Programme: M.Sc. Subject: Information Technology

Learning Outcomes:

- It is expected to improvise the soft skill, technical knowledge as well as hardware skills for the students. To keep them connected with latest changes in the field of Information Technology, new subject is introduced.
- Demonstrate a comprehensive understanding of the broad themes in Information Technology.
- Use and apply current technical concepts and practices in the core information technologies of networking, data management, software engineering, computer security.
- Demonstrate a deep understanding of the IT methodologies and frameworks used to solve complex computing problems related to at least one IT Body-of-Knowledge
- Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
- Effectively integrate IT-based solutions into the user environment.
- Developed and implement optimal solutions to complex computing problems using industry-recognized best practices and standards.
- Apply ethical decision making in the development, implementation, and management of IT systems

Program Outcome

1. Demonstrate a deep understanding of the fundamental concepts, theories, and practices in information technology.
2. Apply critical thinking and problem-solving skills to develop innovative solutions to real-world IT challenges.
3. Analyze and evaluate the impact of emerging technologies on various industries and organizations.
4. Demonstrate proficiency in programming languages, software engineering principles, database design and administration, and network security.
5. Conduct independent research and produce scholarly work that contributes to the field of information technology.
6. Effectively communicate technical information to both technical and non-technical audiences.
7. Collaborate effectively with team members from diverse backgrounds and disciplines.
8. Demonstrate ethical and professional conduct in all aspects of their work in information technology.

PART 1

Program Specific Outcomes

1. PSO1: Ability to apply the knowledge of Information Technology with recent trends aligned with research and industry.
2. PSO2: Ability to apply IT in the field of Computational Research, Soft Computing, Big Data Analytics, Data Science, Image Processing, Artificial Intelligence, Networking and Cloud Computing.
3. PSO3: Ability to provide socially acceptable technical solutions in the domains of Information Security, Machine Learning, Internet of Things and Embedded System, Infrastructure Services as specializations.
4. PSO4: Ability to apply the knowledge of Intellectual Property Rights, Cyber Laws and Cyber Forensics and various standards in interest of National Security and Integrity along with IT Industry.
5. PSO5: Ability to write effective project reports, research publications and content development and to work in multidisciplinary environment in the context of changing technologies.

Program Objective

1. To be able to conduct business research with an understanding of all the latest theories.
2. To develop the ability to explore research techniques used for solving any real world or innovate problem.
3. Develop in depth understanding of the key technologies in data science and business analytics: data mining, machine learning, visualization techniques, predictive modeling, and statistics
4. Practice problem analysis and decision-making. Gain practical, hands-on experience with statistics programming languages and big data tools through coursework and applied research experiences.
5. To learn how to use Cloud Services.
6. To implement Virtualization.
7. To implement Task Scheduling algorithms.
8. Apply Map-Reduce concept to applications.
9. To build Private Cloud.
10. Broadly educate to know the impact of engineering on legal and societal issues involved

Course Outcome

A learner will be able to:

- solve real world problems with scientific approach.
- develop analytical skills by applying scientific methods.
- recognize, understand and apply the language, theory and models of the field of business analytics
- foster an ability to critically analyze, synthesize and solve complex.
- unstructured business problems.
- understand and critically apply the concepts and methods of business analytics.
- identify, model and solve decision problems in different settings.
- interpret results/solutions and identify appropriate courses of action for a given managerial situation whether a problem or an opportunity.
- create viable solutions to decision making problems.
- Apply quantitative modeling and data analysis techniques to the solution of real world business problems, communicate findings, and effectively present results using data visualization techniques.
- Recognize and analyze ethical issues in business related to intellectual property, data security, integrity, and privacy.
- Apply ethical practices in everyday business activities and make well reasoned ethical business and data management decisions.
- Demonstrate knowledge of statistical data analysis techniques utilized in business decision making.
- Apply principles of Data Science to the analysis of business problems.
- Use data mining software to solve real-world problems.
- Employ cutting edge tools and technologies to analyze Big Data.
- Apply algorithms to build machine intelligence.
- Demonstrate use of team work, leadership skills, decision making and organization theory.

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PART 2

Programme Specific Outcomes

1. PSO1: Effectively communicating computing concepts and solutions to bridge the gap between computing industry experts and business leaders to create and initiate innovation
2. PSO2: Effectively utilizing their knowledge of computing principles and mathematical theory to develop sustainable solutions to current and future computing problems.
3. PSO3: Exhibiting their computing expertise within the computing community through corporate leadership, entrepreneurship, and/or advanced graduate study.
4. PSO4: Developing and implementing solution based systems and/or processes that address issues and/or improve existing systems within in a computing based industry.
5. PSO5: Information on Emerging Trends: Give information about software design and development practices to develop software applications in emerging areas such as Cloud and High performance computing, Data analytics and Cyber security.
6. PSO6: Successful Career and Entrepreneurship: The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.

