** |

## REFERENCE BOOKS:


1. Sancheti&Kapoor, Business Mathematics, Sultan Chand & Co. New Delhi.
2. Anand Sharma, Business Mathematics & Analytics Himalaya Publishing
3. Dr.Ramnath Dixit and Dr.Jinendra Jain Business Mathematics Himalaya Publishing
4. G. S. S. BhishmaRao, Mathematical Foundation of Computer Science, Scitech publication, India Pvt. LTD. Edition 2nd ISBN 0 – 07 – Y85493 –9
5. Tremblay, Discrete Mathematics, TATA Mcgraw Hill ISBN 13:9780074631133


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 3 | 2 | 2 | 1 | 1 | 2 |
| **CO2** | 3 | 3 | 2 | 2 | 2 | 1 | 1 |
| **CO3** | 3 | 3 | 2 | 1 | 2 | 1 | 2 |
| **CO4** | 3 | 2 | 3 | 3 | 3 | 1 | 2 |
| **CO5** | 3 | 3 | 3 | 2 | 3 | 2 | 2 |

**Assessment Pattern:**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | ✓ | - |

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FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

**SEMESTER: III**

**BCA-MIN-234 Management Information System - I**

| | |
|---|---|
| Course Title: Management Information System - I | Course Type: Minor |
| Course Code: BCA-MIN-234 | Total Credits: 04 |
| Lectures: Tutorials: Practical: 4:0:0 | CIE Marks: 40 |
| Lecture Hours: 48 Hours | ESE Marks: 60 |

**Course Description:**

This course introduces the fundamentals of Management Information Systems (MIS), focusing on their role in business operations, decision-making, and the use of IT in functional areas and e-business.

**Course Objectives:**

1. To enable students to apply MIS concepts in solving real-world business problems.
2. To familiarize students with key components and technologies used in MIS environments.
3. To develop skills in managing data resources and using database structures effectively.
4. To understand how IT helps build competitive, agile, and customer-focused enterprises.
5. To analyze emerging trends in MIS including e-business, virtualization, and knowledge systems.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Describe** the basic concepts of MIS and its significance in business organizations. |
| **CO2** | **Explain** the structure and components of information systems and their classifications. |
| **CO3** | To **understand** the structure and role of MIS in Finance and Human Resource functions. |
| **CO4** | To **explore** how MIS supports operational and strategic goals within the functional areas of production and marketing. |
| **CO5** | To **explore** how businesses use technology to become virtual and share knowledge. |
| **CO6** | To **analyze** the principles of system analysis, design, and implementation within MIS frameworks. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT -I Introduction to MIS**<br>1.1 Data vs. Information, Information System Concept<br>1.2 Definition and Purpose of MIS<br>1.3 Role of MIS in Business Organizations<br>1.4 Types of Information System<br>1.5 Managerial Challenges of Information Technology | 8 | **CO1** |
| 2 | **UNIT –II Components and Types of MIS**<br>2.1 What is System? Types of Systems: Open, Closed | 8 | **CO2** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 2.2 Feedback and Control<br>2.3 Components of Information Systems<br>2.4 Information System Resources<br>a. People Resources<br>b. Hardware Resources<br>c. Software Resources<br>d. Data Resources<br>e. Network Resources<br>2.5 TPS, DSS, EIS,KMS | | |
| 3 | **UNIT –III MIS in Functional Areas-I**<br>3.1 MIS in Finance<br>a. Introduction<br>b. Features<br>c. Functions<br>d. Model of Financial Information System<br>e. Subsystems of Financial IS<br>f. Input and Output of Financial IS<br>3.2 MIS in Human Resources<br>a. Introduction<br>o Information Flow in HRM<br>o Functions of HRM<br>o Files of HRM<br>o Subsystems of HRM | 8 | **CO3** |
| 4 | **UNIT –IV MIS in Functional Areas-II**<br>4.1 MIS in Production<br>a. Introduction<br>b. Task<br>c. Sources<br>d. Types<br>e. Responsibilities<br>f. Benefits<br>4.2 MIS in Marketing<br>o Introduction<br>o Model of Marketing System<br>o Different Parts<br>o Input and Output of MKIS<br>o Sources of MKIS<br>o Benefits of MKIS | 8 | **CO4** |
| 5 | **UNIT-V Competing with Information Technology**<br>5.1 The Role of Information Technology in MIS<br>5.2 Becoming an Agile Company<br>5.3 Creating a Virtual Company<br>a. Virtual Company Strategies<br>5.4 Building a Knowledge Creating Company | 8 | **C05** |
| 5 | **UNIT – VI System Analysis and Design**<br>6.1 Concept of System<br>6.2 Types of Systems – Open, Closed, Deterministic, Probabilistic, etc.<br>6.3 Relevance of choice of System in MIS | 8 | **CO6** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 6.4 Integration of Organization Systems and Information Systems<br>6.5 System Analysis, Design and Implementation | | |

## REFERENCE BOOKS:


1. O'Brien, James A., "Management Information System", Tata McGraw Hill, 2003 ISBN 81-203-1282-1
2. Javadekar, W. S. "Management Information System", Tata Mac Graw Hill Publication,2003. ISBN0-07-282256-2
3. Basandra, Suresh K., "Management Information System", Wheeler Publishing, New Delhi,999.
4. Arora, Ashok & Bhatia, Akshaya, "Management Information System", Excel Books, New Delhi, 2001 ISBN: 978-81-7446-781-2


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| **CO2** | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **CO3** | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| **CO4** | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **CO5** | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| **CO6** | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | - | ✓ | - | - |
| **End Semester Examination (60)** | ✓ | ✓ | - | ✓ | - | - |

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FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Applications

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

**SEMESTER: III**

**BCA-OE-235-A Entrepreneurship Development**

| | |
|---|---|
| Course Title: Entrepreneurship Development | Course Type: OE |
| Course Code: BCA-OE-235-A | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:** Entrepreneurship plays an influential role in the economic growth and development of the country. As the world economy is changing so is the dynamism of the business world. The aim of this course is to in still and kindle the spirit of Entrepreneurship amongst students. The idea of this course is to create "job providers rather than job seekers". By the end of the course, students will have gained insights into both the challenges and opportunities of entrepreneurship, preparing them to pursue entrepreneurial ventures or contribute effectively to entrepreneurial environments.

**Course Objectives:**

1. **To understand** the fundamental concepts, evolution, and roles of entrepreneurs in business and society.
2. **To analyze** the significance, challenges, and contributions of women entrepreneurs in the economic landscape.
3. **To explore** the psychological and motivational factors that drive entrepreneurial behavior.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** the concept, evolution, characteristics, and types of entrepreneurs and differentiate them from managers. |
| **CO2** | **Evaluate** the role, growth, and problems faced by women entrepreneurs in India and globally. |
| **CO3** | **Apply** motivation theories and factors to **understand** entrepreneurial drive and behavior. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT -I Introduction to Entrepreneur**<br>**1.1** Evolution of the concept of Entrepreneur<br>1.2 Meaning and Characteristics of an Entrepreneur<br>1.3 Distinction between an Entrepreneur and a Manager<br>1.4 Functions and Types of Entrepreneur | 8 | **CO1** |
| 2 | **UNIT –II Women Entrepreneurship**<br>2.1 Concept of Women Entrepreneurship<br>2.2 Functions of Women Entrepreneurship<br>2.3 Growth of Women Entrepreneurship<br>**2.4** Problem of Women Entrepreneurship | 8 | **CO2** |
| 3 | **UNIT –III Small Business** | 8 | **CO3** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 3.1 Concept; Definition, Role of Small Business in the Modern Indian Economy<br>3.2 Steps for starting a small industry,<br>3.3 Registration as SSI, advantages and problems of SSIs<br>3.4 Govt. Policies for SSI | | |

