

MCA SCHEME JULY 24

Program	Course Code	Course Name	Credit	Sem	Theory/ Practical	Internal Marks	External Marks
MCA	TMC101	Full Stack Development	3	1	Theory	30	70
MCA	TMC102	Computer Networks	3	1	Theory	30	70
MCA	TMC103	Programming and Problem-Solving	3	1	Theory	30	70
MCA	TMC104	Advanced Operating Systems	3	1	Theory	30	70
		Discipline-Specific Elective - I					
MCA	TMC111	Probability and Statistics	4	1	Theory	30	70
MCA	TMC112	Green Computing	4	1	Theory	30	70
MCA	TMC113	Cloud Computing	4	1	Theory	30	70
MCA	TMC114	Cyber Security	4	1	Theory	30	70
MCA	TMC115	Internet of Things	4	1	Theory	30	70
MCA	TMC116	Artificial Intelligence	4	1	Theory	30	70
MCA	TMC117	AI and Data Science	4	1	Theory	30	70
MCA	TMC118	Python Programming	4	1	Theory	30	70
MCA	TMC105	Career Skills - I	2	1	Theory	30	70
MCA	PMC101	Full Stack Development Laboratory	1	1	Practical	30	70
MCA	PMC102	Advanced Operating Systems and Computer Networks Laboratory	1	1	Practical	30	70
MCA	PMC103	Programming and Problem-Solving Laboratory	1	1	Practical	30	70
Total Credit			21				

First Semester Audit and Bridge Courses:

Course Code	Course Type	Course Title
AMC101	Audit	Fundamentals of Computers
BMC101	Bridge	Introduction to Operating Systems
BMC102	Bridge	Mathematical Foundation of Computer Science

Program	Course Code	Course Name	Credit	Sem	Theory/ Practical	Internal Marks	External Marks
MCA	TMC201	Advanced Database Management Systems	3	2	Theory	30	70
MCA	TMC202	Advanced Java Programming	3	2	Theory	30	70
MCA	TMC203	Data Structures	3	2	Theory	30	70
		Discipline-Specific Elective - II					
MCA	TMC211	Machine Learning – 1	4	2	Theory	30	70
MCA	TMC212	Computer-Aided Simulation and Modelling	4	2	Theory	30	70
MCA	TMC213	Cloud based application development and management	4	2	Theory	30	70
MCA	TMC214	Information security	4	2	Theory	30	70
MCA	TMC215	Human-Computer Interaction	4	2	Theory	30	70
		General Elective - I					
MCA	TMC221	Research Methodology	3	2	Theory	30	70
MCA	TMC222	Entrepreneurship	3	2	Theory	30	70
MCA	TMC204	Career Skills - II	2	2	Theory	30	70
MCA	MCP201	Mini Project – I /Research Publication	2	2			100
MCA	PMC201	Advanced Database Management Systems Laboratory	1	2	Practical	30	70
MCA	PMC202	Advanced Java Programming Laboratory	1	2	Practical	30	70
MCA	PMC203	Data Structures Laboratory	1	2	Practical	30	70
MCA	GP 201	General Proficiency	1	2		100	
Total Credit			24				

Second semester Bridge Courses:

Course Code	Course Type	Course Title
BMC201	Bridge	Introduction to Database Management Systems
BMC202	Bridge	Introduction to Object-Oriented Programming

Program	Course Code	Course Name	Credit	Sem	Theory/ Practical	Internal Marks	External Marks
MCA	TMC301	Design and Analysis of Algorithms	3	3	Theory	30	70
MCA	TMC302	Mobile Application Development	3	3	Theory	30	70
MCA	TMC303	Software Engineering	3	3	Theory	30	70
		Discipline-Specific Elective - III					
MCA	TMC311	Machine Learning-2	4	3	Theory	30	70
MCA	TMC312	DevOps on cloud	4	3	Theory	30	70
MCA	TMC313	Computer system security	4	3	Theory	30	70
MCA	TMC314	Data Visualization	4	3	Theory	30	70
MCA	TMC315	Data Warehousing and Mining	4	3	Theory	30	70
MCA	TMC304	Career Skills – III	2	3	Theory	30	70
MCA	MCP301	Mini Project –II /Research Seminar	2	3			100
	PMC301	Design and Analysis of Algorithms Laboratory	1	3	Practical	30	70
MCA	PMC302	Mobile Application Development Laboratory	1	3	Practical	30	70
MCA	PMC303	Software Engineering Laboratory	1	3	Practical	30	70
Total Credit			20				

Third Semester Audit and Bridge Courses:

Course Code	Course Type	Course Title
AMC301	Audit	Competitive Programming

Program	Course Code	Course Name	Credit	Sem	Theory/ Practical	Internal Marks	External Marks
MCA	TMC401	Data Science using R	3	4	Theory	30	70
		Discipline-Specific Elective - IV					
MCA	TMC411	Visual Computing	4	4	Theory	30	70
MCA	TMC412	Advanced Algorithms	4	4	Theory	30	70
MCA	TMC413	Block chain and its applications	4	4	Theory	30	70
MCA	TMC414	Software Project Management	4	4	Theory	30	70
MCA	TMC415	Soft Computing	4	4	Theory	30	70
MCA	TMC416	Cryptography	4	4	Theory	30	70
MCA	TMC417	Natural Language Processing	4	4	Theory	30	70
MCA	TMC418	Generative AI	4	4	Theory	30	70
		General Elective – II					
MCA	TMC431	Personal Finance	3	4	Theory	30	70
MCA	TMC432	Digital Marketing	3	4	Theory	30	70
MCA	MCP401	Internship/Dissertation/Capstone Project	8	4			100
MCA	PMC401	Data Science using R Laboratory	1	4	Practical	30	70
MCA	GP 401	General Proficiency	1	4			100
Total Credit			20				

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Master of Computer Applications

Semester -I Summary

Inspired by the transformative vision of NEP 2020, the MCA program is designed to make learning an exciting and empowering journey. Rooted in Outcome-Based Education (OBE), every module is crafted to ensure you gain practical, real-world skills that are not just theoretical but immediately applicable. The Choice-Based Credit System (CBCS) adds a dash of flexibility, allowing you to tailor your academic path by choosing electives that resonate with your passions and career dreams. This personalized approach ensures your education is as unique as you are.

