

Scheme of Teaching and Examination M. Tech in Artificial Intelligence and Data Science (SAD)

Choice Based Credit System (CBCS) and Outcome Based Education(OBE))

Effective from the academic year 2022-23

Semester 1											
S.No	Course	Course Code	Course Title	Teaching Hours Per week			Examination			Credits	
				Theory	Practicals	Skill Development/Activities(Hours)	Duration in hours	CIE Marks	SEE Marks		Total Marks
				L	P	SDA					
1	BSC	MVJ2222SAD11	Mathematics Course Stream	03	00	00	03	50	50	100	3
2	IPCC	MVJ2222SAD12	Fundamentals of Data Sciences	03	02	00	03	50	50	100	4
3	PCC	MVJ2222SAD13	Artificial Intelligence and Machine Learning	03	00	02	03	50	50	100	4
4	PCC	MVJ2222SAD14	Human Computer Interface	02	00	02	03	50	50	100	3
5	PCC	MVJ2222SAD15	Advanced Data Structures	02	00	02	03	50	50	100	3
6	MCC	MVJ2222RMI16	Research Methodology and IPR	03	00	00	03	50	50	100	3
7	PCCL	MVJ22SADL17	Artificial Intelligence and Data Science Laboratory	01	02	00	03	50	50	100	2
8	AUD/AEC	MVJ22AUD18/MVJ22AEC27	BOS recommended ONLINE courses	Classes and evaluation procedures are as per the policy of the online course providers.							PP
TOTAL				17	04	06	21	350	350	700	22

Note: BSC-Basic Science Courses, PCC: Professional core. IPCC-Integrated Professional Core Courses, MCC- Mandatory Credit Course, AUD/AEC –Audit Course / Ability Enhancement Course(A pass in AUD/AEC is mandatory for the award of the degree)

Integrated Professional Core Course (IPCC): Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with practical of the same course. The theory part of the IPCC shall be evaluated both 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.

Audit Courses /Ability Enhancement Courses Suggested by BOS (ONLINE courses): Audit Courses:These are prerequisite courses suggested by the concerned Board of Studies. Ability Enhancement Courses will be suggested by the BoS if prerequisite courses are not required for the programs. Ability Enhancement Courses:

- These courses are prescribed to help students to enhance their skills in in fields connected to the field of specialisation as well allied fields that leads to employable skills. Involving in learning such courses are impetus to lifelong learning.
- The courses under this category are online courses published in advance and approved by the concerned Board of Studies.
- Registration to Audit /Ability Enhancement Course shall be done in consultation with the mentor and is compulsory during the concerned semester.
- In case a candidate fails to appear for the proctored examination or fails to pass the selected online course, he/she can register and appear for the same course if offered during the next session or register for a new course offered during that session, in consultation with the mentor.

- The Audit Ability Enhancement Course carries no credit and is not counted for vertical progression. However, a pass in such a course is mandatory for the award of the degree.

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 modelling of systems and algorithms for transient and steady-state operations, thermal study, etc.

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 to involve 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 which will enhance their skill. The prepared report shall be evaluated for CIE marks.

Semester 2											
S.No	Course	Course Code	Course Title	Teaching Hours Per week			Examination				Credits
				Theory	Practicals	Skill Development/Activities (Hours)	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P	SDA					
1	PPC	MVJ22SAD21	Advanced Database Management and NoSQL	02	00	02	03	50	50	100	3
2	IPCC	MVJ22SAD22	Deep Learning	03	02	00	03	50	50	100	4
3	PEC	MVJ22SAD23x	Professional Elective 1	02	00	02	03	50	50	100	3
4	PEC	MVJ22SAD24x	Professional Elective 2	02	00	02	03	50	50	100	3
5	MPS	MVJ22SAD25	Mini Project with Seminar	00	04	02	--	100	--	100	3
6	PCCL	MVJ22SADL26	Database Management and NoSQL Laboratory	01	02	00	03	50	50	100	2
7	AUD/AEC	MVJ22AUD27	Suggested ONLINE courses	Classes and evaluation procedures are as per the policy of the online course providers.							PP
TOTAL				10	08	08	15	350	250	600	18

Note: BSC-Basic Science Courses, PCC: Professional core. IPCC-Integrated Professional Core Courses, MCC- Mandatory Credit Course, AUD/AEC –Audit Course / Ability Enhancement Course(A pass in AUD/AEC is mandatory for the award of the degree)

Professional Elective 1		Professional Elective 2	
Course Code Under 2SAD23X	Course title	Course Code under 22SAD24X	Course title
MVJ22SAD231	Financial Data Analytics	MVJ22SAD241	Natural Language Processing

MVJ22SAD232	Business Intelligence and Analytics	MVJ22SAD242	Big Data Analytics
MVJ22SAD233	Predictive Analysis	MVJ22SAD243	Blockchain Technology
MVJ22SAD234	Decision Support System	MVJ22SAD244	Agile Technologies
MVJ22SAD235	Cloud Computing	MVJ22SAD245	Virtual Reality

Note:

1 Mini Project with Seminar: This may be hands-on practice, survey report, data collection and analysis, coding, [mobile app](#) development, field visit and report preparation, modelling of system, simulation, analysing and authenticating, case studies, etc. CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a senior faculty of the department. Students can present the seminar based on the completed mini-project. Participation in the seminar by all postgraduate students of the program shall be mandatory. The CIE marks awarded for Mini-Project work and Seminar, shall be based on the evaluation of Mini Project work and Report, Presentation skill and performance in Question and Answer session in the ratio 50:25:25. Mini-Project with Seminar shall be considered as a head of passing and shall be considered for vertical progression as well as for the award of degree. Those, who do not take-up/complete the Mini Project and Seminar shall be declared as fail in that course and have to complete the same during the subsequent semester. There is no SEE for this course.

2. Internship: All the students shall have to undergo a mandatory internship of **06 weeks** during the vacation of II and III semesters. A University examination shall be conducted during III semester and the prescribed internship credit shall be counted in the same semester. The internship shall be considered as a head of passing and shall be considered for vertical progression as well as for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in the internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

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Semester 3											
S.No	Course	Course Code	Course Title	Teaching Hours Per week			Examination				Credits
				Theory	Practicals	Skill Development/Activities Activities(Hours are for Interaction between faculty and students)	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P	SDA					
1	PCC	MVJ22SAD31	Internet of Things and Applications	03	00	03	03	50	50	100	4
2	PEC	MVJ22SAD32X	Professional Elective 3	03	00	03	03	50	50	100	3
3	OEC	MVJ22SAD33X	Professional Elective 4	03	00	03	03	50	50	100	3
4	PROJ	MVJ22SAD34	Project Work phase -1	00	06	--		100	--	100	3
5	SP	MVJ22SAD3S	Societal Project	00	06	--		100	--	100	3
6	INT	MVJ22SADI36	Internship	(06 weeks Internship Completed during the intervening vacation of II and III semesters.)			03	50	50	100	6
TOTAL				09	12	03	12	400	200	600	22

Note: PCC: Professional core Courses, PEC: Professional Elective Courses. PROJ-Project Work, INT-Internship, OEC Open Elective

Professional Elective 3	Professional Elective 4
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Course Code under	Course title	Course Code under	Course title
MVJ22SAD321	Image Processing	MVJ22SAD331	Data and Web Mining
MVJ22SAD322	Semantic Web and Social Network	MVJ22SAD332	Computer Vision
MVJ22SAD323	Business Intelligence and Analytics	MVJ22SAD333	Artificial Intelligence in Cyber Security
MVJ22SAD324	Decision Support Systems	MVJ22SAD334	Cyber Security and Cyber law
MVJ22SAD325	Pattern Recognition	MVJ22SAD335	Object Oriented Design

Note: 1. Project Work Phase-1: The project work shall be carried out individually. However, in case a disciplinary or interdisciplinary project requires more participants, then a group consisting of not more than three shall be permitted. Students in consultation with the guide/co-guide (if any) in disciplinary project or guides/co-guides (if any) of all departments in case of multidisciplinary projects, shall pursue a literature survey and complete the preliminary requirements of the selected Project work. Each student shall prepare a relevant introductory project document, and present a seminar. CIE marks shall be awarded by a committee comprising of HoD as Chairman, all Guide/s and co-guide/s (if any) and a senior faculty of the concerned departments. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question and Answer session in the ratio of 50:25:25.

2. Societal Project: Students in consultation with the internal guide as well as with external guide (much preferable) shall involve in applying technology to workout/proposing viable solutions for societal problems. CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question and Answer session in the ratio of 50:25:25. Those, who have not pursued /completed the Societal Project, shall be declared as fail in the course and have to complete the same during subsequent semester/s after satisfying the Societal Project requirements. There is no SEE (University examination) for this course.

3. Internship: Those, who have not pursued /completed the internship, shall be declared as fail in the internship course and have to complete the same during subsequent University examinations after satisfying the internship requirements. Internship SEE (University examination) shall be as per the University norms. CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question and Answer session in the ratio of 50:25:25.

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SEMESTER 4

S.No	Course	Course Code	Course Title	Teaching Hours Per week		Examination				Credits
				Theory	Practical's	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P					
1	PROJ	MVJ22SAD41	Project Work Phase 2	00	08	03	100	100	200	18
TOTAL				00	08	03	100	100	200	18

Note:

1. Project Work Phase-2:

Students in consultation with the guide/co-guide (if any) in disciplinary project or guides/co-guides (if any) of all departments in case of multidisciplinary projects, shall continue to work of Project Work phase -1to complete the Project work. Each student / batch of students shall prepare project document, and present a seminar. CIE marks shall be awarded by a committee comprising of HoD as Chairman, all Guide/s and co-guide/s (if any) and a senior faculty of the concerned departments. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question and Answer session in the ratio of 50:25:25. SEE shall be at the end of IV semester. Project work evaluation and Viva-Voce examination (SEE), after satisfying the plagiarism check, shall be as per the University norms.