## REFERENCE BOOKS:


1. Entrepreneurial Development– Dr. S. S. Khanka, S. Chand and Company Ltd.
2. Entrepreneurial Development and Project Development-Text and Cases – Neeta Baporikar- Himalaya Publishing House
3. Entrepreneurial Development- S. L. Gupta and Arun Mittal- International Book House Pvt. Ltd.
4. Entrepreneurial Development – Dr. C. B. Gupta, Dr. N. P. Srinivasan – Sultans Chand and Sons
5. Dynamics of Entrepreneurial Development and Management- Vasant Desai- Himalaya Publishing House


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO2** | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| **CO3** | 1 | 1 | 1 | 1 | 3 | 2 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyse | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | | ✓ | | |
| **End Semester Examination (60)** | ✓ | ✓ | | ✓ | | |

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FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

**SEMESTER: III**

**BCA- OE-235-B Ecommerce & M-Commerce**

| | |
|---|---|
| Course Title: Ecommerce & M-Commerce | Course Type: OE |
| Course Code: BCA-OE-235-B | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

An Ecommerce & M-Commerce course aims to equip students with the knowledge and skills to manage and succeed in online businesses, particularly those focused on mobile commerce. The course covers various aspects of e-commerce, including business models, website design, digital marketing, logistics, and legal and security aspects. M-commerce, a subset of e-commerce, focuses on transactions conducted through mobile devices, such as smartphones and tablets.

**Course Objectives:**

The objectives of the course are to introduce the concept of electronic commerce, and to understand how electronic commerce is affecting business enterprises, governments, consumers and people in general. In addition, this skill enhancement paper will provide elementary knowledge to students to acquaint with the art and skill of developing websites using relevant software tools.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | Students will be able to **Define and explain** e-commerce and m-commerce concepts. As well as difference between various business models. And impact of mobile devices on commerce. |
| **CO2** | Students will be able to **Understand** how technology supports online and mobile commerce. And Explain payment systems and security in digital commerce.<br>With Comparison mobile app and web-based solutions. |
| **CO3** | Students will be able to **Understand** concepts to real-world digital commerce platforms. As well as ethical and legal frameworks. Analyse current and future trends in E-commerce. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT -I Introduction to E-Commerce and M-Commerce**<br>1.1 Definition and Features of E-Commerce & M-Commerce<br>1.2 E-Business vs E-Commerce<br>1.3 Evolution and History of E-Commerce<br>1.4 Business Models (B2B, B2C, C2C, C2B, G2C) | 8 | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 1.5 Benefits and Limitations<br>1.6 M-Commerce Overview: Growth and Importance<br>**1.7** Key Differences Between E-Commerce and M-Commerce | | |
| 2 | **UNIT –II Technologies and Infrastructure**<br>2.1 Internet and Web Technologies (HTML, HTTP, HTTPS)<br>2.2 E-Commerce Website Design and Development<br>2.3 Hosting, Domains, and Web Servers<br>2.4 Payment Gateways and Online Payment Systems<br>2.5 Mobile Devices and Wireless Technologies (GPRS, 4G, 5G, NFC, QR codes)<br>2.6 Security and Encryption (SSL, Digital Certificates, Firewalls)<br>2.7 Mobile Apps vs Mobile Web | 8 | **CO2** |
| 3 | **UNIT –III Applications, Strategies, and Trends**<br>3.1 E-Commerce in Retail, Education, Banking, and Services<br>3.2 M-Commerce Applications (Mobile Banking, Mobile Wallets, Location-Based Services)<br>3.3 E-Marketing and Mobile Marketing (SEO, SEM, SMS, Social Media)<br>3.4 Legal, Ethical, and Regulatory Issues<br>3.5 E-Commerce and M-Commerce Trends: AI, Big Data, IoT<br>3.6 Case Studies (e.g., Amazon, Flipkart, Paytm, Google Pay,<br>a. Alibaba) | 8 | **CO3** |

## REFERENCE BOOKS:


- *E-Commerce 2023: Business, Technology, and Society* by Kenneth C. Laudon & Carol Guercio Traver
- *Mobile Commerce: Technology, Theory and Applications* by Brian Mennecke & Troy Strader
- *Introduction to E-Commerce* by Amir Manzoor
- *M-Commerce: Global Experiences and Perspectives* by Nansi Shi.
- Kenneth C. Laudon, E-Commerce: Business, Technology, Society, 4th Edition, Pearson.
- S. J. Joseph, E-Commerce: An Indian perspective, PHI.


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 1 | 2 | 1 | 2 | 1 | 1 |
| **CO2** | 3 | 1 | 3 | 2 | 3 | 1 | 1 |
| **CO3** | 2 | 1 | 2 | 1 | 2 | 2 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | ✓ | ✓ | ✓ | |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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**SEMESTER: III**

**BCA-VSC-236 Lab on Web Technology-III**

| | |
|---|---|
| Course Title: Lab on Web Technology-III | Course Type: VSC |
| Course Code: BCA-VSC-236 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 0:0:2 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:** This course introduces students to React.js, a powerful and widely-used JavaScript library for building dynamic, component-based user interfaces. The course covers the fundamentals of React including JSX, components, props, state, hooks, event handling, and routing, as well as integration with APIs and basic deployment techniques.

**Course Objectives:**

- To **introduce the fundamentals of React.js** and enable students to build component-driven, dynamic single-page applications (SPAs).
- To develop skills for state management, event handling, routing, and building reusable UI components in React.
- To enable students to create and manage **RESTful APIs** using **Node.js and Express.js**, and to connect these APIs to **MongoDB** using **Mongoose**.
- To implement **CRUD operations** and perform full-stack data flow from the React frontend to the MongoDB backend via API endpoints.
-

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** the fundamentals of React.js for building dynamic and component-based front-end web applications**.** |
| **CO2** | **Develop** and **manage** stateful and reusable components using React features such as props, state, hooks, and routing**.** |
| **CO3** | **Design** and **build** RESTful APIs using Node.js and Express, integrating MongoDB as a backend database via the Mongoose library**.** |

| *SN* | *Contents of Module* |
|---|---|
| 1 | Setting Up React Environment and Creating a Basic React Application .(Install Node.js, NPM, Create React App) |
| 2 | JSX and Component Creation Using Props. |
| 3 | State Management in React Using use State: Building a Counter App |
| 4 | Event Handling in React: Managing Button Clicks and Input Changes |
| 5 | Rendering Dynamic Lists in React Using Array Mapping and Key Props |
| 6 | Building Controlled Forms in React: Managing State and Implementing Basic Validation |
| 7 | Styling React Components: Implementing CSS Modules and Inline Styles |

| *SN* | *Contents of Module* |
|---|---|
| 8 | **Conditional styling in React** using both **CSS Modules** and **inline styles.** (Toggle Button with Conditional Styling). |
| 9 | Developing a Personal Portfolio Website with React and Bootstrap |
| 10 | Setting Up a Node.js and Express.js Development Environment: A Practical Guide |
| 11 | Implementing Basic Routing in Express.js: Creating Multiple GET Endpoints" |
| 12 | Building a RESTful API with Express.js: A Hands-On Guide to HTTP Methods on (Customer details). |
| 13 | Building RESTful APIs: Managing JSON POST Requests in Express.js (Employee Post Method). |
| 14 | Implementing CRUD Operations (Students)Using RESTful API and HTTP Methods. |
| 15 | Setting up Mongo DB Environment: Teachers API with MongoDB by using MongoDB Compass. |
| 16 | Mini Project on Inventory Management System. |

## REFERENCE BOOKS:


1. **"**Full Stack Development with MongoDB**"** by Shama Naz.
2. "REACTJS DEVELOPMENT" by Sandeep Bisht.
3. "Full-Stack React, Type Script, and Node" by David Choi.


