COURSE OUTCOMES FOR M.TECH Artificial Intelligence R20 FOR THE YEAR 2020-2021

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code) Introduction to Artificial Intelligence and Applications(M20AI01)	No. of Hours L:3 T:0 P:0	Credits: 3
On successful completion of this course, students will be able to:				
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Course Outcome	Year /Semester I Sem	Subject Name (Subject Code) Soft Computing Techniques (M20CS14)	No. of Hours L:3 T:0 P:0	Credits:3
On successful completion of this course, students are able to:				
1	Understand the fuzzy logic, concepts of fuzziness involved in fuzzy settheory			
2	Explain the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic.			
3	Build the fundamental theory, concepts of neuralnetworks			
4	Identify different neural network architectures, algorithms, applications along their limitations.			
5	Classify different learning rules, architectures to learn several neural network paradigms along with itsapplications.			
6	Deploy different applications of these models to solve engineering			

Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Cloud computing (M20CS03)	No. of Hours L:3 T:0 P:0	Credits:3
After the completion of this course, the students should be able to				
1	Discuss main concepts, key strengths, and limitations for cloud computing.			
2	Develop the architecture along with specific infrastructure on cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.			
3	Explain the issues on cloud computing along with security, privacy, and interoperability			
4	Choose and use the appropriate technology, methods on these issues			
5	Identify problems, and explain, analyze, and evaluate various cloud computing solutions			
6	Provide the appropriate solutions on cloud computing based on the application.			

Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Robotic Operating System and Simulation (M20AI02)	No. of Hours L:3 T:0 P:0	Credits: 3
1	Acquire basic Knowledge on Robots			

2	Ability to process end effectors and robotic controls.
3	Analyse Robot Transformations and Sensors
4	Able to understand Robot cell design and applications

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code) Internet of Things (M20CS05 I)	No. of Hours L:3 T:0 P:0	Credits: 3
On successful completion of this course, students will be able to:				
1	Describe the basic terminology, latest technology along with its applications			
2	Discuss the protocols based on the concepts such as machine to machine.			
3	Illustrate the IOT devices using Python Scripting Language			
4	Develop an application with Raspberry PI platform which can be widely used in many applications of IoT devices			
5	Implement it widely that can be used in many applications of IoT devices			
6	Design a web application framework on REST ful web API.			

Course Outcome	Year /SemesterI Sem	Subject Name (Subject Code) Genetic Algorithms and Applications(M20CS19)	No. of Hours L:3 T:0 P:0	Credits:3
On successful completion of this course, students are able to:				
1	Fundamentals and introduction concepts of genetic algorithms			
2	Basic Concepts and aspects of evolutionary algorithms (EAs), in particular GA, GP, ES			
3	It also concentrates on the basic concepts of representation of operators and overall control. Many examples and applications are dealt on the concepts of genetic programming using python in important applications			

Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Artificial Neural Networks (M20AI03)	No. of Hours L:3 T:0 P:0	Credits:3
After the completion of this course, the students should be able to				
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Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Network Security and Cryptography (M20CS08)	No. of Hours L:3 T:0 P:0	Credits: 3
1	Identifies various types of vulnerabilities, attacks, mechanisms and security services			
2	Compare and contrast symmetric and asymmetric encryption algorithms			
3	Implementation of message authentication, hashing algorithms and able to understand kerberos			
4	Explore the attacks and controls associated with IP, transport level, web and E-mail security			
5	. Develop intrusion detection system, solutions for wireless networks and designing of various types of firewalls.			

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code) PythonProgramming Lab (M20CS11)	No. of Hours L:0 T:0 P:4	Credits: 2
On successful completion of this course, students will be able to:				
1	Expressing the Core Python scripting elements such as variables and flow control structures			
2	Apply Python functions to facilitate code reuse			
3	Extending how to work with lists and sequence data			
4	Implement file operations such as read and write and Adapting the code robust by handling errors and exceptions properly			

Course Outcome	Year /Semester I Sem	Subject Name (Subject Code) Cloud computing Lab(M20CS10)	No. of Hours L:0 T:0 P:04	Credits:2
On successful completion of this course, students are able to:				
1	Develop the architecture along with specific infrastructure on cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud,etc			
2	Explain the issues on cloud computing along with security, privacy,and interoperability.			
3	Identify problems, and explain, analyze, and evaluate various cloud computingsolutions			
4	Provide the appropriate solutions on cloud computing based on theapplication.			

Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Robotic Operating System and Simulation Lab(M20AI04)	No. of Hours L:0 T:0 P:4	Credits:2
After the completion of this course, the students should be able to				
1	Understand the basic components and specifications used in robotics and automation			
2	Understand and implement the different types of motors and sensors during designing of robotics system.			
3	Use manipulators, Actuators and Grippers and their design considerations in robotics and automation.			
4	Understand the basic concepts of AVR microcontrollers			
5	Implement the programming and interfacing concepts of AVR microcontroller in robotic designing.			

Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Internet of Things Lab(M20CS12)	No. of Hours L:0 T:0 P:4	Credits:2
1	Demonstrate the starting of Raspberry Pi and practice Linux commands in command terminal window			
2	Develop and run all basic python programs on RaspberryPi			
3	Build real time applications on Light an LED using Pythonprogramming			
4	Experiment with implementation of intruder system and various sensors like temperature, humidity,smoke.			

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code) Research Methodology & IPR(M20MC01)	No. of Hours L:2 T:0 P:0	Credits: 2
On successful completion of this course, students will be able to:				
1	. Acquire knowledge on Research Design and statistical methods in research			
2	Analyze the various methods in Data Collection, Data Organization and different approaches of Data Representation.			
3	Understand all the basic concepts required to prepare a. Research synopsis b. Dissertation c. Writing a good research proposal			
4	Interpret the Scope of Patent Rights and Administration of Patent System.			
Course Outcome	Year /Semester I Sem	Subject Name (Subject Code) Audit Course-I English for Research Paper Writing(M20AC01)	No. of Hours L:2 T:0 P:0	Credits:0
On successful completion of this course, students are able to:				
1	Obtain complete knowledge on Definition of a research paper, Purpose of writing any research paper , its Scope and Benefits			
2	Understand the standard English formats .for scripting the best research paper.			
3	Analyze all the Qualitative and Quantitative Research Methodologies and the ethics of plagiarism			
4	Explain the detailed process of writing and publishing any research paper and perform a case study on paper writing.			
Course Outcome	Year / semester II Sem	Subject Name (Subject Code) Advanced in Machine Learning(M20AI05)	No. of Hours L:3 T:0 P:0	Credits:3
After the completion of this course, the students should be able to				
1	Ability to understand the concepts of NeuralNetworks			
2	Ability to select the Learning Networks in modeling real worldsystems			
3	Ability to use an efficient algorithm for DeepModels			
4	Ability to apply optimization strategies for large scaleapplications			
Course Outcome	Year / semester II Sem	Subject Name (Subject Code) Data Science (M20CS20)	No. of Hours L:3 T:0 P:0	Credits: 3
1	Describe a Data Science, skill sets available for a data scientist			
2	Discuss the terms Statistical Inference, its significance to explore data analysis			
3	Understand Data Science Process and its components interact.			
4	Adapt APIs tools to understand the Web data.			
5	Illustrate EDA and the Data Science as a case study			
6	Plan a effective visualization on given data.			
Course Outcome	Year/Semester II Sem	Subject Name (Subject Code) Data Pre-processing and Analysis(M20AI06)	No. of Hours L:3 T:0 P:0	Credits: 3

On successful completion of this course, students will be able to:				
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Course Outcome	**Year /Semester II Sem**	**Subject Name (Subject Code)** AI and Speech Processing(M20AI07)	**No. of Hours L:3 T:0 P:0**	**Credits:3**
On successful completion of this course, students are able to:				
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Course Outcome	**Year / semester Ⅱ Sem**	**Subject Name (Subject Code)** Digital Forensics (M20CS17)	**No. of Hours L:3 T:0 P:0**	**Credits:3**
After the completion of this course, the students should be able to				
1	Discuss digital forensics related to investigative process.			
2	Explain the legal issues to prepare, perform digital forensic analysis based on theinvestigator's position.			
3	Demonstrate the techniques, usage of digital forensics tools.			
4	Elaborate digital forensics in detail			
5	Analyze the state of the practice, gaps in technology, policy, and legal issues			
6	. Develop techniques used on Data Analysis, cybercrime.			
Course Outcome	**Year / semester II Sem**	**Subject Name (Subject Code)** Computer Vision(M20AI08)	**No. of Hours L:3 T:0 P:0**	**Credits: 3**
1	To implement fundamental image processing techniques required for computer vision			
2	Understand Image formation process			
3	To perform shape analysis			
4	Extract features form Images and do analysis of Images			
5	Generate 3D model from images			
6	To develop applications using computer vision techniques			
7	Understand video processing, motion computation and 3D vision and geometry			
Course Outcome	**Year/Semester II Sem**	**Subject Name (Subject Code)** Block Chain Technology(M20CS18)	**No. of Hours L:3 T:0 P:0**	**Credits: 3**
On successful completion of this course, students will be able to:				
1	Introduce the fundamentals of blockchain, history, technology and decentralization.			

