



TULSIRAMJI GAIKWAD-PATIL
College of Engineering & Technology

Mohgaon, Wardha Road, Nagpur - 441 108

(An Autonomous Institute Affiliated to RTM Nagpur University)



DEPARTMENT OF INFORMATION TECHNOLOGY

M.Tech Artificial Intelligence & Machine Learning

Structure & Curriculum

From

Academic Year 2021-22

Vision of Institute

To emerge as a learning Center of Excellence in the National Ethos in domains of Science, Technology and Management

Mission of Institute

[M1] To strive for rearing standard and stature of the students by practicing high standards of Professional ethics, transparency and accountability

[M2] To provide facilities and services to meet the challenges of Industry and Society

[M3] To facilitate socially responsive research, innovation and entrepreneurship

[M4] To ascertain holistic development of student and staff members by inculcating knowledge and profession as work practices

Vision of the Department

To contribute in the enhancement of capabilities of youth to face Information Technology challenges, by empowering them with innovative ideas.

Mission of the Department

- To stimulate students to learn effectively and apply the knowledge in the field of Engineering and Technology.
- To undertake industry academic collaboration to enhance competency in graduates.
- To foster innovative ideas amongst students for becoming leaders.
- To create an environment of research culture.
- To impart social and ethical values for inculcating the culture of lifelong learning.

Program Education Objectives (PEO)

- Acquire fundamental knowledge of mathematics, science and engineering to analyze, design and implement solutions to the Information Technology problems
- Understand emerging concepts and trends in Information Technology.
- Apply IT tools to develop innovative computational systems.
- The students are encouraged to develop the habit of lifelong learning to face the challenges.
- The students will be embedded as a responsible individual having ethical and social values to lead the society and to nurture team spirit.

Program Outcomes (PO)

PO1: An ability to independently carry out research /investigation and development work to solve practical problems.

PO2: An ability to write and present a substantial technical report/document.

PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program

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Scheme of Instructions

Scheme of Instructions for First Year M. Tech. Program in Artificial Intelligence & Machine Learning


Semester – I (w.e.f.: AY 2021-22)


Sr.	Course Category	CourseCode	Course Title	L	T	P	Contact Hrs / week	Credits	Exam Scheme				
									CT – 1	CT – 2	TA / CA	ESE	TOTAL
1.	PCC	MAI1101	Artificial Intelligence	3	-	-	3	3	15	15	10	60	100
2.	PCC	MAI1102	Natural Language Processing	3	-	-	3	3	15	15	10	60	100
3.	PCC	MAI1103	Probability & Statistics	3	-	-	3	3	15	15	10	60	100
4.	PCC	MAI1104	Laboratory –I (AI)	-	-	2	2	1	-	-	25	25	50
5.	PCC	MAI1105	Laboratory –II (NLP)	-	-	2	2	1	-	-	25	25	50
6.	PEC	MAI1106-09*	Professional Elective – I	3	-	-	3	3	15	15	10	60	100
7.	PEC	MAI1110-13*	Professional Elective - II	3	-	-	3	3	15	15	10	60	100
8.	MCC	MAU1101	Pedagogy Studies	2	-	-	2	Audit	-	-	-	-	-
Total				17	-	4	21	17	75	75	100	350	600


L- Lecture T-Tutorial P-Practical CT1- Class Test 1 CT2- Class Test 2 TA/CA- Teacher Assessment / Continuous Assessment ESE- End Semester Examination (For Laboratory: End Semester Performance)

* Indicates out of the four course codes each student has to select any one PEC from the list provided at the end of structure.

PROGRESSIVE TOTAL CREDITS= 17


Head of Dept. (Information Technology)
 Tulsiramji Gaikwad-Patil College of
 Engineering & Technology, Nagpur.


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Principal
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Semester – II (w.e.f.: AY 2021-22)

Sr.	Course Category	CourseCode	Course Title	L	T	P	Contact Hrs / week	Credits	Exam Scheme				
									CT – 1	CT- 2	TA / CA	ESE	TOTAL
1.	PCC	MAI1201	Machine Learning for Data Analysis	3	-	-	3	3	15	15	10	60	100
2.	PCC	MAI1202	Big Data Mining And Analytics	3	-	-	3	3	15	15	10	60	100
3.	PCC	MAI1203	Information & Cyber Security	3	-	-	3	3	15	15	10	60	100
4.	PCC	MAI1204	Laboratory –III (ML using Python)	-	-	2	2	1	-	-	25	25	50
5.	PCC	MAI1205	Laboratory –IV (BDMA)	-	-	2	2	1	-	-	25	25	50
6.	FC	MAI1206	Research Methodology#	2	-	-	2	2	-	-	25	25	50
7.	PEC	MAI1207-10*	Professional Elective – III	3	-	-	3	3	15	15	10	60	100
8.	PEC	MAI1211-14*	Professional Elective – IV	3	-	-	3	3	15	15	10	60	100
9.	MCC	MAU1202	Research Paper Writing	2	-	-	2	Audit	-	-	-	-	-
Total				19	-	4	23	19	75	75	125	375	650

