

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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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 holistic development among students.

- BCA program is structured to equip students with the necessary knowledge and 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 with a 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 that for 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 in another 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 foundation of computer science and applications. These courses provide in-depth knowledge and understanding of essential subjects such as programming languages, 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 courses consist 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 courses to 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. By participating 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 to delve 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 a Programme of the study, including learning outcomes relating to the disciplinary areas, learning generic outcomes that are expected to be acquired by a graduate on completion 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 on what 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 disciplinary areas relating to the chosen field(s) of learning within the broad multidisciplinary & interdisciplinary learning outcomes that graduates of all Programmes should acquire & demonstrate.

| <u>Graduate Attributes</u> | |
|-----------------------------------|--|
| 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 |
| <i>Level of correlation: 3-High, 2-Medium, 1-Low</i> | | | | | | | |

**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:

| Ye ar s | Le ve l | Sem | Major(Core) Subjects | | Mino r | O E | VSC, SEC (VSE C) | AEC, VEC, IKS | OJT, FP,C EP,C C,RP | Cu m. Cr/ Se mes ter | Degree/ Cumul ative Credit |
|-----------------------------|---------------|-----------------|---------------------------------------|-----------------------|-----------|--------|---------------------------|---------------------------------|------------------------------|-------------------------------------|-------------------------------------|
| | | | Mand atory (DSC) | Electiv e (DSE) | | | | | | | |
| I | 4. 5 | I | 4 – 6 (4+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+ | VSC- 2 SEC- 2 | AEC- 2 VEC- 2 | CC-2 | 20- 22 | |
| | | Cu m.C r. | 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 | |
| | | Cu m.C r. | 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/C EP-2 | 20 | 40-44 |
| | | VI | 8(2*4) – 10(2*4 +2) | 4 | 4 | | | | OJT- 4 | 20 | |
| | | Cu m.C r. | 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 | |
| | | Cu m.C r. | 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 | | | |
| | | Cu m.C r. | 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.

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. |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|---|------------|------------|
| 1 | UNIT -I Introduction to Programming in C | 10 | CO1 |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|---|------------|------------|
| | 1.1 History 1.2 Compilers and Interpreters 1.3 Structures of 'C' Programming 1.4 C Tokens, Keywords, Identifiers, Variables 1.5 Constant, Data Types, Variables and constants 1.6 Precedence and Associativity 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. 1.8 Input and Output 1.9 Pre-processor directives in C | | |
| 2 | UNIT -II Control structures 2.1 Decision making structures 2.2 If, if else 2.3 Nested If -else 2.4 Switch 2.5 Control structures 2.6 While 2.7 Do-while 2.8 For 2.9 Nested for loop 2.10 Other statements: break, continue. Goto and exit. | 08 | CO2 |
| 3 | UNIT -III FUNCTIONS 3.1 Basic types of Function-Built in Functions, User Define Functions 3.2 Declaration and Definition 3.3 Return Keyword 3.4 Function argument (formal arguments, local arguments) 3.5 Function with default argument 3.6 Parameter passing, Call by value, Call by reference 3.7 Storage classes 3.8 Recursion | 08 | CO3 |
| 4 | UNIT-IV ARRAY, POINTERS AND STRING 4.1 Array declaration, initialization 4.2 Types – one, two and multidimensional 4.3 What is Pointer? Pointer declaration, initialization. 4.4 Pointers arithmetic, Pointer to pointer, Arrays of pointers, pointer to function. STRING 4.5 Declaration and initialization 4.6 Standard library functions 4.7 Manipulating Strings 4.8 Strings and pointers 4.9 Array of strings | 08 | CO4 |
| 5 | UNIT-V STRUCTURE AND UNION 5.1 Structure Basics 5.2 Creating structures 5.3 Accessing structure members (dot Operator) | 08 | CO5 |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|--|------------|------------|
| | 5.4 Array of structures 5.5 Nested structures 5.6 Pointer to structure 5.7 Self-referential structure 5.8 Union 5.9 Difference between structure and union. | | |
| 6 | UNIT - VI FILE HANDLING 6.1 Types of Files 6.2 Random Access to File 6.3 File handling functions in C 6.4 Operations on files 6.5 File opening modes 6.6 File reading mode 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 | P01 | P02 | P03 | P04 | P05 | P06 | P07 |
|------------|-----|-----|-----|-----|-----|-----|-----|
| C01 | 3 | 2 | 1 | 1 | 2 | 1 | 1 |
| C02 | 3 | 2 | 1 | 1 | 2 | 1 | 1 |
| C03 | 3 | 3 | 1 | 1 | 3 | 1 | 1 |
| C04 | 3 | 2 | 1 | 1 | 2 | 1 | 1 |
| C05 | 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),
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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:

| | |
|------------|--|
| C01 | Understand fundamental concepts of C programming, including syntax, data types, operators |
| C02 | Develop C programs using control structures for decision-making and iteration |
| C03 | Analyze the concept of function scope, recursion, and the importance of modular programming. |
| C04 | Evaluate the effectiveness of different data handling techniques (e.g., arrays, pointers, string) in solving particular problems. |
| C05 | Describe the memory allocation differences between structures and unions. |
| C06 | 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.
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),

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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: 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 1.1. Definition, Nature and Features of Management 1.2. Management-Science or Art 1.3. Management as Profession 1.4. Functions of Management | 8 | CO1 |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|---|------------|------------|
| | 1.5. Nature of Management Functions 1.6 Functions at Various Management Levels | | |
| 2 | Unit 2. Planning & Organizing 2.1. Meaning, Definition & Importance of Planning 2.2. Essentials of Effective Planning 2.3. Steps of Planning 2.4. Meaning, Objectives of organizing 2.5. Meaning, Definition & Importance Staffing, Directing and Controlling | 8 | CO2 |
| 3 | Unit 3. Co-ordination & Decision making 3.1. Co-Ordination 3.2. The Essence of Management 3.3. Techniques of Effective Co-Ordination 3.4. Meaning of decision making 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),
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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: I

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

Course Title: Principles of Accounting-I
Course Code: BCA-OE-113-B
Lectures: Tutorials: Practical: 2:0:0
Lecture Hours: 24 Hours

Course Type: OE
Total Credits: 02
CIE Marks: 20
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 1.1 Meaning, Definition and Objectives 1.2 Importance of Book-keeping. | 10 | CO1 |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs.</i> | <i>COs</i> |
|-----------|---|-------------|------------|
| | 1.3 Difference between Book-keeping and Accountancy. 1.4 Meaning and Definition of Accountancy 1.5 Basis of Accounting System. Advantages of Financial Accounting, Limitations of Financial Accounting, Users of accounting information. 1.6 Qualitative characteristics of accounting information. 1.7 Basic Accounting Terminologies. 1.8 Accounting Concepts, Conventions and Principles. 1.9 Accounting Standards (AS) and IFRS. | | |
| 2 | Unit – II Meaning and Fundamentals of Double Entry Book-keeping & Fundamentals of accounting. 2.1 Meaning and Definition of Double entry Book-keeping System 2.2 Methods of Recording Accounting Information (Indian, Single, Double) 2.3 Advantages of Double entry Book-keeping system. 2.4 Classification of Accounts. 2.5 Golden Rules of Debit and Credit (Traditional Approach) 2.6 Modern Approach of Rules of Accounts. 2.7 Illustrations. 2.8 Accounting Equations. 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. 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 3.1 Meaning, Importance and Utility of Accounting Documents. 3.2 Meaning, Definition, Importance and Utility of Journal. 3.3 Specimen of Journal. 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 |
|-------|-----|-----|-----|-----|-----|-----|-----|
| | | | | | | | |

| | | | | | | | |
|------------|---|---|---|---|---|---|---|
| C01 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| C02 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| C03 | 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),
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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: I

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

Course Title: Digital Marketing – I

Course Code: BCA-OE-114-A

Lectures: Tutorials: Practical: 2:0:0

Lecture Hours: 24 Hours

Course Type: OE

Total Credits: 02

CIE Marks: 20

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 Develop skills to analyze digital marketing performance and optimize strategies. |

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

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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: I

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

Course Title: Personal Financial Planning-I
Course Code: BCA-OE-114-B
Lectures: Tutorials: Practical: 2:0:0
Lecture Hours: 24 Hours