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **3** | **1** | **3** | **-** | **-** |
| **CO2** | **3** | **2** | **3** | **1** | **3** | **-** | **-** |
| **CO3** | **3** | **2** | **2** | **3** | **3** | **1** | **1** |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyse | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | - | ✓ | ✓ | - |
| **End Semester Examination (60)** | ✓ | ✓ | - | ✓ | ✓ | - |

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## SEMESTER: III

### BCA-AEC-237 Personality Development-I

| | |
|---|---|
| Course Title: Personality Development-I | Course Type: AEC |
| Course Code: BCA-AEC-237 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course enhances personal and professional development through self-awareness, personality assessment, and goal setting. It covers key concepts like self-monitoring, perception, attitude, and assertiveness. Students will also learn interpersonal skills, conflict resolution, and professional etiquette to thrive in academic and workplace environments.

**Course Objectives:**

- To develop self-awareness and confidence in students.
- To improve communication skills, focusing on both verbal and non-verbal communication.
- To introduce essential interpersonal skills and professional etiquette required in personal and academic settings.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Assess** personality traits, identify strengths and weaknesses, and set personal and professional goals with time management strategies. |
| **CO2** | **Demonstrate** effective communication skills including body language, active listening, and professional writing. |
| **CO3** | **Apply** interpersonal skills to manage relationships, resolve conflicts, and exhibit professional etiquette. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **Unit 1: Personality**<br>1.1 Definition – Determinants – Personality Traits –Theories of Personality – Importance of Personality Development<br>1.2 Self-Awareness: Identifying personal strengths, weaknesses, values, and personality traits.<br>1.3 SWOT – Meaning – Importance- Application – Components.<br>1.4 Personality Types: Introduction to basic personality types (e.g., Myers-Briggs Type Indicator, Big Five).<br>1.5 Goal Setting: SMART goals (Specific, Measurable, Achievable, Relevant, Time-bound).<br>a. How to create short-term and long-term academic and career goals. | 8 | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 1.6 Time Management Basics: Introduction to techniques like the Eisenhower Matrix. | | |
| 2 | **Unit 2: Self-Monitoring**<br>2.1 Meaning – High self – monitor versus low self-monitor – Advantages and Disadvantages self-monitor<br>2.2 PERCEPTION- Definition- Factor influencing perception- Perception process –Errors in perception – Avoiding perceptual errors.<br>2.3 ATTITUDE – Meaning- Formation of attitude – Types of attitude - Measurement of Attitudes – Barriers to attitude change – Methods to attitude change.<br>2.4 ASSERTIVENESS - Meaning – Assertiveness in Communication – Assertiveness Techniques – Benefits of being Assertive – Improving Assertiveness | 8 | **CO2** |
| 3 | **UNIT 3: Interpersonal Skills and Professional Etiquette**<br>3.1 Building Positive Relationships: How to build and maintain professional relationships with peers and faculty.<br>3.2 Conflict Resolution: Basic conflict management strategies in personal and academic settings.<br>3.3 Professional Etiquette: Importance of dressing appropriately, communication etiquette, and email/telephone manners.<br>3.4 Teamwork: The importance of collaboration and working efficiently with others in group settings. | 8 | **CO3** |

## REFERENCE BOOKS:


1. Dr.S. Narayana Rajan, Dr. B. Rajasekaran, G. Venkadasalapthi, V. Vijuresh Nayaham and Herald M.Dhas, Personality Development, Publication Division, Manonmaniam Sundaranar University, Tirunelveli
2. Stephan P.Robbins, Organisational Behaviour, Tenth Edition, Prentice Hall of India Private Limited, New Delhi,2008


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| **CO2** | 1 | 2 | 2 | 1 | 3 | 1 | 1 |
| **CO3** | 1 | 1 | 2 | 1 | 3 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyse | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| | | | | | | |
|---|---|---|---|---|---|---|
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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**SEMESTER: III**

**BCA-FP-238 Field Project**

| | |
|---|---|
| Course Title: Field Project | Course Type: FP |
| Course Code: BCA-VSC-236 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 0:0:2 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

To enable students to gain practical exposure by assessing and analysing real-time IT projects implemented in the industry or public domain. This project aims to enhance students' research, analytical, and presentation skills through field-based investigation and reporting.

**Course Objectives:**

1. To enable students to assess real-time IT systems and understand their design, implementation, and user impact.
2. To develop students' ability to conduct field-based research using primary data collection and analytical tools.
3. To encourage innovation and problem-solving through observation and evaluation of existing IT infrastructure.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | Students will be able to critically analyze and assess existing IT systems in real-world settings. |
| **CO2** | Students will gain hands-on experience in collecting, analyzing, and interpreting primary data using different tools. |
| **CO3** | Students will enhance their report writing, presentation, and communication skills through structured documentation and viva voce. |

| *Contents of Module* |
|---|
| **Field Work Participation:**<br>• Each student must undergo fieldwork during the 3rd semester.<br>• It may be carried out individually or in a group of two students. |
| **Project Theme:**<br>• The project must be based on the assessment of an IT project already implemented in real time.<br>• It must be research-oriented, innovative, and problem-solving.<br>• The topic must be finalized in consultation with an internal faculty guide. |
| **Suggested Project Areas:**<br>• Field work must focus on live and functional IT systems, such as (For example):<br>• E-Commerce Websites (e.g., Amazon, Flipkart) |

| *Contents of Module* |
|---|
| • E-Governance Platforms (e.g., Aadhaar, Passport Seva)<br>• University/College IT Services (e.g., student portals, exam systems)<br>• Government Digital Portals (e.g., UMANG, Digilocker)<br>• E-Banking Systems (e.g., online banking apps, ATM software)<br>• Railway Reservation Systems (e.g., IRCTC)<br>• Bus Ticketing Systems (e.g., RedBus)<br>• Online Travel Booking Platforms (e.g., MakeMyTrip) |
| **Data Collection & Analysis:**<br>• The project must be based on primary data collected directly from users/stakeholders.<br>• A minimum sample size of 100 respondents is mandatory.<br>  o Written in formal academic language<br>  o Include all sections such as Introduction, Objectives, Methodology, Data Analysis, Findings, and Conclusion<br>  o Certified by the internal guide<br>• Use of tools such as Advanced Excel or SPSS is encouraged for data analysis. |
| **Report Submission:**<br>• A detailed typed report must be prepared, certified by the guide, and submitted in two copies to the Head/Principal of the Institute. |
| **Presentation & Viva Voce:**<br>• At the end of the semester, a Viva Voce will be conducted.<br>• Each student must prepare and present a PowerPoint presentation summarizing their fieldwork.<br>  o Project title and objective<br>  o Brief on data collection and methodology<br>  o Key findings and analysis<br>  o Conclusion and recommendations<br>• Viva duration will be a minimum of 15 minutes per student. |

**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 2 | 3 | 3 | 2 |
| **CO2** | 2 | 1 | 1 | 2 | 2 | 3 | 3 |
| **CO3** | 1 | 1 | 2 | 1 | 2 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | - | ✓ | ✓ | - |
| **End Semester Examination (60)** | ✓ | ✓ | - | ✓ | ✓ | - |

# Semester IV

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**SEMESTER: IV**

**BCA-DSC-241 Database Management System**

| | |
|---|---|
| Course Title: Database Management System | Course Type: DSC |
| Course Code: BCA-DSC-241 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

The "Database Management System (DBMS)" course introduces students to the core concepts of database systems. Topics include DBMS architecture, data models, ER modelling, normalization, SQL, and transaction management. Students will learn to design and query relational databases using SQL and understand key principles like data integrity and ACID properties. The course emphasizes practical skills through hands-on exercises, preparing students for advanced database applications and real-world data handling.

