Program Semester Design – MTech in AI

First Semester	4 courses*3 credit = 12 credit	3 core course, 1 elective
Second Semester	4 courses*3 credit = 12 credit	1 core course, 3 elective
Third semester	2 courses*3 credit = 6 credit	1 guided, 1 seminar
Fourth semester	Thesis = 15 credit	Total = 45 credit

List of Courses

Core Courses	**Elective/Guided courses**
Computational Statistics and Probability Artificial Intelligence Machine Learning	Fuzzy systems Deep Learning Big Data Analytics (Bio, Health, WSN, Social Network, Financial Time series analysis) Internet of Thing(Internet of Vehicle, Internet of Health, Internet of people) Evolutionary Computation Computer Vision Image Processing Knowledge Representations and Reasoning Natural Language Processing Recommendation System Discrete Multivariate Modeling Intelligent Information Retrieval Expert System Design Data Acquisition Management Systems Robotic Design
Deep Neural Networks Optimization Techniques Intelligent systems Statistical Methods for AI applications	
Predictive Modeling Data Analytics Computational Intelligence Probabilistic Graphical Models	

	Computational Numerical Methods Human Computer Interaction Software Design Problem Solving Agent Predictive Modeling Computational Numerical Methods Topics in AI Topics in Data Science AI and Society Research Techniques for Computer Science Quantum Computing

- All courses are assumed to be 3-credit hours and individual courses may be designed including theoretical and lab sessions within the 3-credit hours.
- The subject committee can pick the type of the courses (either core or elective) to be offered for the program from the table above.

Four Semester Plan (starting for September 2021)

Semester I	**Semester II**	**Semester III**	**Semester IV**
Core Courses			
1. AIMA 500 - Computational Statistics and Probability [3] 2. AICC 500 - Artificial Intelligence [2+1] 3. AICC 502 - Data Analytics [2+1]	1. AICC 504 - Deep Neural Networks [2+1]	1. AIRW 621 - Seminar Course[3] 2. AIRW 651 - Guided Course [3] Note: Thesis starts in this semester itself so that students can work for one whole year for the thesis.	AIRW 699 - Thesis Completes [15]

Elective Courses			
(Any one) 1. Elective1 [3] 2. Elective2 [3]	**(Any three)** 2.Elective3[3] 3.Elective4[3] 4.Elective5 [3] 5.Elective6[3]		
12 Credit	12 Credit	6 Credit	15 Credit

Brief overview of some courses:

Computational Statistics and Probability [3]: The aim of this course is to provide the statistical analysis of data using modern computational methods to the students. Probability, descriptive statistics, inferential statistics and computational methods such as simulations, sample distributions, shuffling, bootstrapping, and cross-validation would be the main content in this course.

Artificial Intelligence [2+1]: The aim of this course is to provide the techniques and technologies that will help students to master the foundational knowledge of AI. The main content may be the state space search, planning, knowledge representation techniques, Markov decision process, cognitive functions etc. to implement rational behavior.

Data Analytics [2+1]: This course prepares students to gather, describe, and analyze data, and use advanced Machine Learning tools. Topics include regression, clustering, decision trees, associations, correlations, data classification, prediction, data-clustering approaches, and outlier analysis etc. The aim of this course is to familiarize students with a new rapidly evolving field of Machine Learning and Data Mining, and provide practical knowledge experience in the analysis of real-world data.

Deep Neural Networks [2+1]: The aim of this course is to provide the knowledge of mathematical, statistical and computational techniques of building stable representations for high-dimensional data such as multimedia data and texts. The course will include the modern concepts of Deep Artificial Neural Networks focusing on both theory and practical aspects for developing models, training, testing and deploying them for real world applications.