



R K COLLEGE OF ENGINEERING

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(An ISO 9001:2015 Certified Institution)
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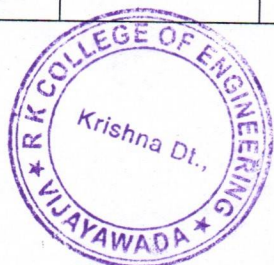


DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

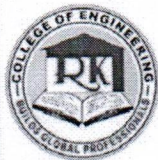
COURSE OUTCOMES (COs)

Course Outcomes (COs) describe what students can able to do after completion of the course.

| S.No | Year-Sem | Course Code | Course Name | Course Outcomes |
|------|----------|-------------|--|---|
| 1 | I-I | MTCSE1101 | Mathematical Foundations Of Computer Science | After completion of the course student can able to |
| | | | | CO1:To apply the basic rules and theorems of probability theory such as Baye's Theorem, to determine probabilities that help to solve engineering problems and to determine the expectation and variance of a random variable from its distribution |
| | | | | CO2:Able to perform and analyze of sampling, means, proportions, variances and estimates the maximum likelihood based on population parameters. |
| | | | | CO3:To learn how to formulate and test hypotheses about sample means, variances and proportions and to draw conclusions based on the results of statistical tests. |
| | | | | CO4:Design various ciphers using number theory. |
| | | | | CO5:Apply graph theory for real time problems like network routing problem. |
| 2 | I-I | MTCSE1102 | Advanced Data Structures & Algorithms | CO1:Ability to write and analyze algorithms for algorithm correctness and efficiency |
| | | | | CO2:Master a variety of advanced abstract data type (ADT) and data structures and their Implementation |
| | | | | CO3:Demonstrate various searching, sorting and hash techniques and be able to apply and solve problems of real life |
| | | | | CO4:Design and implement variety of data structures including linked lists, binary trees, heaps, graphs and search trees |



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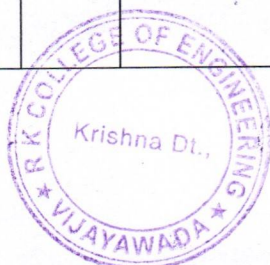


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| | | | | |
|---|-----|-----------|----------------------------|---|
| | | | | CO5:Ability to compare various search trees and find solutions for IT related problems |
| 3 | I-I | MTCSE1103 | Big Data Analytics | CO6:Illustrate on big data and its use cases from selected business domains. |
| | | | | CO7:Interpret and summarize on No SQL, Cassandra |
| | | | | CO1:Analyze the HADOOP and Map Reduce technologies associated with big data analytics and explore on Big Data applications Using Hive. |
| | | | | CO2:Make use of Apache Spark, RDDs etc. to work with datasets. |
| | | | | CO3:Assess real time processing with Spark Streaming |
| 4 | I-I | MTCSE1103 | Digital Image Processing | CO1:Demonstrate the components of image processing |
| | | | | CO2:Explain various filtration techniques. |
| | | | | CO3:Apply image compression techniques. |
| | | | | CO4:Discuss the concepts of wavelet transforms. |
| | | | | CO5:Analyze the concept of morphological image processing |
| 5 | I-I | MTCSE1103 | Advanced Operating Systems | CO1:Illustrate on the fundamental concepts of distributed operating systems, its architecture and distributed mutual exclusion. |
| | | | | CO2:Analyze on deadlock detection algorithms and agreement protocols. |
| | | | | CO3:Make use of algorithms for implementing DSM and its scheduling. |
| | | | | CO4:Apply protection and security in distributed operating systems. |
| | | | | CO5:Elaborate on concurrency control mechanisms in distributed database systems |
| 6 | I-I | MTCSE1104 | Advanced Computer Networks | CO1:Illustrate reference models with layers, protocols and interfaces. |
| | | | | CO2:Describe the routing algorithms, Sub netting and Addressing of IP V4and IPV6. |
| | | | | CO3:Describe and Analysis of basic protocols of computer networks, and how they can be used to assist in network design and implementation. |
| | | | | CO4:Describe the concepts Wireless LANS, WIMAX, IEEE 802.11, Cellular telephony and Satellite networks |



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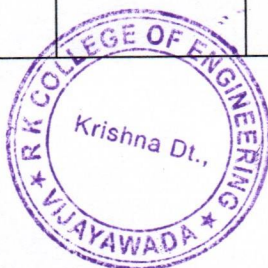


