

## **2.6.2: ATTAINMENT OF POS AND COS ARE EVALUATED.**

Programme Outcomes (POs) and Course Outcomes (COs) of the institution deliberates the quality of education provided by the college.

Programme Outcomes of the institution aim at nurturing skill and capacity among students for employment, research, problem solving, social responsibility, ethics, protection of environment and empowerment through education. Course Outcomes measure what the student should be able to do at the end of the course. It is an effective ability, including attributes, skills and knowledge to successfully carry out the identified activity. Most important aspect of CO should be observable and measurable.

The following is the initial step taken in measuring the level of attainment in the college. In the process of attainment of outcomes, the curriculum is framed as per Outcome Based Education. POs, PSOs are defined based on different levels of Bloom's taxonomy from Lower Order thinking skills (LOTS) to Higher Order thinking skills (HOTS). Likewise, set Course Outcomes are set, which describe what students are expected to know and be able to do at the end of each course. These relate to the skills, knowledge, and behaviour that students acquire by the completion of the course. Attainment is reflected when course outcomes have to incorporate the PSOs for the successful actualization of outcomes. To achieve this, the COs of all courses in the programme are to be mapped with POs & PSOs, which is still in the process of construction. The college used two assessment methods to meet the attainment of POs and PSOs. They are

1. Direct Assessment methods
2. Indirect Assessment methods

The following aspects are considered in the attainment and evaluation of POs and Cos'.

### **Direct Assessment Method**

COs are assessed through the continuous internal mid examinations, assignments and semester end examinations. The COs are mapped against each question and CO analysis is carried out by faculty for each course and documented also. The average result of 75% University examinations and 25% internal examinations results are considered for the evaluation of CO's. Attainment is calculated on a 3-point scale of 1 to 3 (High 3, Medium 2 and Low 1).

The assessment methods, both formative and summative, are the obvious direct measures to determine the attainment of course outcomes. Direct Assessment methods like Continuous Comprehensive Evaluation (Formative assessments) as part of Internal assessments is done

through Assignments, Projects, Mid examinations, Student Seminars, Poster Presentations, Quizzes etc, which account for 25 marks and Semester End examinations for 75 marks are directly related to Course Outcomes. The efficacy of these tools depends on designing an assessment question paper or a project topic or a term paper prompt that assess not just the conceptual knowledge of the course but the applicatory skills as well as analytical and critical thinking skills. Hence care is taken in designing questions that measure the skills of application, analysis, synthesis, and evaluation. When the questions are thus framed the assessment automatically measures the attainment of course and programme outcomes. Thus, a mapping of course outcomes and formative and summative question papers leads to an evaluation of the attainment of PSOs and COs.

- **Seminars:** The students are required to present a seminar on the course of study. The objective of the seminar presentation is assessing students' interaction with peers and teachers on assigned topics. The content, preparation, presentation, and communication skills are assessed.
- **Viva-voce:** The subject teacher regularly interacts with the student during the practical classes to evaluate the extent of knowledge and ability for critical thinking.
- **Project work:** The final semester students take up group research project under the guidance of the faculty member. The ability of the students to plan and then execute the plan by designing and conducting experiments, analyse & interpret data and deliver the outcomes within a time frame are assessed.
- **Attendance and Practical Record**  
Weightage is given for student attendance and well maintenance of lab records.

### **Indirect Assessment Method**

Besides the University examinations the indirect assessment tools such as surveys and feedback by students, graduating students, alumni, employers and placement record are also carried out such as:

- **Programme-Exit Survey:** This survey taken from the final year students at the completion of their programme, stands as the comprehensive feedback for the PO assessment
- **Alumni Survey:** This survey is conducted annually with the Alumni to obtain the inputs and suggestions on PO attainment in the real time societal environment
- **Employer Survey:** This survey is taken from the employer to measure the PO

## PROGRAMME OUTCOMES

On successful completion of Graduate & Post Graduate programme, graduating students/graduates will be able to,

**PO-1.Critical Thinking:** Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

**PO-2.Effective Communication:** Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

**PO-3. Social Interaction:** Elicit views of others, mediate disagreements and help reach conclusions in group settings.