COURSE OUTCOME

1. CO1: Develop technical documents that meet the requirements with standard guidelines. Understanding the essentials and hands-on learning about effective Website Development.
2. CO2: Write Better Quality Content Which Ranks faster at Search Engines. Build effective Social Media Pages.
3. CO3: Evaluate the essentials parameters of effective Social Media Pages.
4. CO4: Understand importance of innovation and entrepreneurship.
5. CO5: Analyze research and development projects.
6. CO6: be able to understand the fundamentals concepts of expert system and its applications.
7. CO7: be able to use probability and concept of fuzzy sets for solving AI based problems.
8. CO8: be able to understand the applications of Machine Learning. The learner can also apply fuzzy system for solving problems.
9. CO9: learner will be able to apply to understand the applications of genetic algorithms in different problems related to artificial intelligence.
10. CO10: A learner can use knowledge representation techniques in natural language processing.
11. CO11: Understand the basics of computer vision.

12. CO12: Understand and analyse various structure form motion and various estimates of Dense Motion.
13. CO13: Apply various motion models to images and understand computation photography techniques.
14. CO14: Apply Epipolar geometry , Rectification and various other 3D correspondence and Stereo reconstruction techniques.
15. CO5: Understand image-based rendering and reconstruction
16. CO16: Understand various introductory techniques of malware analysis and creating the testing environment
17. CO17: Perform advanced dynamic analysis and recognize constructs in assembly code.
18. CO18: Perform Reverse Engineering using OLLYDBG and WINDBG and study the behavioursand functions of malware
19. CO19: Understand data encoding, various techniques for anti-disassembly and anti-debugging
20. CO20: Understand various anti virtual machine techniques and perform shellcode analysis of various languages along with x64 architecture.
21. CO21: Understand the mechanism of business process and can provide the solution in an optimize way.
22. CO22: Understand the features use for interacting with database plugins.
23. CO23: Use the plug-ins and other controls used for process automation.
24. CO24: Use and handle the different events, debugging and managing the errors.
25. CO25: Test and deploy the automated process.
26. CO26: The students would understand the structure of a blockchain and why/when it is better than a simple distributed database.
27. CO27: Analyze the incentive structure in a blockchain based system and critically assess its functions, benefits and vulnerabilities
28. CO28: Evaluate the setting where a blockchain based structure may be applied, its potential and its limitations
29. CO29: Understand what constitutes a “smart” contract, what are its legal implications and what it can and cannot do, now and in the near future
30. CO30: Develop blockchain DApps
31. CO31: Investigate the cyber forensics with standard operating procedures.
32. CO32: Recover the data from the hard disk with legal procedure.
33. CO33: To recover and analyse the data using forensics tool
34. CO34: Acquire the knowledge of network analysis and use it for analysing the internet attacks.
35. CO35: Able to investigate internet frauds done through various gadgets like mobile, laptops, tablets and become a forensic investigator.
36. CO36: Understand VMWare VSphere 67, Install ESXi and Configure VSphere Centre
37. CO37: Demonstrate the use of VSphere Update Manager and Create a VSphere Network
38. CO38: Understand VSphere Security, Create and configure storage devices and Perform configurations to ensure business continuity.
39. CO39: Demonstrate Resource allocation, Creating and managing virtual machine and the use of templates

40. CO40: Understand automation of vSphere and manage resource allocation

Program Objectives:

- This course aims to provide conceptual understanding of developing strong foundation in general writing, including research proposal and reports.
- It covers the technological developing skills for writing Article, Blog, E-Book, Commercial web Page design, Business Listing Press Release, E-Listing and Product Description.
- This course aims to provide conceptual understanding of innovation and entrepreneurship development.
- To explore the applied branches of artificial intelligence .
- To enable the learner to understand applications of artificial intelligence.
- To enable the student to solve the problem aligned with derived branches of artificial intelligence.
- To develop the student's understanding of the issues involved in trying to define and simulate perception.
- To familiarize the student with specific, well known computer vision methods, algorithms and results.
- To provide the student additional experience in the analysis and evaluation of complicated systems.
- To provide the student additional software development experience.
- To provide the student with paper and proposal writing experience.
- Possess the skills necessary to carry out independent analysis of modern malware samples using both static and dynamic analysis techniques.
- Have an intimate understanding of executable formats, Windows internals and API, and analysis techniques.
- Extract investigative leads from host and network-based indicators associated with a malicious program.
- Apply techniques and concepts to unpack, extract, decrypt, or bypass new anti-analysis techniques in future malware samples.
- Achieve proficiency with industry standard tools including IDA Pro, OllyDbg, WinDBG, PE Explorer, ProcMon etc.
- To make the students aware about the automation today in the industry.
- To make the students aware about the tools used for automation.
- To help the students automate a complete process.
- To provide conceptual understanding of the function of Blockchain as a method of securing distributed ledgers, how consensus on their contents is achieved, and the new applications that they enable.
- To cover the technological underpinnings of blockchain operations as distributed data structures and decision-making systems, their functionality and different architecture types.

- To provide a critical evaluation of existing “smart contract” capabilities and platforms, and examine their future directions, opportunities, risks and challenges.
- Explain laws relevant to computer forensics
- Seize digital evidence from pc systems.
- Recover data to be used as evidence
- Analyse data and reconstruct events.
- Explain how data may be concealed or hidden
- Identify the need for Server Virtualization
- Describe the components and features of vSphere 6.7 and ESXi
- Describe how VMware’s products help solve business and technical challenges with
- regard to Server Virtualization