**Course Objectives:**

- To provide a strong foundation in database concepts, architecture, and design using ER modeling and normalization techniques.
- To develop practical skills in SQL and relational algebra for effective data manipulation, querying, and transaction management.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** DBMS architecture, users, and ACID properties of transactions. |
| **CO2** | **Design** ER models and normalize relational schemas up to 4NF. |
| **CO3** | **Write** SQL queries and apply relational algebra for data manipulation and control. |

| *SN* | *Contents of Module* | *Marks* | *Hrs* | ***COs*** |
|---|---|---|---|---|
| 1 | **UNIT -I INTRODUCTION**<br>1.1 Database system application and purpose, Characteristics of DBMS.<br>1.2 Database Users, 1-tier, 2-tier and 3-tier architecture of DBMS along with its advantages.<br>1.3 Levels of Database Architecture'<br>1.4 Data Models, Transaction and states of transactions.<br>1.5 Desirable properties (ACID properties) of Transactions.<br>1.6 Data-schemas and instances, Data Independence, Role and responsibilities of DBA. | 08 | 06 | **CO1** |
| 2 | **UNIT –II DATABASE DESIGN AND E-R MODEL**<br>2.1 Overviews of Database Design | 10 | 08 | **CO2** |

| SN | Contents of Module | Marks | Hrs | COs |
|---|---|---|---|---|
| | 2.2 ER Modeling concepts, ER Diagrams.<br>2.3 Reduction to Relational Schemas, Extended ER Features.<br>2.4 Alternative notations for Modeling.<br>2.5 Cardinality constraints.<br>2.6 Atomic Domains and 1NF, Decomposition using Functional Dependencies (BCNF, 3NF and 4NF) | | | |
| 3 | **UNIT –III RELATIONAL DATABASES**<br>3.1 Structure of Relational Databases<br>3.2 Database Schemas, Keys, Schema diagrams, SQL data<br>3.3 types and Schemas.<br>3.4 Relational Query Languages, Relational Operation.<br>3.5 Overview of SQL- Basic Structure of SQL Queries- DDL,DML, DCL, TCL, DQL.<br>3.6 Basic Operations- Set Operations, Null Values<br>3.7 Aggregate Functions, and Nested Sub queries,<br>3.8 Modification of Databases. Join Expressions, Views,Transactions, Integrity Constraints, Authorization.<br>3.9 Functions and Procedures.The relational Algebra fundamental and extended Operations.<br>3.10 AWS Types of Databases - Amazon DynamoDB, Amazon Aurora, Amazon Relational Database Service (RDS), Amazon Time stream, Amazon Neptune, Amazon Quantum Ledger Database (QLDB), Amazon RDS on VMware | 12 | 10 | **CO3** |

## REFERENCE BOOKS:


1. Michael Kifer, Arthur Bernstein, P.M, Lewis and P.K. Panigrahi (2011), "Database Systems: An Application Oriented Approach", Second Edition, Pearson Education, 2011, ISBN: 9788131703748.
2. Fundamentals of Database Systems, Mark L Gillenson, 2nd Edition, John Wiley & Sons, 2011
3. Silberschatz, H.F.Korth, and S.Sudarshan (2011), "Database System Concepts", TMH Publications, Sixth Edition, 2011, ISBN: 978-007-132522-6.
4. Ramez Elmasri, Shamkant B. Navathe (2011), "Fundamentals of Database Systems" Seventh Edition, Pearson Education, 2011, ISBN: 978-0-13-397077-7.


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 1 | 3 | 2 | 1 | 1 |
| **CO2** | 3 | 1 | 2 | 3 | 2 | 1 | 1 |
| **CO3** | 3 | 2 | 2 | 3 | 3 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | ✓ | | | ✓ |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | | ✓ |

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**SEMESTER: IV**

**BCA-DSC-242 Lab on Database Management System**

| | |
|---|---|
| Course Title: Lab on Database Management System | Course Type: DSC |
| Course Code: BCA-DSC-242 | Total Credits: 02 |
| Practical: 02:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

The objective of this lab course is to understand the practical applicability of database management system concepts. Working on existing database systems, designing of database, creating relational database, analysis of table design.

**Course Objectives:**

- Understand and Apply SQL DDL, DML and data integrity constraints.
- Use SQL Clauses, Aggregate functions, string and date time functions.
- Perform set based operations, joins and create procedure.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | Execute DDL,DML commands and implement integrity constraints. |
| **CO2** | Apply SQL clauses, Aggregate functions, string and date time functions. |
| **CO3** | Create Procedure, apply joins and perform set based operations |

| ***SN*** | ***Practical List*** |
|---|---|
| 1 | Implement DDL Statement. • Create table , Modify table, Drop table |
| 2 | Implement DML Statement. • Adding/Modify/Delete data using Insert/ Update/ Delete. |
| 3 | Implement following Constraints. • NULL and NOT NULL, Primary Key Constraint, Foreign Key Constraint • Unique Constraint, Check Constraint, Default Constraint. |
| 4 | Implement following clauses. • Simple select clause • Accessing specific data with Where Clause • Ordered By/ Distinct/Group By Clause. |
| 5 | Implement Aggregate Functions. • AVG, COUNT, MAX, MIN, SUM, CUBE. |
| 6 | Implement all String functions. |
| 7 | Implement Date and Time Functions. |
| 8 | Implement use of UNION, INTERSECTION, SET DIFFERENCE. |
| 9 | Implement Nested Queries & all types of JOIN operation. |
| 10 | Implement practical performing different operations on a view. |
| 11 | Implement use of Procedure. |

**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 3 | -- | -- | -- | 2 | -- |
| **CO2** | -- | 3 | 3 | -- | 3 | -- | -- |
| **CO3** | -- | -- | 3 | -- | 3 | -- | -- |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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**SEMESTER: IV**

**BCA-DSC-243 Mathematical Foundation - II**

Course Title: Mathematical Foundation - II | Course Type: SYBCA

Course Code: BCA DSC-243 | Total Credits: 04

Lectures: Tutorials: Practical: 4:0:0 | CIE Marks: 40

Lecture Hours: 48 Hours | ESE Marks: 60

**Course Description:**

This course provides a comprehensive introduction to the mathematical and statistical principles that underpin computer science. It is designed to equip students with the necessary tools to understand, analyses computational methods.

**Course Objectives:**

1. To build the foundation of computer algorithms using mathematical base.
2. To apply statistical measures on the data and represent it graphically.
3. To relate practical examples to the probability theory.
4. To build the foundation for machine learning by probability theory.
5. Understand the concepts of Measures of Central Tendency and Measures of Dispersion.