Course Type: OE
Total Credits: 02
CIE Marks: 20
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 1.1 Introduction: Financial goals, steps in financial Planning, budgeting incomes and payments, Time Value of Money, Introduction to savings, benefits of savings, management of spending & financial discipline, setting alerts and maintaining sufficient funds for fixed commitments, Financial Security, Importance of Personal Financial Planning, Principles of Personal Finance, Biases in Personal Finance. | 8 | CO1 & CO2 |

| SN | Contents of Module | Hrs | COs |
|----|---|-----|----------------|
| | 1.2 Financial Statements and Ratios Analysis: Managing Cash Flows, Creating and Reviewing Financial Statements, Analyzing Financial Statements, Budget. | | |
| 2 | Unit – 2 Introduction to Insurance and Risk Management 2.1 Risk Management: Risk and Return, Risk Management, Risk Diversification, Managing Life, Health and Disability Risks, Concept and Types of Insurance. 2.2 Investment Fundamentals: Saving and Investment, Rules of Investing, Debt and Equity. Investment in Bonds and Mutual Funds. Managing Income Taxes: Introduction to Personal Income Tax Planning, Tax Avoidance and Tax Evasion. 2.3 Building and Maintaining Good Credit: Credit Basics and Debt Management, Sources of Debt, Credit Report and Scores. | 8 | CO1 & CO2 |
| 3 | Unit – 3 Investment Planning 3.1 Basics of Investment: Process and objectives of investment, concept and measurement of return & risk for various asset classes, measurement of portfolio risk and return, diversification & portfolio formation. Gold bond; Real estate; Investment in green field and brownfield Projects; Investment in fixed income instruments, financial derivatives & commodity market in India. Mutual fund schemes; International investment avenues. Currency derivatives and digital currency. | 8 | CO1, CO2 & CO3 |

REFERENCE BOOKS:

- Halan, M. “Let’s Talk Money: You’ve Worked Hard for It, Now Make It Work for You” Harper Collins Publishers, New York.
- Indian Institute of Banking & Finance. “Introduction to Financial Planning” Taxmann Publication, New Delhi.
- Keown A.J. “Personal Finance” Pearson, New York.
- Madura, J. “Personal Finance”, Pearson
- Pandit , A. “The Only Financial Planning Book that You Will Ever Need” Network 18 Publications Ltd., Mumbai.
- Sinha, M. “Financial Pfanning: A Ready Reckoner” McGraw Hill Education, New York.
- 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),
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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: 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 <ul style="list-style-type: none"> Apply CSS to style text, backgrounds, and margins of a simple HTML page. |
| 6 | Create a Box Layout <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> Style a button with different states (normal, hover, active) using CSS. |
| 8 | Develop a Simple Footer Layout <ul style="list-style-type: none"> Create a footer with multiple columns and style it with CSS for a clean and organized appearance. |
| 9 | Use LESS Variables for Colors <ul style="list-style-type: none"> Define and apply variables in LESS for colors to standardize the color scheme across multiple elements. |
| 10 | Implement a LESS Mixins for Buttons <ul style="list-style-type: none"> Create a mixin in LESS for button styles and use it to apply consistent button styling. |
| 11 | Apply Nesting in LESS <ul style="list-style-type: none"> Use LESS nesting to write CSS for a simple navigation menu, demonstrating how nested rules are structured. |
| 12 | Build a Responsive Layout with LESS <ul style="list-style-type: none"> Develop a basic responsive layout using LESS, with media queries for different screen sizes |
| 13 | Create and Use Sass Variables <ul style="list-style-type: none"> 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 <ul style="list-style-type: none">• Develop mixins in Sass for common styling patterns, such as border-radius or box-shadow. |
| 15 | Design a Simple Grid System with Sass <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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)

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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 1.1. History & generation of computer 1.2. Definition of computer 1.3. Computer Language 1.4. Block diagram of computer system 1.5. Types of computers 1.6. Definition- Software, Hardware, Firmware, Translators, Compiler, Interpreter, Loader and Linder, Compiler | 8 | CO1 |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|---|------------|------------|
| | 1.7. Introduction to Number system: decimal, binary, octal and hexadecimal, Conversion in Number System. | | |
| 2 | Unit – II Memory Management & Designing Algorithm with Flowchart 2.1 What is and Memory Management 2.2 Types of Memory Primary- RAM, ROM, PROM, EPROM 2.3 Secondary- Magnetic Disk, Hard Disk and CD, Pen drive. 2.4 Algorithm, Program Development steps- Algorithms 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 3.1 Computer Net 3.2 work: Definition of Computer Network 3.3 Types of Networks: LAN, MAN, WAN. 3.4 Topologies: Star, Tree, Bus, Ring, Mesh, Fully Connected. 3.5 Wired and Wireless Networks 3.6 Internet: History of Internet 3.7 Working of Internet 3.8 Use of Internet, Applications of Internet | 8 | CO3 |