The first year of the postgraduate program in Computer Applications provides students with essential technical knowledge, hands-on experience, and problem-solving skills to excel in the tech industry. The curriculum blends theoretical learning with practical applications, ensuring students are well-prepared for real-world challenges.

Students develop expertise in Full Stack Development, where they learn front-end and back-end technologies to design, build, and deploy complete web applications. Computer Networks introduces them to networking protocols, security mechanisms, and data transmission processes, helping them understand the backbone of modern communication systems. Programming and Problem-Solving sharpens their coding skills and algorithmic thinking, enabling them to write efficient programs. In Advanced Operating Systems, they explore key concepts such as process management, memory allocation, and system security. Additionally, an elective course allows them to specialize in a niche domain, while Career Skills training enhances their communication, teamwork, and professional growth.

Practical learning is a key component of the program. The Full Stack Development Laboratory provides hands-on experience in web application development. The Advanced Operating Systems and Computer Networks Laboratory allows students to work on configuring networks and troubleshooting system issues.

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Master of Computer Applications

Semester -II Summary

The second semester of the Master of Computer Applications program is a transformative phase that goes beyond academics, shaping students into future-ready professionals. It delves into advanced topics like data management, programming, and problem-solving, equipping learners with the tools to thrive in a technology-driven world. These skills empower them to design efficient systems, analyze complex data, and create innovative solutions that can revolutionize industries.

In addition to technical expertise, the program emphasizes critical thinking, analytical reasoning, and research capabilities, which are vital for addressing real-world challenges. Courses on creativity, entrepreneurship, and career development foster a mindset of innovation and professionalism, preparing students to stand out in a competitive global landscape.

Hands-on projects and laboratory sessions play a crucial role in bridging the gap between theory and practice. These experiences allow students to apply their knowledge in meaningful ways, boosting their confidence and technical proficiency. Moreover, collaborative projects enhance teamwork, leadership, and adaptability—skills that are invaluable in any career.

By combining technical depth with practical exposure and soft skills development, the second semester prepares students to excel as well-rounded professionals, ready to make a significant impact in the ever-evolving tech industry. This phase is not just about learning—it's about transforming into industry leaders.

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Master of Computer Applications

Semester -III Summary

The third semester of the postgraduate program in Computer Applications begins with a semester focused on equipping students with advanced skills and practical experience to excel in the tech industry. Combining theory and hands-on learning, the program ensures students are prepared to solve real-world challenges.

Students will enhance their coding and problem-solving abilities through Competitive Programming, which boosts quick thinking and logical reasoning. Introduction to Software Engineering guides them in building strong software systems, step by step. The Design and Analysis of Algorithms course turns students into efficient problem-solvers, empowering them to tackle complex coding tasks. Mobile Application Development encourages innovation, allowing students to create apps that could transform industries—imagine designing the next app used by millions.

For those intrigued by futuristic tech, Artificial Intelligence and Machine Learning explore smart systems, teaching how machines can think and learn. Software Testing and Quality Assurance ensure every product is flawless, highlighting the importance of precision. The program also covers Human-Computer Interaction for designing user-friendly tech, Theory of Computation to understand programming fundamentals, and Operations Research to optimize real-world problems. Additionally, Career Skills sharpens professional abilities, while the Mini Project/Research Seminar offers a platform to showcase creativity and innovation.

With a strong emphasis on hands-on learning, problem-solving, and career readiness, this program prepares students to become tech leaders, ready to innovate and thrive in the ever-changing world of computer applications.

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Master of Computer Applications
Semester - IV Summary

The fourth semester postgraduate courses in Computer Applications are designed to equip students with cutting-edge skills and hands-on experience to tackle real-world challenges in the tech industry. These courses blend theoretical knowledge with practical applications, ensuring students are career ready.

Data Science using R focuses on data analysis, visualization, and predictive modeling, enabling students to extract meaningful insights from complex datasets. Cryptography and Cybersecurity/Information Security teach students to secure digital systems, emphasizing encryption techniques and threat mitigation strategies. These skills are critical in today's data-driven and security-conscious world.

Computer-Aided Simulation and Modeling introduces students to tools for simulating real-world systems, enhancing their problem-solving and decision-making abilities. C# and .NET provides expertise in building robust applications, while Advanced Graphics and Visual Computing explores rendering techniques and visual data representation, essential for gaming, VR, and multimedia industries.

Soft Computing introduces AI techniques like neural networks and fuzzy logic, preparing students for intelligent system design. Internet of Things (IoT) covers smart device integration and data communication, a growing field in automation and smart technologies.

Students also choose from General Electives like Digital Marketing and Personal Finance, which add versatility to their skill set. The Data Science Laboratory offers hands-on practice with real datasets, reinforcing analytical skills.

The program culminates with an Internship/Dissertation/Capstone Project, where students apply their knowledge to solve industry-specific problems, bridging the gap between academia and the professional world.

These courses emphasize hands-on learning, problem-solving, and career-oriented skills, preparing students to excel in diverse roles such as data scientists, cybersecurity experts, software developers, and IoT specialists. With a focus on practical applications and emerging technologies, this program ensures students are well-equipped to thrive in the dynamic field of computer applications.