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BASAVESHWARENGINEERINGCOLLEGE, BAGALKOTE-587102

Department of Computer Applications (MCA)

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

Sl. No.	Course	Subject Code	Subject	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 (Online)	PP	Online Courses(online.vtu.ac.in)					
8.	**NCMC**	**PCAA******	**Mathematics for MCA Students**	PP	2	-	2	100	-	100
			Total	**18**	**14**	**05**	**06**	**300**	**300**	**600**

Note:**BSC**-BasicScienceCourses,**PCC**:Professionalcore.**IPCC**-IntegratedProfessionalCoreCourses,**PCC(PB):**ProfessionalCoreCourses(ProjectBased),**PCCL**-ProfessionalCoreCourselab,**NCMC**-NoneCreditMandatoryCourse,,**L-**Lecture,**P-**Practical,**T/SDA-**Tutorial**/**SkillDevelopmentActivities(Hours are for Interaction between faculty and students NCMC- Research Methodology and IPR (**Online**) for the students who have **not studied** this course in the Under graduate 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 and IPR- None Credit Mandatory Course (NCMC) if students have not studied his course in their under graduate program then he/she has to take this Course at **http://online.vtu.ac.in** and to qualify for this course is compulsory before completion of the minimum duration of the program (Two years), however, this course will not be considered for vertical progression.

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

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MCA-II 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.	IPCC	PCAA201C	Machine Learning and Data Analytics using python	4	2	-	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**	**16**	**00**	**09**	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- None Credit Mandatory Course, ,L-Lecture, P-Practical, T/SDA-Tutorial / Skill Development Activities(Hours are for Interaction between faculty and students) Research Methodology and IPR (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.

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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.

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Department of Computer Applications (MCA)

MCA-III 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	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			100	100	200
			Total	**24**	**09**	**00**	**00**	250	250	500

The students can opt for any three courses from any one specialization 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 Visualization	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

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Department of Computer Applications (MCA)

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	Blockchain 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.

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Department of Computer Applications (MCA)

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.