REFERENCE BOOKS:

1. Fundamentals of computer - V. Raja Raman, (PHI Publication)/SBW10:812034011
2. Computer Networks - Andrew S. Tanenbaum , Fourth Edition.
/SBWnumber0130661023
3. Computer and studies a first course - Roger Hunt and John Shelley, (PHI Publication)/SBW10:0131646737
4. Cloud Computing for Dummies -Hurwitz Judith S. and Daniel Kirsch.

Mapping of Course Outcomes to Program Outcomes:

| CO/PO | P01 | P02 | P03 | P04 | P05 | P06 | P07 |
|--------------|------------|------------|------------|------------|------------|------------|------------|
| 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.

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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. |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>Cos</i> |
|-----------|--|------------|------------|
| 1 | Unit – I Introduction to essentials of Communication 1.1. Concept, Nature and Process of communication 1.2. Channel and Importance 1.3. Media for Communication 1.4. Types of communication- Advantages and Disadvantages 1.5. Channels: Formal & Informal 1.6. Levels of Communication 1.7. Direction of Communication: Downward, upward, Lateral & Diagonal | 9 | CO1 |
| 2 | Unit – II Effective Communication: Barriers to Communication and its solutions 2.1 Effective Communication: Barriers to Communication and its solutions 2.2 Interactive and Non-Interactive Techniques of Communication 2.3 Listening as a tool of Communication 2.4 Guidelines for effective communication | 5 | CO2 |
| 3 | Unit – III Written Communication and E-Correspondence 3.1 Nature and functions of business correspondence 3.2 Types of correspondence, purpose and use of business correspondence 3.3 Need and Importance of Business Letters 3.4 Parts of Business letters, Layout of business letters 3.5 Technology for Communication 3.6 Office Memorandum, Office Circulars, Notices and Orders 3.7 Effective IT Communication Tools. 3.8 Electronic Mail: Advantages, Safety and Smartness in Email 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

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SEMESTER: II

BCA-DSC-121 OOPS with C++

Course Title: OOPS with C++

Course Code: BCA-DSC-121

Lectures: Tutorials: Practical: 4:0:0

Lecture Hours: 48 Hours

Course Type: DSC

Total Credits: 04

CIE Marks: 40

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:

| | |
|-----|---|
| C01 | Understanding the Object-Oriented Paradigm. |
| C02 | Understanding in C++ Controls, Pointers, and Functions |
| C03 | Demonstration Classes and Objects in C++ |
| C04 | Apply inheritance concepts to solve programming problems |
| C05 | Explain and apply polymorphism in C++ to enhance code flexibility and functionality. |
| C06 | 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 1.1 Introduction to Object-Oriented Paradigm 1.2 Need for Object-Oriented Programming | 6 | C01 |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|---|------------|------------|
| | 1.3 Characteristics of Object-Oriented Programming (Encapsulation, Abstraction, Inheritance, Polymorphism) 1.4 Difference between Structured Programming and OOP | | |
| 2 | Unit 2: C++ Controls, Pointers & Functions 2.1 Input/Output in C++ (cin, cout, iostream) 2.2 Data Types and Operators (Arithmetic, Relational, Logical, Bitwise) 2.3 Control & Conditional Statements (if, else, switch, loops) 2.4 Pointer Variables (Declaration, Initialization, Dereferencing, Arrays), Pointer Arithmetic 2.5 Function and its Components, Parameter Passing Mechanisms (Pass by Value, Reference, Pointer) - Pointer as Function Argument - Recursive Functions | 8 | CO2 |
| 3 | Unit 3: Objects and Classes 3.1 Class Declaration in C++ (Data Members, Member Functions) 3.2 Constructors (Default, Parameterized, Copy) 3.3 Destructors 3.4 Difference between Classes and Structures 3.5 Friend Class and Friend Function | 8 | CO3 |
| 4 | Unit 4: Inheritance 4.1 Inheritance: Definition and Concept (Base and Derived Classes) 4.2 Types of Inheritance (Single, Multiple, Multilevel, Hierarchical, Hybrid) 4.3 Visibility Modes (Public, Private, Protected) 4.4 Virtual Base Class 4.5 Benefits of Inheritance (Reusability, Extensibility, Maintenance) | 8 | CO4 |
| 5 | Unit 5: Operator Overloading 5.1 Operator Overloading: Definition 5.2 Unary Operator Overloading 5.3 Binary Operator Overloading (+, -, *, ==) 5.4 Rules for Operator Overloading (Precedence, Associativity) 5.5 Operator Overloading using Friend Functions 5.6 Function Overloading | 10 | CO5 |
| 6 | Unit 6: Virtual Functions, Templates & Exception Handling & File Handling 6.1 Virtual Functions (Polymorphism, Overriding) 6.2 Pure Virtual Functions (Abstract Classes) 6.3 Function Templates (Generic Programming) 6.4 Exception Handling Constructs (try, catch, throw) 6.5 Introduction to File System (File Modes, File Streams) 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 |
|-------|-----|-----|-----|-----|-----|-----|-----|
| C01 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| C02 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| C03 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| C04 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| C05 | 3 | 3 | 2 | 2 | 3 | 2 | 2 |
| C06 | 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) | ✓ | ✓ | - | ✓ | ✓ | - |

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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:

| | |
|-----|---|
| C01 | Understand the basic programming skills including variables, control structures, functions, and arithmetic operations etc |
| C02 | Understand and apply OOP principles like encapsulation, inheritance, and polymorphism, including implementing classes with constructors/destructors, function overloading, and operator overloading. |
| C03 | Learn advanced techniques including dynamic memory management, exception handling, and file operations, enabling effective memory management and error handling. |
| C04 | Understand basic data structures such as arrays and strings. |
| C05 | 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. b) Write a program to create pointers that point to objects and access their members. 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. 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) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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SEMESTER: II

BCA-MIN-123 System Analysis and Design

Course Title: System Analysis and Design
Course Code: BCA-MIN-123
Lectures: Tutorials: Practical: 2:0:0
Lecture Hours: 24 Hours

Course Type: Minor
Total Credits: 02
CIE Marks: 20
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. |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|---|------------|------------|
| 1 | Unit – 1 Overview of System Analysis and Design 1.1 Introduction to Systems Concepts: Definition and characteristics of a system, Types of systems (open, closed, physical, abstract), Subsystems and system boundaries 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 1.3 Problem Identification and Feasibility Analysis: Identifying system requirements, Types of feasibility studies: Technical, | 8 | CO1 |