**Teaching/ Evaluation Pedagogy:**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Solve** applications involving permutations and combinations. |
| **CO2** | **Apply** problem-solving techniques needed to accurately calculate probabilities. |
| **CO3** | **Develop** problem-solving techniques needed to accurately calculate probabilities. |
| **CO4** | **Analyze** statistical data using measures of central tendency, dispersion and location. |
| **CO5** | **Understand** the various measures of dispersion to analyzed the spread of data. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT- I Statistics**<br>1.1 Meaning of Statistics<br>1.2 Importance and Limitations of statistics<br>1.3 Meaning of data, Raw data, Primary data, Secondary data<br>1.4 Variable and attribute, Types of variable: - districts and continuous<br>1.5 Meaning of Population and sample<br>1.6 Introduction to methods of sampling: - simple random sampling, stratified random sampling and systematic random sampling. | 8 | **CO1** |
| 2 | **UNIT –II Permutation and Combination**<br>2.1 Meaning of permutation and combination<br>2.2 Statement of fundamental<br>2.3 Principle of counting | 8 | **CO2** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 2.4 Determination of number of permutations (all N Objects are different)<br>2.5 Determination of Number of Combination (all N objects are different). | | |
| 3 | **UNIT –III Probability**<br>3.1 Making decisions under uncertainty<br>3.2 Classical definition of Probability<br>3.3 Sample Space and Events<br>3.4 Types of Events and their Outcomes<br>3.5 Rules of Probability<br>3.6 Probability axioms | 8 | **CO3** |
| 4 | **UNIT –IV Conditional Probability and Independence**<br>4.1 Introduction of Conditional probability<br>4.2 Probability independence<br>4.3 Baye's theorem Proof<br>4.4 Applications of Baye's theorem | 8 | **CO4** |
| 5 | **UNIT-V Measures of central tendency**<br>5.1 Meaning and central tendency<br>5.2 Statement of measures of central tendency<br>5.3 Computation of these measures of central tendency for given data : - arithmetic mean, geometric mean, harmonic mean, median and mode<br>5.4 Partition values: - quartiles, deciles and percentiles | 8 | **CO5** |
| 6 | **UNIT– VI Measures of Dispersion**<br>6.1 Range, Interquartile Range and Coefficient of Range<br>6.2 Variance<br>6.3 Standard Deviation (SD) and Coefficient of Variation (CV)<br>6.4 Mean Absolute Deviation (MAD) and Coefficient of Mean Deviation<br>6.5 Median Absolute Deviation (also MAD)<br>6.6 Quartile Deviation (Semi-Interquartile Range) and Quartile Coefficient of Dispersion | 8 | **CO5** |

## REFERENCE BOOKS:


1. Michael Baron (2014) Probability and Statistics for Computer Scientists Second Edition, CRC press. ISBN: 978-1-4822-1410-9
2. Goon A.M., Gupta M.K., Dasgupta. B. (2001), Fundamentals of Statistics, Volume I and II, World Press, Calcutta.
3. Ross, S. (2005). Introduction to Probability Models, (6th Ed. Academic Press). ISBN 978 25 0-12375686-2
4. Anand Sharma, (2008), Business Mathematics & Analytics, Himalaya Publishing house, ISBN NO.:1234029928


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 3 | 2 | 2 | 1 | 1 | 1 |
| **CO2** | 3 | 3 | 2 | 3 | 2 | 1 | 2 |
| **CO3** | 3 | 3 | 3 | 3 | 2 | 1 | 2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **CO4** | 3 | 2 | 3 | 3 | 3 | 2 | 2 |
| **CO5** | 3 | 2 | 2 | 3 | 2 | 2 | 2 |

**Assessment Pattern:**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | ✓ | - |

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**SEMESTER: IV**

**BCA-MIN-244 Management Information System - II**

| | |
|---|---|
| Course Title: Management Information System-II | Course Type: Minor |
| Course Code: BCA-MIN-244 | Total Credits: 04 |
| Lectures: Tutorials: Practical: 4:0:0 | CIE Marks: 40 |
| Lecture Hours: 48 Hours | ESE Marks: 60 |

**Course Description:**

This course covers the integration of CRM, ERP, decision support systems, and AI technologies in business. It also focuses on developing business strategies and managing IT security.

**Course Objectives:**

1. To explore the applications of CRM in improving customer relationships and understanding CRM trends and challenges.
2. To learn how ERP systems integrate business functions and manage enterprise-wide resources effectively.
3. To apply decision-making tools like what-if analysis, sensitivity analysis, and optimization for improved business decision-making.
4. To evaluate AI-based systems like expert systems and intelligent agents, and their use in business problem-solving.
5. To identify and apply IT security measures such as biometric security, firewalls, and fault-tolerant systems in an organization.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Describe** the concept, phases, and strategic role of Customer Relationship Management in business. |
| **CO2** | **Explain** ERP implementation strategies and analyze the causes of ERP successes and failures. |
| **CO3** | **Apply** decision support technologies to solve business problems and improve strategic outcomes**.** |
| **CO4** | **Explore** the role of AI in business through expert systems, neural networks, fuzzy logic, and genetic algorithms. |
| **CO5** | **Understand** business/IT architecture planning and strategic alignment for competitive advantage. |
| **CO6** | **Evaluate** methods for protecting information systems from internal and external security threats. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT -I Enterprise Business Systems**<br>1.1 What is CRM?<br>1.2 The Three Phase of CRM | 8 | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 1.3 Benefits and Challenges of CRM,<br>1.4 CRM Failures<br>1.5 Trends in CRM | | |
| 2 | **UNIT –II Enterprise Resource Planning**<br>2.1 Introduction<br>2.2 What is ERP?<br>2.3 Benefits and Challenges of ERP<br>a. The Costs of ERP<br>b. Causes of ERP Failures<br>2.4 Trends in ERP | 8 | **CO2** |
| 3 | **UNIT –III Supporting Decision Making**<br>3.1 Introduction<br>a. Information, Decision, and Management<br>b. Information Quality<br>3.2 Decision Support Trends<br>3.3 Decision Support System<br>a. Example<br>b. DSS Components<br>3.4 Online Analytical Processing<br>3.5 Using Decision Support Systems<br>o What – If Analysis<br>o Sensitivity Analysis<br>o Optimization Analysis<br>o Data Mining for Decision Support | 8 | **CO3** |
| 4 | **UNIT-IV Artificial Intelligence Technologies in Business**<br>4.1 Business and AI<br>4.2 The Domains of AI<br>4.3 Expert Systems<br>a. Components of an Expert System<br>b. Expert System Applications<br>c. Benefits of Expert Systems<br>d. Limitations of Expert Systems<br>4.4 Developing Expert Systems<br>4.5 Neural Networks<br>4.6 Fuzzy Logic in Business<br>4.7 Genetic Algorithms<br>4.8 Virtual Reality Application<br>**4.9** Intelligent Agents | 8 | **CO4** |
| 5 | **UNIT-V Developing Business/ IT Strategies**<br>5.1 Introduction, Organizational Planning<br>5.2 Planning for Competitive Advantage<br>a. SWOT Analysis<br>5.3 Business Models and Planning<br>5.4 Business/IT Architecture Planning<br>a. Information Technology Architecture<br>b. Balanced Scorecard<br>5.5 Identifying Business/IT Strategies<br>5.6 Business Application Planning | 8 | **CO5** |
| 6 | **UNIT - VI Security Management of Information Technology** | 8 | **CO6** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 6.1 Introduction<br>6.2 Tools of Security Management<br>6.3 Inter-Networked Security Defenses<br>a. Encryption<br>b. Firewalls<br>c. Denial of Service Attacks<br>d. E-mail Monitoring<br>e. Virus Defenses<br>6.4 Other Security Measures<br>a. Security Codes<br>b. Backup Files<br>c. Security Monitors<br>d. Biometric Security<br>e. Computer Failure Controls<br>f. Fault-Tolerant Systems<br>g. Disaster Recovery<br>6.5 System Control and Audits<br>o Information System Controls<br>o Auditing IT Security | | |

