## MCA–I Semester Scheme of teaching and examinations for 2024-2025

| Sl. No. | Category | Course Code | Course Title | Credits | Hours/Week | | | Examination Marks | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lecture | Tutorial /SDA | Practical/ Seminar | CIE | SEE | Total |
| 1. | IPCC | PCAA101C | Programming and Problem Solving in C | 4 | 2 | - | 2 | 50 | 50 | 100 |
| 2. | BSC | PCAA102C | Discrete Mathematics and Graph Theory | 3 | 2 | 1 | - | 50 | 50 | 100 |
| 3. | PCC | PCAA103C | Database Management Systems | 3 | 3 | - | - | 50 | 50 | 100 |
| 4. | PCC | PCAA104C | Operating Systems | 3 | 2 | 1 | - | 50 | 50 | 100 |
| 5. | PCC | PCAA105C | Web Technologies | 3 | 3 | - | - | 50 | 50 | 100 |
| 6. | PCCL | PCAA106L | DBMS and Web Technologies Laboratory | 2 | - | 2 | 2 | 50 | 50 | 100 |
| 7. | NCMC | PCAA001M | Research Methodology | PP | NPTEL/VTU Online Courses | | | | | |
| 8. | **NCMC** | **PCAA****** | **Mathematics for MCA Students** | PP | 2 | - | 2 | 100 | - | 100 |
| | | | **Total** | 18 | 14 | 04 | 06 | 300 | 300 | 600 |

Note:**BSC**-BasicScienceCourses,**PCC**:Professionalcore.**IPCC**-IntegratedProfessionalCoreCourses,**PCC(PB):**ProfessionalCoreCourses(ProjectBased),**PCCL**-ProfessionalCoreCourselab,**NCMC**-Non CreditMandatoryCourse,,**L**-Lecture,**P**-Practical,**T/SDA**-Tutorial**/**SkillDevelopmentActivities(Hours are for Interaction between faculty and students NCMC- Research Methodology (**Online**) for the students who have **not studied** this course in the Undergraduate level. This course is not counted for vertical progression; Students have to qualify for the award of the master's degree.

**BSC: Basic Science Courses:** Courses like Mathematics/ Science are the prerequisite courses that the concerned engineering stream board of Studies will decide.**PCC: Professional Core Course:** Courses related to the stream of engineering, which will have both CIE and SEE components, students have to qualify in the course for the award of the degree. **Integrated Professional Core Course (IPCC)**: Refers to a Professional Theory Core Course Integrated with practical of the same course. The IPCC's theory part shall be evaluated by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE).However, questions from the practical part of IPCC shall be included in the SEE question paper .**Project Based Learning Course (PCC (PB):** Project Based Learning course is a professional core Course only Students have to complete a project out of learning from the course and SEE will be viva voce on project work. **PCCL: Professional Core Course Laboratory:** Practical courses whose CIE will be evaluated by the class teacher and SEE will be evaluated by the two examiners.

**Skill development activities: Under Skill development activities** in a concerning course, the students should

1. Interact with industry (small, medium, and large).
2. Involve in research/testing/projects to understand their problems and help creative and innovative methods to solve the problem.
3. Involve in case studies and field visits/fieldwork.
4. Accustom to the use of standards/codes etc. to arrow the gap between academia and industry.
5. Handle advanced instruments to enhance technical talent.
6. Gain confidence in the modeling of systems and algorithms for transient and steady- state operations, thermal study etc.
7. Work on different software/s (tools) to simulate, analyze and authenticate the output to interpret and conclude.

All activities should enhance student's abilities to employment and/or self- employment opportunities, management skills, Statistical analysis, fiscal expertise etc. Students and the course instructor/share to be involved either individually or in groups to interact together to enhance the learning and application skills of the study they have under taken. The students with the help of the course teacher can take up relevant technical –activities that will enhance their skills. The prepared report shall be evaluated for CIE marks.

**NCMC- Research Methodology -** Non Credit Mandatory Course (NCMC) , for the students who have **not studied** this course in the Undergraduate level. This course is not counted for vertical progression; Students have to qualify for the award of the master's degree.

