PG-M.Tech (SCS)2020-Scheme COs

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING	
COURSE CODE	**20SCS11-MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE**
CO1	Understand the numerical methods to solve and find the roots of the equations..
CO2	Apply the technique of singular value decomposition for data compression, least square approximation in solving inconsistent linear systems
CO3	Understand vector spaces and related topics arising in magnification and rotation of images
CO4	Utilize the statistical tools in multi variable distributions.
C05	Use probability formulations for new predictions with discrete and continuous RV's.
COURSE CODE	**20SCS12- ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**
CO1	Define Artificial intelligence and identify problems for AI. Characterize the search techniques to solve problems and recognize the scope of classical search techniques
CO2	Define knowledge and its role in AI. Demonstrate the use of Logic in solving AI problems
CO3	Demonstrate handling of uncertain knowledge and reasoning in probability theory
CO4	Understanding of Learning methods
COURSE CODE	**20SCS13-ADVANCES IN DATA BASE MANAGEMENT SYSTEM**
CO1	Select the appropriate high-performance database like parallel and distributed database
CO2	Infer and represent the real-world data using object-oriented database
CO3	Interpret rule set in the database to implement data warehousing of mining
CO4	Discover and design database for recent applications database for better interoperability
COURSE CODE	**20SCS14-ADVANCED ALGORITHMS**
CO1	Design and apply iterative and recursive algorithms
CO2	Design and implement optimization algorithms in specific applications.
CO3	Design appropriate shared objects and concurrent objects for applications.
COURSE CODE	**20SCS15-INTERNET OF THINGS AND APPLICATIONS**
CO1	Develop schemes for the applications of IOT in real time scenarios
CO2	Manage the Internet resources
CO3	Model the Internet of things to business
CO4	Understand the practical knowledge through different case studies
CO5	Understand data sets received through IoT devices and tools used for analysis

COURSE CODE	20SCSL16-ALGORITHMS AND DATABASE MANAGEMENT SYSTEMS LABORATORY
CO1	Work on the concepts of Software Testing and ADBMS at the practical level
CO2	Compare and pick out the right type of software testing process for any given real-world problem
CO3	Carry out the software testing process in efficient way
CO4	Establish a quality environment as specified in standards for developing quality software
CO5	Model and represent the real-world data using object-oriented database
CO6	Embed the rules set in the database to implement various features of ADBMS
CO7	Choose, design and implement recent applications database for better interoperability
COURSE CODE	20RMI17-RESEARCH METHODOLOGY AND IPR
CO1	Discuss research methodology and the technique of defining a research problem
CO2	Explain the functions of the literature review in research, carrying out a literature search, developing theoretical and conceptual frameworks and writing a review
CO3	Explain various research designs, sampling designs, measurement and scaling techniques and also different methods of data collections
CO4	Explain several parametric tests of hypotheses, Chi-square test, art of interpretation and writing research reports
CO5	Discuss various forms of the intellectual property, its relevance and business impact in the changing global business environment and leading International Instruments concerning IPR.
COURSE CODE	20SCS21-DATA SCIENCE
CO1	Define data science and its fundamentals
CO2	Demonstrate the process in data science
CO3	Explain machine learning algorithms necessary for data sciences
CO4	Illustrate the process of feature selection and analysis of data analysis algorithms
CO5	Visualize the data and follow of ethics
COURSE CODE	20SCS22-SEMANTIC WEB AND SOCIAL NETWORKS
CO1	Demonstrate the semantic web technologies like RDF Ontology and others
CO2	Learn the various semantic web applications
CO3	Identify the architectures and challenges in building social networks
CO4	Analyse the performance of social networks using electronic sources
COURSE CODE	20SCS23-BLOCKCHAIN TECHNOLOGY
CO1	Understand the types, benefits and limitation of blockchain
CO2	Explore the blockchain decentralization and cryptography concepts
CO3	Enumerate the Bitcoin features and its alternative options.
CO4	Describe and deploy the smart contracts
CO5	Summarize the blockchain features outside of currencies.