## REFERENCE BOOKS:


1. O'Brien, James A., "Management Information System", Tata McGraw Hill, 2003 ISBN 81-203-1282-1
2. Javadekar, W.S. "Management Information System", Tata Mac Graw Hill Publication,2003. ISBN0-07-282256-2
3. Basandra, Suresh K., "Management Information System", Wheeler Publishing, New Delhi,999.
4. 4. Arora,Ashok &Bhatia,Akshaya, "Management Information System", Excel Books, NewDelhi, 2001 ISBN: 978-81-7446-781-2


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 1 | 2 | 1 | 2 | 1 | 1 |
| **CO2** | 2 | 1 | 1 | 2 | 3 | 2 | 1 |
| **CO3** | 2 | 1 | 2 | 3 | 3 | 3 | 2 |
| **CO4** | 1 | 2 | 1 | 1 | 2 | 2 | 3 |
| **CO5** | 2 | 1 | 2 | 2 | 3 | 2 | 2 |
| **CO6** | 2 | 1 | 1 | 2 | 3 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation.** | ✓ | ✓ | | ✓ | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **(40)** | | | | | | |
| **End Semester Examination (60)** | ✓ | ✓ | | ✓ | | |

**KCES's Institute of Management and Research (Autonomous), Jalgaon**

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

**SEMESTER: IV**

**BCA-OE-245-A-Basics of Tally**

| | |
|---|---|
| Course Title: Basics of Tally | Course Type: OE |
| Course Code: BCA-OE-245 (A) | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

Tally Prime is the latest updated version of the Tally accounting software. It is the successor of Tally ERP 9 and comes with many new features; it promotes business growth and makes everyday business simple. It helps you manage accounting, banking, taxation, inventory and payroll in a much easier way

**Course Objectives:**

1. To provide a practical foundation in accounting and financial management
2. To use software effectively for transaction recording, and generate financial reports.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | -- | -- | - | -- | | |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Memorize** key Tally Prime Concepts. |
| **CO2** | **Create** Ledger & Compile Stock in Tally Prime Software. |
| **CO3** | **Pass** Voucher Entries in Tally Prime Software. |

| *SN* | *Contents of Module* | *Hrs* | CO's |
|---|---|---|---|
| **1** | **1. Maintaining Charts in Tally Prime**<br>1.1 Introduction to Tally Prime.<br>1.2 What is Accounting.<br>1.3 Golden rules of Accounting.<br>1.4 Accounting Masters<br>**1.5** Inventory Masters | 6 | CO1 |
| **2** | **Assignment 2. Create BCA Ltd company with following details**<br>2.1 Enter the hypothetical details e.g. Address, State, PAN No. etc.<br>2.2 Select Accounts with Inventory option, Use 1-4-20XX (Current Financial Year) as the date of Commencement of business.<br>2.3 Alter company Details.<br>2.4 Delete Company.<br>**Assignment 3.** Create the following Ledger accounts, place under appropriate group (Create new groups whenever necessary)<br>(a) Wages paid to factory workers | 8 | CO2 |

<table>
<tr><th>SN</th><th>Contents of Module</th><th>Hrs</th><th>CO's</th></tr>
<tr><td></td><td>(b) Wages paid to temporary workers<br>(c) Salary paid to H.O. employees<br>(d) Salary paid to Branch employees<br>(e) Share Capital ( Rs. 5,00,000 Cr.)<br>(f) Telephone Charges</td><td></td><td></td></tr>
<tr><td>3</td><td>Assignment 4. Create Ledger & Groups<br><br>
<table>
<tr><th>Ledger Name</th><th>Under</th><th>Opening Balance</th></tr>
<tr><td>Capital A/c</td><td>Capital Account</td><td>5,00,000</td></tr>
<tr><td>Building A/c</td><td>Fixed Assets</td><td>25,000</td></tr>
<tr><td>Mr. Rajesh A/c</td><td>Sundry Debtors</td><td>15,000</td></tr>
<tr><td>Mr. Swapnil A/c</td><td>Sundry Creditors</td><td>10,000</td></tr>
<tr><td>Sales A/c</td><td>Sales</td><td>5,000</td></tr>
<tr><td>SBI Loan A/c</td><td>Loans & Advances</td><td>50,000</td></tr>
<tr><td>Purchase A/c</td><td>Purchase</td><td>10,000</td></tr>
</table>
<br>Assignment 5; Pass Journal Entries:<br><br>1. On July 1st 2024 Ramu started business with a capital of Rs. 75, 000.<br>2. Purchased Furniture from Manu for Rs. 25,000.<br>3. Sold goods to Tanu for cash Rs.16, 000.<br>4. Bought furniture for Rs.15, 000.<br>5. Cash Paid to Manu Rs. 10,000.<br>6. Sold Furniture to Prakash for Rs. 40,000.</td><td>10</td><td>CO3</td></tr>
</table>

**REFERENCE BOOKS:**

**ReferenceBooks:**

1. Master Tally Prime A Complete Guide, Ravi Thelgu, Vedanta Soft Solutions.
2. Mastering Tally Prime: Training, Certification & Job, Ashok K. Nadhani, BPB Solutions.
3. Official Guide to Financial Accounting Using Tally Prime, Tally Education Private Limited.

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation (40)** | ✓ | ✓ | ✓ | ✓ | | ✓ |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | | ✓ |

**KCES's Institute of Management and Research (Autonomous), Jalgaon**

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

**SEMESTER: IV**

**BCA-OE-245-B Advanced Excel**

| | |
|---|---|
| Course Title: Advanced Excel | Course Type: OE |
| Course Code: BCA-OE-245-B | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course is designed to enhance your Excel skills by equipping you with powerful tools and techniques for data management, analysis, and automation. You will learn how to use smart formulas, advanced lookup functions, and text manipulation tools to streamline your workflow and reduce errors. The course covers essential data analysis techniques, such as PivotTables, charts, and What-If analysis, enabling you to summarize and visualize large datasets effectively. Additionally, you will gain expertise in automating tasks using Macros, securing your work with password protection, and cleaning and combining data from multiple sources using Power Query. Whether you're managing simple spreadsheets or complex data models, this course will empower you to work faster, make informed decisions, and safeguard your Excel files with confidence.