**Bridge Course**: Non-Credit Mandatory Course -Mathematics for MCA Students: Students who have not taken Mathematics at the 10+2 or degree level are required to study and pass this course in the 1st semester. However, this course/subject will not be considered for vertical progression

## MCA-II Semester Scheme of teaching and examinations for 2024-2025

| Sl. No. | Category | Course Code | Course Title | Credits | Hours/Week | | | Examination Marks | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lecture | Tutorial / SDA | Practical | CIE | SEE | Total |
| 1. | IPCC | PCAA201C | Machine Learning and Data Analytics using python | 4 | 3 | - | 2 | 50 | 50 | 100 |
| 2. | PCC | PCAA202C | Object Oriented Programming using JAVA | 4 | 4 | - | - | 50 | 50 | 100 |
| 3. | PCC | PCAA203C | Data Structure and Algorithms | 4 | 4 | - | - | 50 | 50 | 100 |
| 4. | PCC | PCAA204C | Software Engineering | 3 | 3 | - | - | 50 | 50 | 100 |
| 5. | PCC | PCAA205C | Web Application Development | 3 | 3 | - | - | 50 | 50 | 100 |
| 6 | PCCL | PCAA206L | Object Oriented Programming using JAVA Laboratory | 2 | - | - | 4 | 50 | 50 | 100 |
| 7. | PCCL | PCAA207L | Data Structure and Algorithms Laboratory | 2 | - | - | 4 | 50 | 50 | 100 |
| 8. | NCMC | PCA A002M | Ability Enhancement Courses with Seminar-I | PP | | | | | | |
| | | | **Total** | 22 | 17 | 00 | 10 | 350 | 350 | 700 |

**Note:** BSC-Basic Science Courses, PCC: Professional core. IPCC-Integrated Professional Core Courses, PCC(PB): Professional Core Courses (Project Based), PCCL-Professional Core Course lab ,NCMC- Non Credit Mandatory Course, ,L-Lecture, P-Practical, T/SDA-Tutorial / Skill Development Activities(Hours are for Interaction between faculty and students) Research Methodology (**Online**) for the students who have **not studied** this course in the Undergraduate level. This course is not counted for vertical progression; Students have to qualify for the award of the master's degree.

BSC: Basic Science Courses: Courses like Mathematics/ Science are the prerequisite courses that the concerned engineering stream board of Studies will decide. PCC: Professional Core Course: Courses related to the stream of engineering, which will have both CIE and SEE components, students have to qualify in the course for the award of the degree. Integrated Professional Core Course (IPCC): Refers to a Professional Theory Core Course Integrated with practicals of the same course. The IPCC's theory part shall be evaluated by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. Project Based Learning Course (PCC(PB): Project Based Learning course is a professional core Course only Students have to complete a project out of learning from the course and SEE will be viva voce on project work. PCCL: Professional Core Course Laboratory: Practical courses whose CIE will be evaluated by the class teacher and SEE will be evaluated by the two examiners.
**Skill development activities: Under Skill development activities in a concerning course, the students should**
1. Interact with industry (small, medium, and large).
2. Involve in research/testing/projects to understand their problems and help creative and innovative methods to solve the problem.
3. Involve in case studies and field visits/ fieldwork.
4. Accustom to the use of standards/codes etc., to narrow the gap between academia and industry.
5. Handle advanced instruments to enhance technical talent.
6. Gain confidence in the modeling of systems and algorithms for transient and steady-state operations, thermal study, etc.

7. Work on different software/s (tools) to simulate, analyze, and authenticate the output to interpret and conclude.

All activities should enhance student's abilities to employment and/or self-employment opportunities, management skills, Statistical analysis, fiscal expertise, etc. Students and the course instructor/s are to be involved either individually or in groups to interact together to enhance the learning and application skills of the study they have undertaken. The students with the help of the course teacher can take up relevant technical –activities that will enhance their skills. The prepared report shall be evaluated for CIE marks.

**Ability Enhancement Courses with Seminar-I** - None Credit Mandatory Course (NCMC), Students have to select the Topic like ERP, R Programming, Scripting language, Web Development Application, etc. They have to develop a small prototype and demonstrate to all the class.