2	Revise cryptographic concepts and its use in blockchain			
3	Revise cryptographic concepts and its use in blockchain			
4	Understand alternatives to proof of work			
5	Introduce smart contracts, solidity and Web3 to implement blockchain			
6	Understand applications of blockchain and its challenges			
Course Outcome	**Year /Semester** **II Sem**	**Subject Name (Subject Code)** Software Process and Project Management(M20CS02)	**No. of Hours** **L:3 T:0 P:0**	**Credits:3**
On successful completion of this course, students are able to:				
1	Discuss and plan to execute projects based on required standards			
2	Understand the range of tools used on project management			
3	Analyze the concepts related on project governance and methodologies.			
4	Apply critical analysis on solving problems and planning process.			
5	Describe planning, Risk and issues management			
6	Plan process, pragmatic planning service delivery and quality assurance			
Course Outcome	**Year / semester** **II Sem**	**Subject Name (Subject Code)** Advances in Machine Learning Lab(M20AI09)	**No. of Hours** **L:0 T:0 P:4**	**Credits:2**
After the completion of this course, the students should be able to				
1	understand complexity of Machine Learning algorithms and their limitations;			
2	understand modern notions in data analysis-oriented computing;			
3	be capable of confidently applying common Machine Learning algorithms in practice and implementing their own;			
4	Be capable of performing experiments in Machine Learning using real-world data.			
Course Outcome	**Year / semester** **I I Sem**	**Subject Name (Subject Code)** Digital Forensics Lab(M20CS24)	**No. of Hours** **L:0 T:0 P:4**	**Credits: 2**
1	Understand the methods available for retrieving the lost data.			
2	Classify the various mobile forensic techniques and how to handle them			
3	Identify the different Open-source intelligence techniques			
4	Demonstrate how to develop certification for Cyber Forensic			
Course Outcome	**Year / semester** **I I Sem**	**Subject Name (Subject Code)** Data Pre-processing and Analysis Lab(M20AI10)	**No. of Hours** **L:0 T:0 P:4**	**Credits: 2**
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Course Outcome	**Year / semester I I Sem**	**Subject Name (Subject Code)** AI and Speech Processing Lab(M20AI11)	**No. of Hours L:0 T:0 P:4**	**Credits: 2**
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Course Outcome	**Year / semester I I Sem**	**Subject Name (Subject Code)** Mini Project with seminar(M20AI12)	**No. of Hours L:0 T:0 P:4**	**Credits: 2**
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Course Outcome	**Year / semester I I Sem**	**Subject Name (Subject Code)** Audit Course-II Stress Management(M20AC02)	**No. of Hours L:2 T:0 P:0**	**Credits: 0**
1	Burnout the causes of stress			
2	Control the time management			
3	Identify the right career path			
4	Handle the difficult work situation			
5	Manage the career life without stress			

Course Outcomes: Students will be able to: Develop healthy mind in a healthy body thus improving social health also• Improve efficiency•

