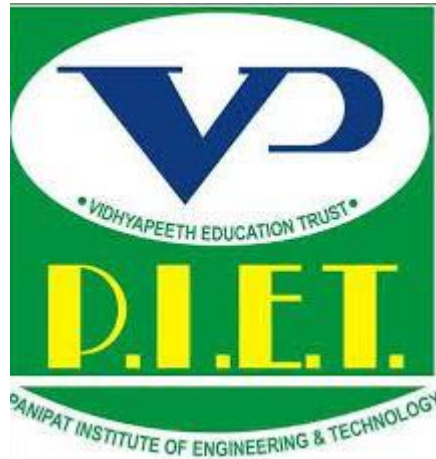




Panipat Institute of Engineering & Technology

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Scheme of Studies and Examinations, and the Syllabi
for
Post Graduate Degree Programme
Master of Computer Applications
(in phased manner)

as per NEP-2020 guidelines, and
Curriculum and Credit Framework for Postgraduate Programme

With Multiple Entry-Exit and Internship
w.e.f. Academic Session 2024-25

DEPARTMENT OF COMPUTER APPLICATIONS - PG

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Vision of the Department

To be recognized as a centre of excellence for academic repute to create competent, ethical, and responsible Computer Applications professionals with the abilities to contribute globally to the industry, environment and the society at large.

Mission of the Department

M1: Equip students with knowledge and practical skills in computer applications in line with the needs of the industry.

M2: Foster research and innovation capabilities, imbibe ethics and values, and instill leadership in students to support sustainable development.

M3: To develop students with an analytical mindset and the competence to solve real-life problems.

M4: Facilitate linkages with industry and professional bodies, provide experiential learning opportunities, and develop responsible students with abilities to learn and work independently.

Program Educational Objectives (PEOs)

The Graduate of the program will be able to:

PEO1: Demonstrate analytical abilities, design skills, multidisciplinary competence, critical thinking, and the ability to foster innovations.

PEO2: Demonstrate leadership and supportive roles in the dynamic work environment with ethical behavior and responsibility in their professions.

PEO3: To excel in careers in the diverse domains of computer applications, higher education, and entrepreneurship.

PEO4: Adapt to evolving technologies with the ability to learn independently.

Program Outcomes (POs)

PO1	Foundation Knowledge	Apply knowledge of mathematics, programming logic and coding fundamentals for solution architecture and problem solving.
PO2	Problem Analysis	Identify, review, formulate and analyse problems for primarily focussing on customer requirements using critical thinking frameworks.
PO3	Development of Solutions	Design, develop and investigate problems with as an innovative approach for solutions incorporating ESG/SDG goals.
PO4	Modern Tool Usage	Select, adapt and apply modern computational tools such as development of algorithms with an understanding of the limitations including human biases.
PO5	Individual and Teamwork	Function and communicate effectively as an individual or a team leader in diverse and multidisciplinary groups. Use methodologies such as agile.
PO6	Project Management and Finance	Use the principles of project management such as scheduling, work breakdown structure and be conversant with the principles of Finance for profitable project management.
PO7	Ethics	Commit to professional ethics in managing software projects with financial aspects. Learn to use new technologies for cyber security and insulate customers from malware.
PO8	Life-long learning	Change management skills and the ability to learn, keep up with contemporary technologies and ways of working.