L- Lecture T-Tutorial P-Practical CT1- Class Test 1

CT2- Class Test 2

TA/CA- Teacher Assessment / Continuous Assessment ESE- End

Semester Examination (For Laboratory: End Semester Performance)

Students is expected to complete it online by appearing NPTEL/Swayam Certification for 03 credits. Weekly 02 Hrs practical in which students are expected to work on mathematical modeling.

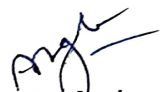
Seminar on IPR, Patent filing, Removing Plagiarisms, etc. will be done.

* Indicates out of the four course codes each student has to select any one PEC from the list provided at the end of structure.

PROGRESSIVE TOTAL CREDITS= 17+19 = 36


BoS Chairman

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Semester – III (w.e.f.: AY 2021-22)

Sr.	Course Category	CourseCode	Course Title	L	T	P	Contact Hrs / week	Credits	Exam Scheme				
									CT - 1	CT - 2	TA / CA	ESE	TOTAL
1	PROJ	MAI2301	Dissertation Phase-I	-	-	20	20	10	-	-	100	100	200
2	PEC	MAI2302	MOOC course (8-12)\$	-	-	-	-	3	-	-	-	-	-
3	OEC	M\$XX01-06#	Open Elective –I	3	-	-	3	3	15	15	10	60	100
			Total	3	-	20	23	16	-	-	110	160	300

ote:

1. MAI2301 will be decided by respective Guide in Consultation with Program Coordinator. Course is mandatory is for student and hisdissertation phase I will be considered incomplete without this Mandatory MOOC Course.
2. In Case, the course offered online are not completely relevant with the topic of dissertation then any course suggested by NASSCOM on recent technologies can be opted by candidate.
3. \$ Programme coordinator will provide list of 03 MOOC courses of minimum 08 weeks duration (as per availability). Students are expected to complete any one out of three courses in order to get the required credits.

Indicates out of the 06 course codes each student has to select any one OEC except MCSXX01

L- Lecture

CT1- Class Test 1

CT2- Class Test 2

T-Tutorial

TA/CA- Teacher Assessment/Continuous Assessment

ESE- End Semester Examination (For Laboratory End Semester performance)PROGRESSIVE

TOTAL CREDITS= 36+16 = 52

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Scheme of Instructions for Second Year M. Tech. Program in Artificial Intelligence & Machine Learning

Semester – IV (w.e.f.: AY 2021-22)

Sr.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs / week	Credits	Exam Scheme				
									CT - 1	CT - 2	TA / CA	ESE	TOTAL
1.	PROJ	MA12401	Dissertation Phase- II	-	-	32	32	16	-	-	100	200	300
			Total	-	-	32	32	16	-	-	100	200	300


TA/CA- Teacher Assessment / Continuous Assessment

ESE- End Semester Examination (For Laboratory: End Semester Performance)

PROGRESSIVE TOTAL CREDITS= 52+16 = 68


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List of Professional Elective Courses

Semester-I			
Course Code	Professional Elective- I	Course Code	Professional Elective- II
MAI1106	Cloud Computing	MAI1110	Robotic Process Automation
MAI1107	Agent Based Intelligent Systems	MAI1111	Human Computer Interface
MAI1108	Fundamentals of Data Science	MAI1112	Advanced Algorithms and Analysis
MAI1109	Multi agent System	MAI1113	Security Analytics
	MOOCS Courses		MOOCS Courses

Semester-II			
Course Code	Professional Elective- III	Course Code	Professional Elective- IV
MAI1207	Pattern Recognition	MAI1211	Computer Vision
MAI1208	Reinforcement Learning	MAI1212	Data Visualization Techniques
MAI1209	Optimization Techniques	MAI1213	Block chain Technology
MAI1210	Artificial Neural Network (Deep Learning)	MAI1214	Advance Data Mining
	MOOCS Courses		MOOCS Courses

List of Open Electives

Semester-III	
Course Code	Open Elective- I
MCSXX01	Business Analytics
MSEXX02	Cost Management of Engineering Projects
MSEXX03	Composite Materials
MIPXX04	Waste to Energy
MIPXX05	Industrial Safety
MMBXX06	Operation Research