**Course Objectives:**

1. **Master Advanced Excel Functions:**
   Learn to apply smart formulas such as IF, AND, OR, VLOOKUP, HLOOKUP, INDEX + MATCH, and text functions (LEFT, RIGHT, MID, CONCAT) to automate decision-making, clean data, and enhance workflow efficiency.
2. **Analyze and Visualize Data Effectively:**
   Develop the ability to summarize large datasets using PivotTables, create dynamic reports with Pivot Charts, and present insights visually using a variety of charts and graphs, including Bar, Line, and Waterfall charts.
3. **Automate Tasks and Ensure Data Security:**
   Gain proficiency in automating repetitive tasks using Macros, managing data with Excel Tables, and securing your workbooks with password protection, permissions, and auditing tools to maintain data integrity and confidentiality.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Apply** advanced Excel functions (e.g., IF, VLOOKUP, TEXT functions) to manipulate data, automate calculations, and streamline decision-making processes. |
| **CO2** | **Utili**ze PivotTables, charts, and What-If tools to analyze large datasets, create dynamic reports, and visualize data effectively for decision support. |
| **CO3** | **Automate** repetitive tasks with Macros, secure Excel files with password protection, and clean/combine data using Power Query to improve workflow efficiency and data integrity. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT -I Smart Formulas and Data Tools**<br>1.1 An Overview of the Screen, Navigation and Basic Spreadsheet<br>1.2 Concept<br>1.3 Lookup Functions, Logical If Functions<br>1.4 Text Function, Statistical Function, Math; Trig Functions<br>1.5 Date; Time and Logical Functions, Financial Functions<br>1.6 Data Validation<br>1.7 Sorting, Filtering, and Removing Duplicates<br>1.8 Conditional Formatting | 10 | **CO1** |
| 2 | **UNIT –II Analysing Data and Making Reports**<br>2.1 PivotTables<br>2.2 Pivot Charts<br>2.3 Slicers and Timelines<br>2.4 What-If tools: Goal Seek, Scenario Manager<br>2.5 Charts: Bar, Line, Pie, Waterfall, Sparkline's<br>2.6 Grouping data and creating Subtotals<br>2.7 Making simple Dashboards | 8 | **CO2** |
| 3 | **UNIT –III Automating and Securing Your Work**<br>3.1 Recording Macros<br>3.2 Excel Tables<br>3.3 Power Query<br>3.4 Power Pivot<br>3.5 Locking and Protecting Worksheets | 6 | **CO3** |

## REFERENCE BOOKS:


- Excel 2021 Bible by Michael Alexander and Dick Kusleika
- Learn MS Excel in One Day by Krishna Rungta
- Excel Made Easy by Diane Griffiths


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 1 | 1 | 2 | 3 | 2 | 1 |
| **CO2** | 2 | 1 | 1 | 2 | 2 | 3 | 2 |
| **CO3** | 3 | 1 | 1 | 2 | 3 | 3 | 2 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation.** | ✓ | ✓ | ✓ | ✓ | ✓ | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **(40)** | | | | | | |
| **End Semester Examination (60)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

**KCES's Institute of Management and Research (Autonomous), Jalgaon**

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelor of Computer Application) PROGRAMME BATCH 2024-28

**SEMESTER: IV**

**BCA-SEC- 246 Networking concepts**

| | |
|---|---|
| Course Title: Networking concepts | Course Type: BCA-SEC-246 |
| Course Code: BCA-SEC- 246 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course introduces the fundamentals of computer networks, including network types, devices, topologies, and transmission methods. It covers data communication techniques, transmission media, error detection/correction, and multiplexing. Students will also learn about network layer functions, IP addressing (IPv4/IPv6), routing, and protocols like ARP and NAT.

**Course Objectives:**

- To introduce the fundamental concepts of computer networking.
- To understand the architecture and protocols of networking systems.
- To develop practical skills in configuring and managing networks.
- To address security concerns in network design and implementation

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** the structure and types of computer networks, network devices, communication modes, and transmission media. |
| **CO2** | **Apply** data communication principles including OSI and TCP/IP models, framing, multiplexing, and error detection and correction techniques. |
| **CO3** | **Analyze** the functionality of the network layer, including IP addressing (IPv4 & IPv6), routing, ARP, NAT, and basic network security concepts such as cryptography and firewalls. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **UNIT -I** Overview of computer networks.<br>1.1 What is Network? Classification Of Network: LAN, WAN, MAN and Wireless Networks.<br>1.2 Transmitter, Receiver, Medium, Message, Protocol<br>1.3 Analog Signal and Digital Signal,<br>1.4 Functions of hubs, switches, bridges, routers, and gateways.<br>1.5 Star, Ring, Bus, Mesh, and Tree.<br>1.6 Simplex, Half-Duplex, and Full-Duplex. | 8 | **CO1** |
| 2 | **UNIT –II**: **Data Communication and Transmission** | 8 | **CO2** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 2.1 Reference Models: OSI Reference Model, TCP/IP Reference Models<br>2.2 Communication Media: Guided Transmission Media Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable<br>2.3 Framing: Fixed Sized and Variable Sized Framing<br>2.4 Multiplexing: Frequency-Division Multiplexing, Time - Division Multiplexing<br>**2.5** Error Detection and Correction: Parity bits, Checksum, Hamming codes, and Cyclic Redundancy Check (CRC). | | |
| 3 | **UNIT –III: : Network Layer and Routing**<br>3.1 Network Layer Functions: Logical addressing, routing, and packet forwarding.<br>3.2 Network Computing Model: Peer to Peer, Client Server Process-to-Process Delivery, Cryptography, Firewalls<br>3.3 IP Addressing: IPv4 and IPv6 addressing, subnetting.<br>3.4 Address Resolution Protocols: ARP.<br>3.5 Network Address Translation (NAT): Purpose and implementation. | 8 | **CO3** |

## REFERENCE BOOKS:

**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 1 | 1 | 2 | - | - |
| **CO2** | 3 | 3 | 2 | 2 | 2 | - | - |
| **CO3** | 3 | 2 | 2 | 2 | 2 | - | - |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyse | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (40)** | ✓ | ✓ | ✓ | ✓ | | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | | | |

**KCES's Institute of Management and Research (Autonomous), Jalgaon**

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelors of Computer Application) PROGRAMME BATCH 2024-28

**SEMESTER: IV**

**BCA-AEC-247 Personality Development-II**

| | |
|---|---|
| Course Title: Personality Development-II | Course Type: AEC |
| Course Code: BCA-AEC-247 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course equips students with advanced communication and public speaking skills, emphasizing clarity, persuasion, and cross-cultural awareness. It fosters leadership and team management abilities through exploration of leadership styles, teamwork strategies, and conflict resolution. Students also gain workplace readiness through professional etiquette, time management, interview preparation, and networking skills.