Course Type	Course Code	Nomenclature of Paper	Credit	Contact Periods per week	Exam Time (Hrs.)	Internal Marks (CIE)		External Marks (SEE)		Total Marks (CIE+SEE)	
						Max	Pass	Max	Pass	Max	Pass
Semester – I											
CC-1	MCA-24-11	Introduction to Web Technology	3	3	3	40	16	60	24	100	45
CC-2	MCA-24-12	Advanced Data Structures using C++	3	3	3	40	16	60	24	100	45
CC-3	MCA-24-13	Programming with Java	3	3	3	40	16	60	24	100	45
CC-4	MCA-24-14	Operating System and Linux	3	3	3	40	16	60	24	100	45
PC-1	MCA-24-15	Lab–I (based on MCA-24-11)	2	4	3	50	20	50	20	100	45
PC-2	MCA-24-16	Lab–II (based on MCA-24-12)	2	4	3	50	20	50	20	100	45
PC-3	MCA-24-17	Lab–III (based on MCA-24-13)	2	4	3	50	20	50	20	100	45
PC-4	MCA-24-18	Lab–IV (based on MCA-24-14)	2	4	3	50	20	50	20	100	45
SEC	MCA-24-19	Seminar	1	1	-	100	45	-	-	100	45
Total			21	29	-	460		440		900	405
Semester – II											
CC-5	MCA-24-20	Programming with Python	3	3	3	40	16	60	24	100	45
CC-6	MCA-24-21	Computer Network and Data Communications	3	3	3	40	16	60	24	100	45
CC-7	MCA-24-22	Advanced Data Base Systems	3	3	3	40	16	60	24	100	45
CC-8	MCA-24-23	Software Project Management	3	3	3	40	16	60	24	100	45
PC-5	MCA-24-24	Lab–V (based on MCA-24-20)	2	4	3	50	20	50	20	100	45
PC-6	MCA-24-25	Lab–VI (based on MCA-24-22)	2	4	3	50	20	50	20	100	45
VAC-1	MCA-24-26	Design Thinking and Innovation	2	2	3	-	-	100	45	100	45
INT	MCA-24-27	Industrial Training / Internship	4	-	-	50	20	50	20	100	45
Total			22	22	-	310		490		800	360
Grand Total (1 year Post Graduate Diploma)			43	51	-	770	-	930	-	1700	765
Semester-III											
CC-9	MCA-24-28	Data Mining and Integration using R	3	3	3	40	16	60	24	100	45
CC-10	MCA-24-29	AI and Machine Learning	3	3	3	40	16	60	24	100	45
DEC-01	MCA-24-30	Elective–I	3	3	3	40	16	60	24	100	45
DEC-02	MCA-24-31	Elective–II	3	3	3	40	16	60	24	100	45
PC-7	MCA-24-32	Lab–VII (based on MCA-24-29)	2	4	3	50	20	50	20	100	45
PC-8	MCA-24-33	Lab–VIII (based on MCA-24-30)	2	4	3	50	20	50	20	100	45
PC-9	MCA-24-34	Lab–IX (based on MCA-24-31)	2	4	3	50	20	50	20	100	45
VAC-2	MCA-24-35	Human Values and Ethics	2	2	3	-	-	100	45	100	45
Total			20	26	-	310		490		800	360
Semester-IV											
CC-11	MCA-24-36	Big Data and Pattern Recognition	3	3	3	40	16	60	24	100	45
CC-12	MCA-24-37	Design and Analysis of Algorithms	3	3	3	40	16	60	24	100	45
PC-10	MCA-24-38	Lab–X (based on MCA-24-36)	2	4	3	50	20	50	20	100	45
VAC-3	MCA-24-39	Intellectual Property Rights	2	2	3	-	-	100	45	100	45
PRJ	MCA-24-40	Project	10	20	3	50	20	50	20	100	45
Total			20	32	-	180		320		500	225
Grand Total (2 years Post Graduate Degree)			83	109	-	1260	-	1740	-	3000	1350

List of Discipline specific Elective Courses:

Elective–I	
MCA-24-32 (i)	Full Stack Development (MERN) (Mongo DB, Express JS, React JS, and Node JS)
MCA-24-32 (ii)	Data Analysis and Visualization using R
MCA-24-32 (iii)	Cyber Security
MCA-24-32 (iv)	Advanced Java Programming.
MCA-24-32 (v)	Blockchain Technology
MCA-24-32 (vi)	Image Processing and Computer Vision
Elective–II	
MCA-24-33 (i)	Full Stack Development (MEAN) (Mongo DB, Express JS, Angular, and Node JS)
MCA-24-33 (ii)	Ethical Hacking
MCA-24-33 (iii)	Cloud Computing and Internet of Things
MCA-24-33 (iv)	Compiler Design
MCA-24-33 (v)	Software Engineering
MCA-24-33 (vi)	Massive Open Online Course (MOOC)

Abbreviations Used:

Abbreviation	Full Form	Description
CC	Core Course	Compulsory core course for the programme, CC will be a theory course of 4 credits
PC	Practicum Course	Compulsory practical course (software lab).
DEC	Discipline-specific Elective Course	A student can opt for one course out of the given options for Discipline Elective Courses. MOOC elective course can be selected from NPTEL, SWAYAM. MOOC course must be of compulsory 4 credits and shall be from the computer domain and approved by the department committee.
SEC	Skill Enhancement Course	The Seminar is a SEC aiming to impart skills of self-learning, comprehension, communication and presentation. It will be of 2 credits. Guidelines regarding seminar are as per the ordinance of the programme.
VAC	Value-Added Course	This course aims to instil in students (i) Human Values and Ethics, (ii) Intellectual Property Rights (IPR) awareness, and (iii) Design Thinking. It will be of 2 credits.
INT	Internship	The industrial training/internship shall be of 45-60 days duration after the second semester. It will a non-credit course.
PRJ	Project	Compulsory Project work based on the skills learned.

Note: Relative weightage of Continuous Internal Evaluation (CIE) and Semester End Examination (SEE), criteria of passing marks, evaluation procedure, and other guidelines are as per the Ordinance of Master of Computer Applications (MCA) programme.