# BASAVESHWARENGINEERINGCOLLEGE, BAGALKOTE-587102
## Department of Computer Applications (MCA)

### MCA-III Semester Scheme of teaching and examinations for 2024-2025

BVVS

| Sl. No. | Course | Subject Code | Subject | Credits | Hours/Week | | | Examination Marks | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lecture | Tutorial / SDA | Practical | CIE | SEE | Total |
| 1. | PEC | PCAA3XXE | Specializations | 3 | 3 | - | - | 50 | 50 | 100 |
| 2. | PEC | PCAA3XXE | Specializations | 3 | 3 | - | - | 50 | 50 | 100 |
| 3. | PEC | PCAA3XXE | Specializations | 3 | 3 | - | - | 50 | 50 | 100 |
| 4. | PROJ | PCAA3XXP | Project Work | 15 | 25-30 hours per week | | | 50 | 50 | 100 |
| | | | **Total** | **24** | **09** | **00** | **00** | 200 | 200 | 400 |

Students can opt three specializations from the listed below:

# Specializations

| Specialization | Data Science and Analytics(B) | Specialization | Web Application Development(C) | Specialization | Network and System Administration(D) |
|---|---|---|---|---|---|
| Course Code | Course Title | Course Code | Course Title | Course Code | Course Title |
| PCAB301E | Data Mining and Data Warehousing | PCAC301E | Full stack development using java | PCAD301E | Computer Networks |
| PCAB302E | Big data Analytics | PCAC302E | Rich Internet Application Development | PCAD302E | Network and Linux Administration |
| PCAB303E | Business Data Analytics | PCAC303E | Web Development Using PHP and MySQL | PCAD303E | TCP/IP |
| PCAB304E | Enterprise Resource Planning | PCAC304E | Enterprise Application Programming | PCAD304E | Unix Shell Programming |
| PCAB305E | Exploratory Data Analysis | PCAC305E | Advances in Web Technologies | PCAD305E | Cloud Essentials |
| PCAB306E | Social Media Analytics | PCAC306E | Web Programming using Java | PCAD306E | Introduction to ERP and SAP Basis Administration |

# BASAVESHWARENGINEERINGCOLLEGE, BAGALKOTE-587102
## Department of Computer Applications (MCA)

BVVS

| Specialization | Software Development and Systems(E) | Specialization | Computer Networks and Cloud(F) |
|---|---|---|---|
| **Course Code** | **Course Title** | **Course Code** | **Course Title** |
| PCAE301E | Management Information Systems | PCAF301E | Computer Networks |
| PCAE302E | Database Design & Applications | PCAF302E | Data Storage Technologies and Networks |
| PCAE303E | Software Architectures | PCAF303E | Design and Operation of Data Centres |
| PCAE304E | Computer Organization and Software Systems | PCAF304E | Wireless and Mobile Communication |
| PCAE305E | Software Design and Patterns | PCAF305E | Software Defined Networks |
| PCAE306E | Object-oriented Analysis & Design | PCAF306E | Cloud Computing |

| Specialization | AI and ML(G) | Specialization | IoT(H) | Specialization | Security(I) |
|---|---|---|---|---|---|
| **Course Code** | **Course Title** | **Course Code** | **Course Title** | **Course Code** | **Course Title** |
| PCAG301E | Introduction to Generative AI | PCAH301E | Data Management for IoT | PCAI301E | Ethical Hacking |
| PCAG302E | Artificial Neural Networks | PCAH302E | Networked Embedded Applications | PCAI302E | Cyber Security |
| PCAG303E | Natural Language Processing | PCAH303E | Cross Platform Application Development | PCAI303E | Cryptography and Network Security |
| PCAG304E | Deep Learning Fundamentals | PCAH304E | IoT Technology and Applications | PCAI304E | Block chain Technologies |
| PCAG305E | Introduction to Machine Learning | PCAH305E | Communication and Networking Technologies in IoT | PCAI305E | Database & Web Application Security |
| PCAG306E | Computer Vision | PCAH306E | Software and Programming in IoT | PCAI306E | Mobile and Wireless Security |

**Project work** is a significant component aimed at fostering research, practical application of knowledge, and innovation. The evaluation process generally follows these steps:

1. **Selection and Approval of Project Work:**
   • Topic Selection: Students propose project topics, often in consultation with their faculty advisor.
   • Approval Process: The proposed topic is submitted for approval by a project committee or department, ensuring alignment with academic standards and relevance.