**PO-4. Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

**PO-5. Ethics:** Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

**PO-6. Environment and Sustainability:** Understand the issues of environmental contexts and sustainable development.

**PO-7. Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life-long learning in the broadest.

### PROGRAM OUTCOME OF MBA PROGRAMME:

**PO-1.**Apply knowledge of management theories and practices to solve business problems.

**PO-2.** Foster analytical and critical thinking abilities for data-based decision making.

**PO-3.** Ability to develop value-based leadership ability.

**PO-4.** Ability to understand analyse and communicate global, economic, legal and ethical aspects of business.

**PO-5.** Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.

**PO-6.** Ability to continuously learn and adapt to the dynamics of business and society.

**PO-7.** Acquire entrepreneurial skills to establish and manage enterprises.

### PROGRAMME OUTCOMES OF MSc (C. Sc) PROGRAMME:

**PO-1.Computational Knowledge:** Apply knowledge of computing fundamentals, computing specialisation, mathematics, and domain knowledge appropriate for the computing specialisation to the abstraction and conceptualisation of computing models from defined problems and requirements.

**PO-2.Problem Analysis:** Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

**PO-3.Design /Development of Solutions:** Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

**PO-4.Conduct Investigations of Complex Computing Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO-5.Modern Tool Usage:** Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

**PO-6.Professional Ethics:** Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.

**PO-7.Life-long Learning:** Recognise the need, and have the ability, to engage in independent learning for continual development as a computing professional.

**PO-8.Project management and finance:** Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO-9.Communication Efficacy:** Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

**PO-10.Societal and Environmental Concern:** Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.

**PO-11.Individual and Team Work:** Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

**PO-12.Innovation and Entrepreneurship:** Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large. The POs formulated for MCA programme by the institute must be consistent with the NBA's Graduate Attributes of a computing professional. The POs must foster the attainment of the PEOs.

#### **PROGRAM OUTCOMES OF BCA PROGRAMME:**

**PO-1.** Demonstrate, solve and understand major concepts in all disciplines of computer applications.

**PO-2.** Acquire critical thinking and the scientific knowledge to analyse a given problem and algorithm to solve the problem.

**PO-3.** Improve upon a solution to a problem. Use the C-language constructs in the right way.

**PO-4.** Understand, analyse and develop computer programmes in the areas related to algorithm, web design and networking for efficient design of computer-based system.

**PO-5.** Work in the IT sector as system engineer, soft tester, junior programmer, web developer, system administrator, software developer etc.

**PO-6.** Apply standard software engineering practices and strategies in software project development using open-source programming environment to deliver a quality of product for business success.

#### **PROGRAM OUTCOMES OF BBA PROGRAMME:**

**PO-1.** An Understanding of Business Functions.

**PO-2.** Providing Global Perspectives.

**PO-3.** Developing Critical and Analytical Thinking Abilities.

**PO-4.** Interpersonal Skill Development.

**PO-5.** Creating Social Sensitivity and Understanding CSR, Ethical and Sustainable Business Practices Demonstrate sensitivity to social, ethical and sustainability issues.

**PO-6.** Developing Entrepreneurship Acumen.

#### **PROGRAM OUTCOMES OF BCom-GENERAL PROGRAMME:**

**PO-1.** Learners will gain knowledge in the fundamentals of commerce and a deep understanding of all the courses undertaken.

**PO-2.** Learners will be equipped to join the industry or setup own entities, peruse further professional and other courses.

**PO-3.** Learners will be equipped to face upcoming challenges in the industry and business as the specializations offered expose them to practical aspects.

**PO-4.** Learners will be responsible citizens as various academic and co-curricular courses imbibe sensitivity, moral and ethical values among them.

#### **PROGRAM OUTCOMES OF BSc (MPC, MPCS, MSCS, BNC) PROGRAMME:**

**PO-1.** Understand and apply the fundamental principles, concepts and methods in key areas of science and multidisciplinary fields.

**PO-2.** Demonstrate problem solving, analytical and logical skills to provide solutions for the scientific requirements.

**PO-3.** Develop the critical thinking with scientific temper.

**PO-4.** Communicate the subject effectively.

**PO-5.** Understand the importance and judicious use of technology for the sustainable growth of mankind in synergy with nature.

**PO-6.** Understand the professional, ethical and social responsibilities.

**PO-7.**Enhance the research culture and uphold the scientific integrity and objectivity.

**PO-8.**Engage in continuous reflective learning in the context of technological and scientific advancements.

### BCA1<sup>st</sup> Year Course Structure

| SEMESTER-I                                                | SEMESTER-II                                       |
|-----------------------------------------------------------|---------------------------------------------------|
| English-I                                                 | English-II                                        |
| Second Language - I                                       | Second Language - II                              |
| Life Skill Course-I: Human Values and Professional Ethics | Life Skill Course-II: Indian Culture and Science  |
| Skill Development Course-I: Electrical Appliances         | Skill Development Course-II: Solar Energy         |
| Communication & Soft Skills                               | Skill Development Course-III: Food Adulteration   |
| Computer Fundamentals & Office Tools (Theory & Lab)       | Data Structures (Theory & Lab)                    |
| Programming in C (Theory & Lab)                           | Object Oriented Analysis and Design(Theory & Lab) |
| Numerical & Statistical Methods (Theory & Lab)            | Data Base Management System (Theory & Lab)        |