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| | | | | |
|----|-----|-----------|---|--|
| | | | | CO5:Describe the emerging trends in networks-MANETS and WSN |
| 7 | I-I | MTCSE1104 | Internet Of Things | CO1:Summarize on the term 'internet of things' in different contexts. |
| | | | | CO2:Analyze various protocols for IoT. |
| | | | | CO3:Design a PoC of an IoT system using Raspberry Pi/Arduino |
| | | | | CO4:Apply data analytics and use cloud offerings related to IoT. |
| | | | | CO5:Analyze applications of IoT in real time scenario |
| 8 | I-I | MTCSE1104 | Object Oriented Software Engineering | CO1:Apply the Object Oriented Software-Development Process to design software |
| | | | | CO2:Analyze and Specify software requirements through a SRS documents. |
| | | | | CO3:Design and Plan software solutions to problems using an object-oriented strategy. |
| | | | | CO4:Model the object oriented software systems using Unified Modeling Language (UML) |
| | | | | CO5:Estimate the cost of constructing object oriented software. |
| 9 | I-I | MTCSE1105 | Research Methodology And IPR | CO1:Understand the research problem and research process. |
| | | | | CO2:Understand research ethics |
| | | | | CO3:Prepare a well-structured research paper and scientific presentations |
| | | | | CO4:Explore on various IPR components and process of filing. |
| | | | | CO5:Understand the adequate knowledge on patent and rights |
| 10 | I-I | MTCSE1106 | Advanced Data Structures & Algorithms Lab | CO1:Identify classes, objects, members of a class and relationships among them needed for a specific problem. |
| | | | | CO2:Examine algorithms performance using Prior analysis and asymptotic notations. |
| | | | | CO3:Organize and apply to solve the complex problems using advanced data structures (like arrays, stacks, queues, linked lists, graphs and trees.) |
| | | | | CO4:Apply and analyze functions of Dictionary |



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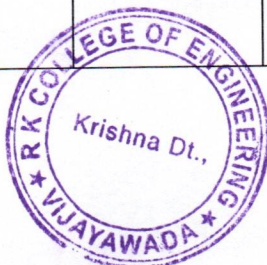


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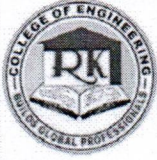
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| 11 | I-I | MTCSE1107 | Advanced Computing Lab | CO1:The student should have hands on experience in using various sensors like temperature, humidity, smoke, light, etc. and should be able to use control web camera, network, and relays connected to the Pi. |
| | | | | CO2:Development and use of s IoT technology in Societal and Industrial Applications. |
| | | | | CO3:Skills to undertake high quality academic and industrial research in Sensors and IoT. |
| | | | | CO4:To classify Real World IoT Design Constraints, Industrial Automation in IoT. |
| 12 | I-II | MTCSE1201 | Machine Learning | CO1:Domain Knowledge for Productive use of Machine Learning and Diversity of Data. |
| | | | | CO2:Demonstrate on Supervised and Computational Learning |
| | | | | CO3:Analyze on Statistics in learning techniques and Logistic Regression |
| | | | | CO4:Illustrate on Support Vector Machines and Perceptron Algorithm |
| | | | | CO5:Design a Multilayer Perceptron Networks and classification of decision tree |
| 13 | I-II | MTCSE1202 | Mean Stack Technologies | CO1:After the completion of the course, student will be able to |
| | | | | CO2:Identify the Basic Concepts of Web & Markup Languages |
| | | | | CO3:Develop web Applications using Scripting Languages & Frameworks. |
| | | | | CO4:Make use of Express JS and Node JS frameworks |
| | | | | CO5:Illustrate the uses of web services concepts like restful, react js. |
| | | | | CO6:Adapt to Deployment Techniques & Working with cloud platform. |
| 14 | I-II | MTCSE1203 | Advanced Databases And Mining | CO1:Analyze on normalization techniques |
| | | | | CO2:Elaborate on concurrency control techniques and query optimization |
| | | | | CO3:Summarize the concepts of data mining, data warehousing and data preprocessing strategies. |
| | | | | CO4:Apply data mining algorithms |
| | | | | CO5:Assess various classification & cluster techniques. |