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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) . |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|--|------------|------------|
| 1 | Unit 1: Introduction: 1.1 Definition, Nature, scope and importance of marketing. 1.2 Selling Vs Marketing 1.3 Functional areas of Marketing 1.4 Marketing Process 1.5 Role of a Marketing Manager in the current scenario. | 8 | CO1 |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|---|------------|------------|
| 2 | Unit 2: Marketing Environment and Segmentation, Targeting and Positioning: 2.1 Concept of marketing environment and importance of marketing environmental analysis. 2.2 Micro-environment and Macro-environment 2.3 Meaning, concepts, benefits and limitations of segmentation 2.4 Bases for Segmenting Consumer Markets 2.5 Concept of Product Positioning and Differentiation | 8 | CO2 |
| 3 | Unit 3: Marketing Mix 3.1 Concept of Marketing mix. 3.2 Product – Concept, Levels of product (core benefit, basic product, expected product, augmented product and potential product), Product Life Cycle. 3.3 Price – Concept, significance, factors affecting price. 3.4 Place (Channel of distribution) – Meaning, importance, Types of distribution channels; Factors affecting choice of distribution channel. 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 – Macmillan.
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),
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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: 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. Able to prepare Trial Balance. Understand the meaning and need of Subsidiary Books. Able to prepare and balance different types of Cash Book. |
| CO2 | Understand effects of Rectification of Errors. Able to detect the errors and rectify them. Meaning and need of Suspense A/c. |
| CO3 | Able to understand Meaning, Objective and Importance of Final Accounts. Able to Prepare Trading A/c, Profit and Loss A/c and Balance sheet with competency. Able to understand effects of adjustments. |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs.</i> | <i>COs</i> |
|-----------|---|-------------|------------|
| 1 | Unit – I Ledger & Subsidiary Books. 1.1 Meaning, Definition and Importance of Ledger. 1.2 Specimen of Ledger. 1.3 Posting of entries from Journal/Subsidiary Books to Ledger. 1.4 Balancing of Ledger Accounts. 1.5 Preparation of Trial Balance. 1.6 Introduction, Meaning and need for maintaining Subsidiary Books. 1.7 Cash Book with Cash Column 1.8 Cash Book with Cash and Bank Columns. 1.9 Simple and Analytical Petty Cash Book under Imprest System. 1.10 Purchase Book. Purchase Return Book. Sales Book. Sales Return Book 1.11 Journal Proper | 10 | CO1 |
| 2 | Unit – II Rectification of Errors. 2.1 Meaning & Effects of errors 2.2 Types of Errors 2.3 Detection & Rectification of errors 2.4 Preparation of Suspense Account | 5 | CO2 |
| 3 | Unit – III Final Accounts of a Proprietary concern. 9.1 Meaning, Objectives and Importance of Final Accounts. 9.2 Preparation of Trading Account. 9.3 Preparation of Profit and Loss Account 9.4 Preparation of Balance Sheet 9.5 Effects of following adjustments:- Closing stock Outstanding Expenses Prepaid Expenses Depreciation on assets Bad debts and R.D.D. Discount on Debtors and Creditors Income received in advance Accrued Income Goods distributed as free sample Goods withdrawn by proprietor for Personal use. Interest on capital 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 | P01 | P02 | P03 | P04 | P05 | P06 | P07 |
|--------------|------------|------------|------------|------------|------------|------------|------------|
| 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) | ✓ | ✓ | ✓ | ✓ | | ✓ |

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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 Code: BCA-OE-125-A
Lectures: Tutorials: Practical: 2:0:0
Lecture Hours: 24 Hours

Course Type: MDE
Total Credits: 02
CIE Marks: 20
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 1.1 The Role of Content in Digital Marketing 1.2 Types of Content (Blogs, Videos, Infographics, etc.) Content Creation Process 1.3 Content Marketing Channels SEO for Content Marketing 1.4 Repurposing and Syndicating Content 1.5 Building and Segmenting an Email List 1.6 Crafting Effective Email Campaigns Email Marketing | 8 | CO1 |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|--|------------|------------|
| | Automation 1.7 Tools for Email Campaigns (e.g., Mailchimp, Constant Contact) 1.8 A/B Testing in Email Marketing Measuring Email Marketing Success | | |
| 2 | Unit 2: Mobile Marketing and E-commerce 1.1 Mobile Marketing Strategies 1.2 Mobile Advertising Formats 1.3 Mobile SEO and User Experience 1.4 Introduction to E-commerce marketing 1.5 Role of Digital Marketing in E-commerce 1.6 Conversion Rate Optimization (CRO) 1.7 E-commerce Tools and Platforms | 8 | CO2 |
| 3 | Unit 3: Analytics, Trends, and Future of Digital Marketing 1.1 Digital Marketing Analytics 1.2 Importance of Data in Digital Marketing 1.3 Overview of Google Analytics 1.4 Tracking and Measuring Digital Campaigns 1.5 Advanced Data Analysis Techniques 1.6 Emerging Trends in Digital Marketing 1.7 Capstone Project and Presentations <ul style="list-style-type: none"> • Students Work in Groups to Develop a Comprehensive Digital Marketing Plan • Presentation of the Plan to the Class • 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-Hill Education; (5th edition, 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) | ✓ | ✓ | ✓ | ✓ | ✓ | |

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SEMESTER: II

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

Course Title: Personal Financial Planning-II
Course Code: BCA-OE-125-B
Lectures: Tutorials: Practical: 2:0:0
Lecture Hours: 24 Hours

Course Type: OE
Total Credits: 02
CIE Marks: 20
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 |