III-SEMESTER

Course Outcome	Year/Semester III Sem	Subject Name (Subject Code) Natural Language Processing Techniques (M20CS26)	No. of Hours L:3 T:0 P:0	Credits: 3
On successful completion of this course, students will be able to:				
1	Understand approaches to syntax and semantics in NLP			
2	Understand approaches to discourse, generation, dialogue and summarization within NLP			
3	Understand current methods for statistical approaches to machine translation.			
4	Understand machine learning techniques used in NLP, including hidden Markov models			
5	Understand the Language model and probabilistic context-free grammars, clustering and unsupervised methods, log-linear and discriminative models			
6	Understand the Machine Translation, multilingual information, multi lingual automatic summerization.			
Course Outcome	Year /Semester III Sem	Subject Name (Subject Code) Cyber Security (M20CS27)	No. of Hours L:3 T:0 P:0	Credits: 3
On successful completion of this course, students are able to:				
1	Outline key terms and concepts in cyber law, intellectual property and cyber crimes			
2	Explore the vulnerabilities, threats and cybercrimes posed by criminals.			
3	Identify various security challenges phased by mobile devices.			
4	Identify various types of tools and methods used in cybercrime, develops the secure counter methods to maintain security protection			
5	Analyze and evaluate the cyber security needs of an organization			
6	Design operational and strategic cyber security risk management policies in order to adequately protect an organization's critical information and assets			
Course Outcome	Year /Semester III Sem	Subject Name (Subject Code) Deep Learning (M20CS28)	No. of Hours L:3 T:0 P:0	Credits: 3
After the completion of this course, the students should be able to				
1	Ability to understand the concepts of Neural Networks			
2	Ability to understand the concepts of Deep Learning			
3	Ability to select the Learning Networks in modeling real world systems			
4	Ability to use an efficient algorithm for Deep Models			
5	Ability to apply optimization strategies for large scale applications			
6	Ability to apply the Deep Learning models for Speech Recognition, NLP and Other Applications			
Course Outcome	Year /Semester III Sem	Subject Name (Subject Code) Advanced Optimization (M20MA01)	No. of Hours L:3 T:0 P:0	Credits: 3
On successful completion of this course, students will be able to:				
1	Describe problem clearly, identify and analyzetheindividual functions.			
2	Analyze study on solving optimization problem.			

3	Translate verbal formula on optimization problem			
4	Design algorithms, reliably to find an approximate solution			
5	Compare the performance of an algorithm			
6	Discovery, study, understandand solve optimization techniques using algorithms			
Course Outcome	**Year /Semester III Sem**	**Subject Name (Subject Code)** Waste Management (M20CE27)	**No. of Hours L:3 T:0 P:0**	**Credits: 3**
On successful completion of this course, students are able to:				
1	Compare the subject from the technical, legal and economical points.			
2	Learn solid waste management			
3	Describe environment for sound management.			
4	Understand a municipal solid waste management system			
5	Plan a solid waste management system for decision makers			
6	Design an incineration facility			
Course Outcome	**Year /Semester III Sem**	**Subject Name (Subject Code)** Embedded System Design (M20VL07)	**No. of Hours L:3 T:0 P:0**	**Credits: 3**
After the completion of this course, the students should be able to				
1	Describe embedded systems, design, technology to explain its metrics or challenges			
2	Designcustomsingle–purposeprocessorsusingcombinationalaswellassequentiallogic			
3	Discuss about optimizing single – purpose processors. Discuss about the basic architecture and operation of general purpose processors.			
4	Define and distinguish between a timer and a counter, various types of timers and UniversalAsynchronousReceiver/Transmitter.ExplaincontrollersforLCD,KeypadandStepper Motor.			
5	Discuss common memory types ROM, RAM, advanced RAM. Explain microprocessor interfacing and arbitration methods, various protocols like serial, parallel			
6	Explain basics of interrupts, architectures like Round Robin, Real – Time Operating System architecture			
Course Outcome	**Year /Semester III Sem**	**Subject Name (Subject Code)** Project / Dissertation Phase-I()	**No. of Hours L:0 T:0 P:20**	**Credits: 10**
1	Identify the problem by applying acquired knowledge.			
2	Analyze and categorize executable project modules.			
3	Choose efficient tools for designing project modules.			
4	Combine all the modules through effective team work after efficient testing.			
5	Elaborate the completed task and compile the project report.			

IV-SEMESTER

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code)	No. of Hours L:0 T:0 P:32	Credits: 16
		Project / Dissertation Phase-II (M20AI14)		
On successful completion of this course, students will be able to:				
1	Identify the problem by applying acquired knowledge.			
2	Analyze and categorize executable project modules.			
3	Choose efficient tools for designing project modules.			
4	Combine all the modules through effective team work after efficient testing.			
5	Elaborate the completed task and compile the project report.			