### BCA 2<sup>nd</sup> Year Course Structure

| SEMESTER-III                                                             | SEMESTER-IV                                           |
|--------------------------------------------------------------------------|-------------------------------------------------------|
| English–III                                                              | Cyber Laws (Theory & Lab)                             |
| Second Language-III                                                      | Data Mining And Data Warehousing (Theory & Lab)       |
| Life Skill Course-III: Environmental Audit                               | Web Programming (Theory & Lab)                        |
| Life Skill Course-IV: Analytical Skills                                  | Design of Object-Oriented Applications (Theory & Lab) |
| Skill Development Course-IV: Personality Enhancement & Leadership Skills | Data Analytics using R (Theory & Lab)                 |
| Accounting and Financial Management (Theory & Lab)                       | Object Oriented Software Engineering (Theory & Lab)   |
| Object Oriented Programming Through Java (Theory & Lab)                  |                                                       |
| Operating Systems (Theory & Lab)                                         |                                                       |

## BCA3<sup>rd</sup> Year Course Structure

| SEMESTER-V                                               | SEMESTER-VI |
|----------------------------------------------------------|-------------|
| Machine Learning using Python (Theory & Lab)             | Internship  |
| Digital Imaging (Theory & Lab)                           |             |
| Cyber Security & Malware Analysis (Theory & Lab)         |             |
| Internet of Things (Theory & Lab)                        |             |
| Mobile Application Development (Theory & Lab)            |             |
| Computer Networking & PC Trouble Shooting (Theory & Lab) |             |

### Course Outcome

A Bachelor of Computer Applications (BCA) program equips students with the skills to design, develop, and implement computer applications.

**Programming Proficiency:** Graduates gain expertise in core programming languages like C++, Java, and Python. This allows them to design and build software applications.

- **Problem-Solving Skills:** The program emphasizes analytical thinking and algorithmic problem-solving, which are valuable assets in any tech career.
- **Database Management:** Students learn the fundamentals of database design and management, which is essential for storing and manipulating data effectively.
- **Communication Skills:** The program incorporates courses that develop written and verbal communication skills, enabling graduates to clearly explain technical concepts.
- **Teamwork:** Collaborative projects are often part of the curriculum, fostering teamwork abilities that are crucial in the IT industry.

In short, a BCA program provides a strong foundation for a successful career in computer applications.

### MSc Computer Science 1<sup>st</sup> Year Course Structure

| SEMESTER-1                                   | SEMESTER-2                                  |
|----------------------------------------------|---------------------------------------------|
| Discrete Mathematical Structure              | Formal Languages & Automata Theory          |
| Data Structures & File Structures            | Relational Data Base Management Systems     |
| Computer Organization & Architecture         | Advanced Operating Systems                  |
| Object Oriented Programming Using C++ & JAVA | Elective I: Embedded Systems                |
| Advanced Computer Networks                   | Elective II: Web Technologies               |
| Data & File Structures Lab                   | Advanced JAVA Programming Lab               |
| Computer Organization Lab                    | Relational Data Base Management Systems Lab |

### MSc Computer Science 2<sup>nd</sup> Year Course Structure

| SEMESTER-3                                | SEMESTER-4 |
|-------------------------------------------|------------|
| Data Warehousing & Mining                 | Internship |
| Object Oriented Software Engineering      |            |
| Network Security & Cryptography           |            |
| Elective III: Cloud Computing             |            |
| MOOCS-I                                   |            |
| OOSE Lab                                  |            |
| Network Programming & Web Programming Lab |            |

#### Course Outcomes of MSc Computer Science Programme:

On successful completion of the course students will be able to demonstrate a sound technical knowledge of their selected project topic. Undertake problem identification, formulation, & solution. Design engineering solutions to complex problems utilizing the system's approach. They understand the practical application of Object-Oriented Programming Using C++ & JAVA, web technologies, network security & cryptography, cloud computing, & advanced computer networks.

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- **Seminars**
- **Viva-voce**
- **Project work**
- **Attendance and Practical Record**

## **2. Indirect Assessment Method**

Besides the University examinations the indirect assessment tools such as surveys and feedback by students, graduating students, alumni, employers and placement record are also carried out such as:

- **Programme-Exit Survey**
- **Alumni Survey**
- **Employer Survey**



A handwritten signature in green ink, consisting of stylized loops and flourishes.

**Director & I/c Principal**

**DIRECTOR**  
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