Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
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Department of Computer Science and Engineering

Programme: M. Tech - DFCS

Academic Year: 2021-2022

COURSE CODE	COURSE TITLE	CO. NO	DESCRIPTION OF THE COURSE OUTCOME
21CS5121	INTRODUCTION TO CYBER SECURITY	CO1	Student should be able to understand security concepts and its impact on data security and application. Students should understand cyber laws and ethics.
		CO2	Student should be able to various threats faced by cyber system. Students should be able to understand rolls and responsibility of law enforcement against cybercrime.
		CO3	Student should be able to understand malware exhibit the processes involved in malware analysis.
		CO4	Students should be able to understand risk analysis and management in the context of cyber security.
		CO5	Examine and device a solution for cyber threats to secure cyber system.
21CS5120	SOFTWARE SECURITY	CO1	Understand the importance of web architecture and able to list out various levels of security
		CO2	Learn and demonstrate various attacks that are occurred in web applications (OWASPTOP10vulnerabilities)
		CO3	Differentiate various web application testing techniques and incorporate secure coding practices
		CO4	To demonstrate skills needed to deal with common programming errors that lead to most security problems and to learn how to develop secure applications and Summarize on web investigation process P
21CS5122	CLOUD INFRASTRUCTURE & SERVICES	CO1	Apply on-demand compute services. Understand IaaS Architectures and Implementation Guidelines.
		CO2	Analyze applications and frameworks for data analysis and Content delivery in the cloud
		CO3	Analyze Cloud Service Availability, Resiliency and dynamic scaling

HEAD OF THE DEPARTMENT
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COURSE CODE	COURSE TITLE	CO. NO	DESCRIPTION OF THE COURSE OUTCOME
		CO4	Use Networking and Security Services. Automate cloud Infrastructure, Deployment, and Management
		CO5	Hands-On Cloud Administration. Implement, monitor, and manage important cloud services and components including IaaS and PaaS
21CS5119	MACHINE LEARNING & REINFORCEMENT LEARNING	CO1	Apply Machine Learning Techniques such as PCA, LDA, Decision Trees to solve Real World Problems
		CO2	Build Bayesian models for solving Classification and Prediction problems
		CO3	Inspect a movie recommender system
		CO4	Apply Neural Network Algorithm techniques to solve Classification, Prediction problems Build a Q-Learning based model for real world problems
		CO5	Implement Machine Learning Techniques using Python Language and develop a small project along with his/her team members.
21IE5149	SEMINAR	CO5	The Seminar has to be taken up by the MTech Second Semester students. It is based on independent research in one of the areas opted by the student. In a Seminar, a student should demonstrate his/her ability in finding out the relevant sources, selection, an illustration of logic, and in organizing the information on the topic, gathering the data, processing, analyzing, and summarizing.
21CS5221	CRYPTOGRAPHY FOR CYBER DEFENSE	CO1	Able to demonstrate the concepts of cryptography.
		CO2	Able to experiment the functionality of cryptographic algorithms.
		CO3	Able to implement the algorithms and explain the strength of the algorithms
		CO4	Able to analyze the security engineering principles in cryptography for cyber defence.
		CO5	Able to acquire knowledge on algorithms and their procedures for maintaining the security for cyber defence using tools and technologies.
21CS5222	MALWARE ANALYSIS & REVERSE ENGINEERING	CO1	Understand Malware types and malware fundamentals.
		CO2	Understand Malware Reverse Engineering techniques.
		CO3	Understand static and dynamic Malware Analysis by using different tools and techniques.
		CO4	Apply Malware Analysis on malicious Microsoft Office (Word, Excel, PowerPoint) and Adobe PDF documents

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COURSE CODE	COURSE TITLE	CO. NO	DESCRIPTION OF THE COURSE OUTCOME
		CO5	Student should be able to acquire knowledge on Malware and their Analysis, Reverse Engineering procedures using different tools and technologies for Malware Analysis.
21CS5223	CYBER INCIDENT RESPONSE & RESILIENCE	CO1	Understand Incident Response concepts.
		CO2	Understand the functionality of Incident Response and Incident categories and handling.
		CO3	Exhibit the processes involved in Incident Handling Process
		CO4	Analyze and understand Incident Response Team Members Roles and Responsibilities.
		CO5	Express the dependencies in incident Response team.
21CS5224	CYBER LAW, GOVERNANCE AND COMPLIANCE	CO1	Student should be able to Understand the Concepts of Cyber Ethics and cyberlaw importance
		CO2	Student should be able to Identify the various IT Acts ITA2000,ITAA 2008..
		CO3	Student should be able to protection of intellectual property Rights.
		CO4	Student should be able to investigate the Cyber Frauds.
		CO5	Student should be able to Acquire knowledge on CYBERLAW,GOVERNANCE& COMPLIANCE .
21IE5250	TERM PAPER	CO5	The term paper has to be taken up by the MTech Second Semester students. It is based on independent research in one of the areas opted by the student. In a term paper, a student should demonstrate his/her ability in finding out the relevant sources, selection, an illustration of logic, and in organizing the information on the topic, gathering the data, processing, analyzing, and summarizing.
21IE6050	DISSERTATION	CO5	The Project has to be taken up by the MTech Second Semester students. It is based on independent research in one of the areas opted by the student. In a project research paper, a student should demonstrate his/her ability in finding out the relevant sources, selection, an illustration of logic, and in organizing the information on the topic, gathering the data, processing, analyzing, and summarizing.
21CS51I1	MOBILE DEVICE THREATS & INVESTIGATION	CO1	Understand Mobile Application Functions
		CO2	Learn and demonstrate Mobile Hacking & Investigation
		CO3	demonstrate Securing smart OS