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|---|------------|----------------------|
| 1 | Unit – 1 Personal Tax Planning 1.1 Basics of Tax: Tax structure in India for personal taxation, Scope of personal tax planning, exemptions and deductions available to individuals under different heads of income and gross total income. Comparison of benefits - Special provision u/s 115BAC vis-à-vis General provisions of the Income-tax Act, 1961, tax avoidance versus tax evasion. | 8 | CO1 & CO2 |
| 2 | Unit – 2 Insurance Planning | 8 | CO1 & CO2 |

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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 Code: BCA-VSC-126

Lectures: Tutorials: Practical: 0:0:2

Lecture Hours: 24 Hours

Course Type: VSC

Total Credits: 2

CIE Marks: 20

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 | P01 | P02 | P03 | P04 | P05 | P06 | P07 |
|------------|-----|-----|-----|-----|-----|-----|-----|
| 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 <ul style="list-style-type: none"> • Create a basic HTTP server using Node.js that responds with "Hello, World!" to any request. |
| 7 | Create a REST API with Node.js <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Design a form using Bootstrap's form components with input and styling. |
| 13 | Set Up a Basic Express.js Server <ul style="list-style-type: none"> • Create a basic Express.js server that serves static files and handles basic routing. |
| 14 | Build a Simple Blog with Express.js <ul style="list-style-type: none"> • Develop a simple blogging application using Express.js with routes for viewing, adding |
| 15 | Build a Simple Blog with Express.js <ul style="list-style-type: none"> • Develop a simple blogging application using Express.js with routes for updating |
| 16 | Build a Simple Blog with Express.js <ul style="list-style-type: none"> • 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

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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 Code: BCA-SEC-127

Lectures: Tutorials: Practical: 2:0:0

Lecture Hours: 24 Hours

Course Type: SEC

Total Credits: 02

CIE Marks: 20

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. |

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

| <i>SN</i> | <i>Contents of Module</i> | <i>Hrs</i> | <i>COs</i> |
|-----------|--|------------|------------|
| | 2.3 features of Linux OS 2.4 Benefits of Linux 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 |
|-------|-----|------|-----|------|-------|
| C01 | 1 | --- | --- | ---- | ----- |
| C02 | --- | 1 | 2 | ---- | ----- |
| C03 | --- | ---- | 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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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 1.1. Effective Negotiation: Elements, Process and General Guidelines 1.2. Telephonic Conversation | 12 | CO1 |

| SN | Contents of Module | Hrs | COs |
|----|--|-----|------------|
| | 1.3. Conducting & Facing Interviews 1.4. Conducting & Participating in Group Decisions 1.5. Essentials for Presentation 1.6. Making Presentations: Content and Organizing 1.7. Delivering a Presentation | | |
| 2 | Unit – II Cross-Cultural Communication and Technology-Enabled Communication 2.1 Concept of Cross-Cultural Communication 2.2 Factors affecting Cross-Cultural Communication 2.3 Strategies and Tips to improve Cross-Cultural Communication 2.4 Technology-Enabled Communication 2.5 Technology-Based Communication tools: Advantages and Disadvantages | 6 | CO2 |
| 3 | Unit – III Writing Business Correspondence and Documents 3.1 Principles of Writing Business Letters 3.2 Kinds of Business Letters 3.3 The Resume: Structure, Format 3.4 To-Do & Not-To-Do 3.5 Instructions for Effective Resume 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 | P01 | P02 | P03 | P04 | P05 | P06 | P07 |
|------------|-----|-----|-----|-----|-----|-----|-----|
| 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) | ✓ | ✓ | - | ✓ | ✓ | - |

Question Paper Pattern (4 Credit Course)

Subject Code

Subject Name

Marks: 60

Times: 2hrs

No. of Pages:

Instructions to Candidate

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should not, no supplement will be provided.

Attempt any Five.

| Q. No. | Question | CO | Marks |
|---------------|-----------------|-----------|--------------|
| 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 |

Question Paper Pattern (2 Credit Course)

Subject Code

Subject Name

Marks: 30

Times: 1 hrs

No. of Pages:

Instructions to Candidate

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should not, no supplement will be provided.

Attempt any Three.

| Q. No. | Question | CO | Marks |
|---------------|-----------------|-----------|--------------|
| 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 |