COURSE CODE	20SCS241-ADVANCED CRYPTOGRAPHY
CO1	Understand OSI security architecture and classical encryption techniques
CO2	Acquire fundamental knowledge on the concepts of finite fields and number theory
CO3	Understand various block cipher and stream cipher models.
CO4	Describe the principles of public key cryptosystems, hash functions and digital signature
CO5	Compare various Cryptographic Techniques
CO6	Design Secure applications
CO7	Inject secure coding in the developed applications
COURSE CODE	20SCS242-NATURAL LANGUAGE PROCESSING
CO1	Analyse the natural language text
CO2	Generate the natural language.
CO3	Demonstrate Text mining.
CO4	Apply information retrieval techniques.
COURSE CODE	20SCS24-CLOUD COMPUTING
CO1	Compare the strengths and limitations of cloud computing
CO2	Identify the architecture, infrastructure and delivery models of cloud computing
CO3	Apply suitable virtualization concept.
CO4	Choose the appropriate cloud player
CO5	Address the core issues of cloud computing such as security, privacy and interoperability
CO6	Design Cloud Services
CO7	Set a private cloud
COURSE CODE	20SCS244-PATTERN RECOGNITION
CO1	Explain pattern recognition principals
CO2	Develop algorithms for Pattern Recognition
CO3	Develop and analyse decision tress
CO4	Design the nearest neighbour classifier
CO5	Apply Decision tree and clustering techniques to various applications
COURSE CODE	20SCS251-IMAGE PROCESSING AND MACHINE VISION
CO1	Explain the fundamentals of image processing and computer vision
CO2	Illustrate the image enhancement techniques
CO3	Illustrate Image restoration and image compression technique
CO4	Tell about image segmentation and morphological image processing
CO5	Summarize computer vision techniques and its uses

COURSE CODE	20SCS252-OBJECT ORIENTED DESIGN
CO1	Identify the heuristics of the object-oriented programming
CO2	Explain the fundamentals of OOP
CO3	Examine fine object-oriented relations
CO4	Explain the role of Physical Object-Oriented Design
CO5	Make use of Heuristics in The Use of Heuristics in Object-Oriented Design
COURSE CODE	**20SCS253-SOFTWARE DEFINED NETWORKS**
CO1	Explain the fundamentals of SDN and make use of open flow tool
CO2	Illustrate the concepts of controllers and network programmability
CO3	Explain data centre and NFV
CO4	Build an SDN framework
CO5	Report use case
COURSE CODE	**20SCS254-MODERN COMPUTER ARCHITECTURE**
CO1	Explain the fundamentals of Fundamentals of Computer Design, Pipelining, ILP
CO2	Summarize the concept of memory
CO3	Abstracting the concept of parallelism
CO4	Summarize the hardware technologies
CO5	Outlineparallel and scalable architectures
COURSE CODE	**20SCSL26-DATA SCIENCE LABORATORY**
CO1	Demonstration of data visualization methods
CO2	Understanding and implementation of data science algorithms
COURSE CODE	**20SCS27-TECHNICAL SEMINAR**
CO1	Choose, preferably through peer reviewed journals, a recent topic of his/her interest relevant to the Course of Specialization
CO2	Carryout literature survey, organize the Course topics in a systematic order.
CO3	Prepare the report with own sentences.
CO4	Type the matter to acquaint with the use of Micro-soft equation and drawing tools or any such facilities
CO5	Present the seminar topic orally and/or through power point slides.
CO6	Answer the queries and involve in debate/discussion.
CO7	Submit two copies of the typed report with a list of references