**Course Objectives:**

- To refine communication skills for professional and social settings.
- To develop leadership qualities and teamwork strategies.
- To impart practical knowledge of handling professional situations, including interviews, public speaking, and workplace ethics.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | | | ✓ | | ✓ | ✓ |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Enhance** their verbal communication, deliver engaging public speeches, and understand cultural differences in communication. |
| **CO2** | **Develop** leadership skills, learn to work effectively in teams, and understand key strategies for conflict management and decision-making. |
| **CO3** | **Acquire** essential workplace skills, including professional etiquette, time management, interview preparation, and networking strategies. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **Unit 1: Advanced Communication and Public Speaking**<br>1.1 Communication: Introduction, types and merits of communication.<br>1.2 **Advanced Verbal Communication:** Using persuasive language, clarity in complex discussions, and engaging storytelling.<br>1.3 **Public Speaking Skills:** Techniques for effective presentations, overcoming stage fright, and managing audience interaction.<br>a. Structuring a speech (introduction, body, conclusion).<br>b. Managing body language and voice modulation during presentations. | 8 | **CO1** |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| | 1.4 **Cross-Cultural Communication:** Understanding communication nuances in global or diverse environments. | | |
| 2 | **Unit 2: Leadership and Team Management**<br>2.1 **Leadership Styles:** Exploring different leadership styles (e.g., transformational, transactional, servant leadership) and identifying personal leadership traits.<br>2.2 **Effective Teamwork:** Strategies for building and leading teams, delegation of tasks, and motivating team members.<br>2.3 **Problem-Solving and Decision-Making:** Applying logical approaches to solve group challenges and make effective decisions in teams.<br>2.4 **Conflict Management:** Techniques for resolving conflicts within teams and maintaining team harmony. | 8 | **CO2** |
| 3 | **Unit 3: Professional Etiquette and Workplace Readiness**<br>3.1 **Workplace Etiquette:** Professional behaviour in meetings, emails, and phone calls. Understanding corporate culture and organizational behaviour.<br>3.2 **Time Management for Professionals:** Tools and techniques for prioritizing tasks and meeting deadlines (e.g., the Pomodoro technique, task prioritization matrix).<br>3.3 **Mock Interviews and Career Preparation:** Preparing for interviews (both technical and HR rounds), understanding commonly asked questions, and handling pressure.<br>3.4 **Networking Skills:** Building professional connections and maintaining them through social media platforms (e.g., LinkedIn). | 8 | **CO3** |

## REFERENCE BOOKS:


1. Jit S. Chandan, Organizational Behavior, Third Edition, Vikas Publishing House Private Limited, 2008
2. Dr. K. K. Ramachandran and Dr. K. K. Karthick, From Campus to Corporate, Macmillan Publishers India Limited, New Delhi,2010.


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 1 | 1 | 2 | 1 | 3 | 1 | 1 |
| **CO2** | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| **CO3** | 1 | 1 | 2 | 1 | 3 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation. (20)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

**KCES's Institute of Management and Research (Autonomous), Jalgaon**

FACULTY OF SCIENCE AND TECHNOLOGY, School of Computer Application

B.C.A. (Bachelors of Computer Application) PROGRAMME BATCH 2024-28

**SEMESTER: IV**

**BCA-CEP-401 Community Engagement and Service**

| | |
|---|---|
| Course Title: Community Engagement and Service | Course Type: CEP |
| Course Code: BCA-CEP-401 | Total Credits: 02 |
| Lectures: Tutorials: Practical: 2:0:0 | CIE Marks: 20 |
| Lecture Hours: 24 Hours | ESE Marks: 30 |

**Course Description:**

This course enables students to understand the importance of community service and encourages them to participate actively in social engagement. It helps foster a sense of responsibility, empathy, and social awareness among students by introducing them to real-life challenges in communities and motivating them to contribute to sustainable development.

**Course Objectives:**

1. To develop awareness about the importance of community involvement.
2. To instill empathy, responsibility, and civic sense among students.
3. To encourage participation in community development and service learning activities.
4. To relate academic learning to real-life social challenges.

**Teaching/ Evaluation Pedagogy**

| Chalk & Talk | ICT Tools | Group Discussion | Case Study | Guest Session | Survey | Assignment | Lab |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |

**Course Outcomes: At the end of the Course, the Student will be able to:**

| | |
|---|---|
| **CO1** | **Understand** the foundational concepts and importance of community engagement. |
| **CO2** | **Analyse** and identify prevalent social issues through real-life case examples. |
| CO3 | **Plan** and **execute** community service initiatives with collaborative effort and appropriate engagement methods. |
| CO4 | **Critically** reflect on service experiences through documentation, assess impact. |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 1 | **Unit I: Introduction to Community Engagement:**<br>1.1 Concept and Scope of Community Engagement.<br>1.2 Importance of Social Responsibility.<br>1.3 1.3 Role of Youth in Nation Building | 6 | CO1 |
| 2 | **Unit II: Understanding the Community**:<br>2.1 Types of Communities.<br>2.2 Social Structure.<br>2.3 Identification of Local Issues and Stakeholders.<br>2.4 Case Examples | 6 | CO2 |

| *SN* | *Contents of Module* | *Hrs* | ***COs*** |
|---|---|---|---|
| 3 | **Unit III: Participating in Community Service:**<br>3.1 Cleanliness drive<br>3.2 Tree Plantation<br>3.3 Donation to Needy<br>3.4 Awareness Campaigns, etc.<br>3.5 Journaling of activities | 12 | CO3 |

**REFERENCE BOOKS:**


1. Handbook on Community Engagement – Dr. P.N. Raju (Allied Publishers)
2. Social Work and Community Development – Surendra Singh (IGNOU Publications)
3. Community Organization and Development – Prof. M.S. Gore (Himalaya Publishing)
4. Youth and Social Change – Yogendra Singh (Rawat Publications)


**Mapping of Course Outcomes to Program Outcomes:**

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 1 | 2 | 1 | 3 | 1 | 1 |

**Assessment Pattern**

| **Bloom's Category** | Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|---|
| **Continuous Internal Evaluation (20)** | ✓ | ✓ | ✓ | ✓ | | |
| **End Semester Examination (30)** | ✓ | ✓ | ✓ | ✓ | | |

| Seat No. | | | | | | | **Security Code** |
|---|---|---|---|---|---|---|---|

# Subject Code
## Subject Name

| **Total Pages: 00**<br>**Time:** 2 Hours | **Max. Marks: 60** |
|---|---|

**Instructions to Candidates:**

1. Do not write anything on question paper except seat number.
2. Answer sheet should be written with BLUE/BLACK ink only.
3. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
4. Student should note, no supplement will be provided.
5. Figures to the right indicate full marks.
6. Attempt **any five** questions from following.

| | | **SECTION I** | **Marks** | **CO** |
|---|---|---|---|---|
| **Que.1** | **A** | | **6** | |
| | **B** | | **6** | |
| **Que.2** | **A** | | **6** | |
| | **B** | | **6** | |
| **Que.3** | **A** | | **6** | |
| | **B** | | **6** | |
| **Que.4** | **A** | | **6** | |
| | **B** | | **6** | |
| **Que.5** | **A** | | **6** | |
| | **B** | | **6** | |
| **Que.6** | **A** | | **6** | |
| | **B** | | **6** | |
| **Que.7** | **A** | | **6** | |

| | | | | |
|---|---|---|---|---|
| | **B** | | **6** | |
| **Que.8** | **A** | | **6** | |
| | **B** | | **6** | |

| Seat No. | | | | | | | **Security Code** |
|---|---|---|---|---|---|---|---|

# Subject Code
## Subject Name

| **Total Pages:**<br>**Time:** One and Half Hours | **Max. Marks: 30** |
|---|---|

**Instructions to Candidates:**

1. Do not write anything on question paper except seat number.
2. Answer sheet should be written with BLUE/BLACK ink only.
3. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
4. Student should note, no supplement will be provided.
5. Figures to the right indicate full marks.
6. Attempt **any three** questions from following.

| | | **SECTION I** | **Marks** | **CO** |
|---|---|---|---|---|
| **Que.1** | **A** | | **5** | |
| | **B** | | **5** | |
| **Que.2** | **A** | | **5** | |
| | **B** | | **5** | |
| **Que.3** | **A** | | **5** | |
| | **B** | | **5** | |
| **Que.4** | **A** | | **5** | |
| | **B** | | **5** | |
| **Que.5** | **A** | | **5** | |
| | **B** | | **5** | |
| **Que.6** | **A** | | **5** | |
| | **B** | | **5** | |