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		CO4	Summarize the Mobile Device Management
21CS51I2	FUNDAMENTALS OF E-DISCOVERY	CO1	Become familiar with the e-discovery rules and other sources of e-discovery law
		CO2	Become familiar with e-discovery ethical issues and e-discovery best practices
		CO3	Learn how to apply their knowledge to resolve typical and somewhat more complex e-discovery problems
		CO4	Acquire basic knowledge and skill in using e-discovery software
21CS51I3	FUZZY SETS AND FUZZY LOGIC	CO1	Understand basic knowledge of the fuzzy sets, operations and their properties
		CO2	Understand the fundamental concepts of Fuzzy functions and Fuzzy logic
		CO3	Apply the concepts of Fuzzy sets in decision making.
		CO4	Apply the concepts of Fuzzy logic and fuzzy sets in applications.
21CS51I4	DIGITAL FORENSICS	CO1	Understand the steps of forensics process.
		CO2	Apply forensics analysis on different hard drives and analyze the file systems.
		CO3	Analyze the various components and data in mobile phone for evidence.
		CO4	Analyze windows registry and the various anti forensics techniques.
		CO5	Create a virtual lab and experiment forensics expts based on the 5 stages of forensics process.
21CS51J1	INTRODUCTION TO BIG DATA ANALYTICS	CO1	Student should be able to Understand the Overview of the term Big Data and their Evalution
		CO2	Student should be able to come across different types of databases, differentiate NOSQL, SQL
		CO3	Student should able to Understand Analytics in data.
		CO4	Student should able to Illustrate different tools in unstructured data.
		CO5	Practical problems on big data analytics
21CS51J2	SOCIAL MEDIA FORENSICS	CO1	Understand open-source intelligence and how to utilize it.
		CO2	Analyze online cyber investigations and intelligence gathering on the Dark Web.
		CO3	Apply social networking searching and monitoring

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		CO4	Investigate criminal groups on social media and understand the legal fundamentals of cyber investigations.
21CS51J3	CRITICAL INFORMATION INFRASTRUCTURE SECURITY	CO1	Identify the key characteristics and problems in the area of cyber-security of critical infrastructure
		CO2	Apply research methods which includes survey, experiments, and articulation of research problems in this area, and methods for finding solutions to selected problems
		CO3	Present in written and/or verbal form key findings in the specific subject area of the course from contemporary research papers.
		CO4	Analyze and identify research verticals in the specific domain area of cyber-security of critical infrastructure.
21CS51K1	INFRASTRUCTURE ATTACKS AND DEFENSE	CO1	Understand the Concepts of Infrastructure attacks and defense.
		CO2	Demonstrate the operating system internals & Mobile Security.
		CO3	Understand network security and wireless attacks.
		CO4	Analyze the cloud concepts & cloud security and web architectures and their security.
21CS52K2	SOFTWARE VULNERABILITY ANALYSIS AND RESILIENCE	CO1	Understand how to exploit a program and different types of software exploitation techniques
		CO2	Understand the exploit development process
		CO3	Investigate various vulnerabilities in closed-source applications
		CO4	Design their own exploits for vulnerable applications
		CO5	Apply and analyse the designed exploits in real time applications
21CS52K3	PARALLEL & CLOUD COMPUTING	CO1	Articulate the main concepts, key technologies, strengths, limitations of parallel and cloud computing and the possible applications for state-of-the-art cloud computing.
		CO2	Identify the architecture and infrastructure of parallel and cloud computing, including cloud delivery and deployment models.
		CO3	Analyze the core issues of parallel and cloud computing such as security, privacy, and interoperability.

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		CO4	Identify problems and analyze various cloud computing solutions.
		CO5	Evaluate various cloud computing solutions.
21CS52K4	CLOUD SECURITY	CO1	Understand the principles of cryptography and Apply various cryptographic algorithms
		CO2	Analyze various security issues and system vulnerabilities in virtualization
		CO3	Analyze the technologies for virtualization based security enhancements
		CO4	Analyze legal and Compliance issues and examine modern security standards
21CS52L1	APPLIED CRYPTOGRAPHY AND STEGANOGRAPHY	CO1	Understand the main concepts of Modern Cryptography and steganography.
		CO2	Apply various cryptographic and steganography algorithms in a real time approaches and analyse the working methodologies and key properties.
		CO3	Evaluate functionality, security and performance properties of cryptography and steganography methods used as components of complex security solutions
		CO4	Analyse the impact of errors or different designs of cryptography and steganography algorithms and protocols
21CS52L2	SOFTWARE MODELING	CO1	Student should be able to uunderstand the cconcepts of Basics of Software Engineering
		CO2	Student should be able to understand the functionality of Unified Modelling Language.
		CO3	Student should be able to analyze the feasibility by performing Root Cause Analysis, Reverse estimation and by tracking.
		CO4	Student should be able to Acquire knowledge on programming languages
21CS52L3	DIGITAL IMAGE PROCESSING	CO1	To understand the fundamental concepts of Digital Image Processing
		CO2	To understand the pre-processing process of remote sensing data
		CO3	To understand basic image processing operations
		CO4	To understand image classification techniques
		CO5	To apply digital image Processing techniques
21CS52L4	PROGRAMMING FOR	CO1	Understanding Ethereum blockchain and using wallet for interacting with network

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	SMART CONTRACTS	CO2	Learn and use solidity programming language to build smart contracts
		CO3	Building advanced smart contracts with various test setups and try-catch assertions.
		CO4	Build interactive front end for smart contracts and use Contracts design patterns.
		CO5	Implement lab experiments through project-based learning on building smart contracts

M. Kavitha
Academic Professor I/C

HOD-CSE

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