2. **Project Execution:**
   • Research and Development: Students carry out research, experiments, or development work as per the project plan.
   • Periodic Reviews: Regular progress reviews are conducted by faculty to monitor the project's progress and provide feedback.
   • Documentation: Students maintain a detailed record of their methodology, data, results, and analysis. Finalized Scheme V4 8

3. **Submission of the Project Report:**
   • Format and Guidelines: The report must follow the prescribed format by the university or department.
   • Plagiarism Check: The report is often checked for plagiarism to ensure originality.

4. **Evaluation Process:**
   • Internal Evaluation: Faculty members from the department review the project report and presentation for content quality, innovation, and depth of research.
   • External Evaluation: An external examiner, often an industry expert or academician from another institution, reviews the project.
   • Viva Voce Examination: The student defends their project work before a panel comprising internal and external examiners. This assesses their understanding, analytical ability, and application of the project work.

5. **Grading Criteria (Guidelines only)**
   • Report Quality: Depth of research, organization, and clarity of the document.
   • Presentation Skills: Effectiveness in communicating key aspects of the project.
   • Technical Merit: Innovation, accuracy, and the applicability of the research.
   • Viva Performance: Understanding of the subject, responses to questions, and ability to discuss the work effectively.

6. **Final Outcome:**
   • Marks Allocation: Typically, evaluation is a blend of internal (guided by the department) and external (examiner's input) assessments, distributed over the report, presentation, and viva.
   • Pass Requirement: Students must meet a minimum threshold to pass, as per university policies.

This structured evaluation ensures a comprehensive assessment of the student's practical and research capabilities, preparing them for further research or professional practice.

## MCA-IV Semester Scheme of teaching and examinations for 2024-2025

| Sl. No. | Course | Subject Code | Subject | Credits | Hours/Week | | | Examination Marks | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lecture | Tutorial / SDA | Practical | CIE | SEE | Total |
| 1. | PEC/MDC | PCAA4XXX | (Online Courses)12 weeks duration | 3 | - | - | - | - | - | 100 |
| 2. | TS | PCAA4XXX | Technical Seminar | 2 | - | - | - | 100 | - | 100 |
| 3. | INT | PCAA4XXX | Research Internship /Industry-Internship / Startup Internship | 11 | - | - | - | 100 | 100 | 200 |
| | | | Total | 16 | - | - | - | 200 | 100 | 400 |

**INT:** Industry/ Research Internship leading to the project work /startup **PROJ:** Project work outcome of Internship (Project Work Phase-II is Viva voce SEE)

**TS:** Technical Seminar: Students can present the seminar based on the new technologies in the seminar by all postgraduate students of the program shall be mandatory. The CIE marks awarded for the Seminar shall be based on the evaluation of the Report, Presentation skill, and performance in the Question and Answer session in the ratio 50:25:25. Seminar shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up/ complete shall be declared as fail in the seminar course and have to complete the same during the subsequent semester.

**PCAA401:** 1 course Online NPTEL can be cumbersome so one research article may be accepted/Published. A patent can be also one option.

**Industry Internship:** The main objective of the industry internship is to ensure that the intern is exposed to a real-world environment and gain practical experience. Often, it may be a practical exposure to the theory that has been learned during the academic period. The industry internship helps students understand of analytical concepts and tools, hone their skills in real-life situations, and build confidence in applying the skills learned.

**Research Internship:** A research internship is an opportunity for students or early career professionals to gain hands-on experience in conducting research under the guidance of a mentor or within a research team. These internships can take place in academic institutions, research organizations, government agencies, or private companies

**Research /Industry Internship:** In the third-semester Students have to be in touch with a guide/mentor/coordinator and regularly submit the report referred to the progress internship. Based on the progress report the Guide/Mentor/coordinator has to enter the CIE marks. he/she has to attend the SEE at the parent Institute.