COURSE CODE	20SCS31-DEEP LEARNING
CO1	Identify the deep learning algorithms which are more appropriate for various types of learning tasks in various domains.
CO2	Implement deep learning algorithms and solve real-world problems.
CO3	Execute performance metrics of Deep Learning Techniques.
	20SCS321-ENGINEERING ECONOMICS
CO1	Describe the principles of economics that govern the operation of any organization under diverse market conditions
CO2	Comprehend macroeconomic principles and decision making in diverse business set up
CO3	Explain the Inflation & Price Change as well as Present Worth Analysis
CO4	Apply the principles of economics through various case studies
COURSE CODE	20SCS322-VIRTUAL REALITY
CO1	Explain fundamentals of virtual reality systems
CO2	Summarize the hardware and software of the VR
CO3	Analyse the applications of VR
COURSE CODE	20SCS322-SOFT AND EVOLUTIONARY COMPUTING
CO1	Implement machine learning through neural networks
CO2	Design Genetic Algorithm to solve the optimization problem.
CO3	Develop a Fuzzy expert system.
CO4	Model Neuro Fuzzy system for clustering and classification
COURSE CODE	20SCS324-MULTICORE ARCHITECTURE AND PROGRAMMING
CO1	Identify the limitations of single core architecture and the need for multicore architectures
CO2	Define fundamental concepts of parallel programming and its design issues
CO3	Solve the issues related to multiprocessing and suggest solutions
CO4	Demonstrate the role of OpenMP and programming concept
CO5	Make out the salient features of different multicore architectures and how they exploit parallelism
COURSE CODE	20SCS331-BUSINESS INTELLIGENCE AND ITS APPLICATIONS
CO1	Explain the complete life cycle of BI/Analytical development
CO2	Illustrate technology and processes associated with Business Intelligence framework
CO3	Demonstrate a business scenario, identify the metrics, indicators and make recommendations to achieve the business goal.
COURSE CODE	20SCS332-ROBOTICS AND AUTOMATION
CO1	Classify various types of automation & manufacturing systems
CO2	Discuss different robot configurations, motions, drive systems and its performance parameters
CO3	Describe the basic concepts of control systems, feedback components, actuators and power transmission systems used in robots.

CO4	Explain the working of transducers, sensors and machine vision systems
CO5	Discuss the future capabilities of sensors, mobility systems and Artificial Intelligence in the field of robotics
COURSE CODE	**20SCS333-SPEECH PROCESSING**
CO1	Explain the fundamentals of speech processing
CO2	Summarize the models of speech processing
CO3	Infer the linear predictive coding
CO4	Illustrate the application of speech processing
COURSE CODE	**20SCS334-WIRELESS SENSOR NETWORKS**
CO1	Know the basics , characteristics and challenges of Wireless Sensor Network
CO2	Apply the knowledge to identify appropriate physical and MAC layer protocol
CO3	Apply the knowledge to identify the suitable routing algorithm based on the network and user requirement
CO4	Be familiar with the OS used in Wireless Sensor Networks and build basic modules
CO5	Understand the applications of WSN in various fields
COURSE CODE	**20SCS34-PROJECT WORK PHASE – 1**
CO1	Demonstrate a sound technical knowledge of their selected project topic
CO2	Undertake problem identification, formulation, and solution
CO3	Design engineering solutions to complex problems utilising a systems approach
CO4	Communicate with engineers and the community at large in written an oral forms
CO5	Demonstrate the knowledge, skills and attitudes of a professional engineer
COURSE CODE	**20SCS35-MINI PROJECT**
CO1	Present the mini-project and be able to defend it
CO2	Make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
CO3	Habituated to critical thinking and use problem solving skills.
CO4	Communicate effectively and to present ideas clearly and coherently in both the written and oral forms.
CO5	Work in a team to achieve common goal.
CO6	Learn on their own, reflect on their learning and take appropriate actions to improve it.
COURSE CODE	**20SCSI36-INTERNSHIP / PROFESSIONAL PRACTICE**
CO1	Gain practical experience within industry in which the internship is done
CO2	Acquire knowledge of the industry in which the internship is done.
CO3	Apply knowledge and skills learned to classroom wor
CO4	Develop a greater understanding about career options while more clearly defining personal career goals
CO5	Experience the activities and functions of professionals.
CO6	Develop and refine oral and written communication skills

CO7	Identify areas for future knowledge and skill development.
CO8	Expand intellectual capacity, credibility, judgment, intuition
CO9	Acquire the knowledge of administration, marketing, finance and economics.
COURSE CODE	**20SCS41-PROJECT WORK PHASE -2**
CO1	Present the project and be able to defend it
CO2	Make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
CO3	Habituated to critical thinking and use problem solving skills
CO4	Communicate effectively and to present ideas clearly and coherently in both the written and oral forms
CO5	Work in a team to achieve common goal.
CO6	Learn on their own, reflect on their learning and take appropriate actions to improve it.