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| 15 | I-II | MTCSE1203 | Ad Hoc & Sensor Networks | CO1: Explain the Fundamental Concepts and applications of ad hoc and wireless sensor networks |
| | | | | CO2: Discuss the MAC protocol issues of ad hoc networks |
| | | | | CO3: Enumerate the concept of routing protocols for ad hoc wireless networks with respect to TCP design issues |
| | | | | CO4: Analyze & Specify the concepts of network architecture and MAC layer protocol for WSN |
| | | | | CO5: Discuss the WSN routing issues by considering QoS measurements |
| 16 | I-II | MTCSE1203 | Soft Computing | CO1: Elaborate fuzzy logic and reasoning to handle uncertainty in engineering problems. |
| | | | | CO2: Make use of genetic algorithms to combinatorial optimization problems. |
| | | | | CO3: Distinguish artificial intelligence techniques, including search heuristics, knowledge representation, planning and reasoning. |
| | | | | CO4: Formulate and apply the principles of self-adopting and self organizing neuro fuzzy inference systems. |
| | | | | CO5: Evaluate and compare solutions by various soft computing approaches for a given problem |
| 17 | I-II | MTCSE1204 | Cloud Computing | CO1: Interpret the key dimensions of the challenge of Cloud Computing. |
| | | | | CO2: Examine the economics, financial, and technological implications for selecting cloud computing for own organization. |
| | | | | CO3: Assessing the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications. |
| | | | | CO4: Evaluate own organizations' needs for capacity building and training in cloud computing-related IT areas. |
| | | | | CO5: To Illustrate Virtualization for Data-Center Automation. |
| 18 | I-II | MTCSE1204 | Principles Of Computer Security | CO1: Describe the key security requirements of confidentiality, integrity, and availability, types of security threats and attacks and summarize the functional requirements for computer security. |



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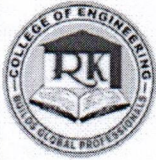
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| | | | | <p>CO2: Explain the basic operation of symmetric block encryption algorithms, use of secure hash functions for message authentication, digital signature mechanism.</p> <p>CO3: Discuss the issues involved and the approaches for user authentication and explain how access control fits into the broader context that includes authentication, authorization, and audit.</p> <p>CO4: Explain the basic concept of a denial-of-service attack, nature of flooding attacks, distributed denial-of-service attacks and describe how computer security vulnerabilities are a result of poor programming practices.</p> <p>CO5: List the steps used to secure the base operating system, specific aspects of securing Unix/Linux systems, Windows systems, and security in virtualized systems and describe the security threats and countermeasures for wireless networks.</p> |
| 19 | I-II | MTCSE1204 | High Performance Computing | <p>CO1: Design, formulate, solve and implement high performance versions of standard single threaded algorithms.</p> <p>CO2: Demonstrate the architectural features in the GPU and MIC hardware accelerators.</p> <p>CO3: Design programs to extract maximum performance in a multicore, shared memory execution environment processor.</p> <p>CO4: Analyze Symmetric and Distributed architectures.</p> <p>CO5: Develop and deploy large scale parallel programs on tightly coupled parallel systems using the message passing paradigm.</p> |
| 20 | I-II | MTCSE1205 | Machine Learning With Python Lab | <p>CO1: Implement procedures for the machine learning algorithms</p> <p>CO2: Design Python programs for various Learning algorithms</p> <p>CO3: Apply appropriate data sets to the Machine Learning algorithms</p> <p>CO4: Identify and apply Machine Learning algorithms to solve real world problems</p> |



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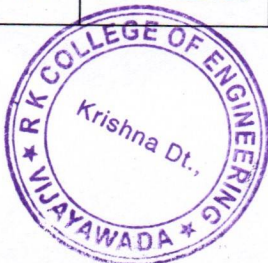


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| 21 | I-II | MTCSE1206 | Mean Stack Technologies Lab | CO1:Identify the Basic Concepts of Web & Markup Languages. |
| | | | | CO2:Develop web Applications using Scripting Languages & Frameworks |
| | | | | CO3:Creating & Running Applications using JSP libraries. |
| | | | | CO4:Creating Our First Controller Working with and Displaying in Angular Js and Nested Forms with ng-form. |
| | | | | CO5:Working with the Files in React JS and Constructing Elements with Data. |
| 22 | I-II | MTCSE1207 | Mini Project With Seminar | CO1:Demonstrate the basic concepts fundamental learning techniques and layers. |
| | | | | CO2:Classify the Probabilistic Neural Networks. |
| | | | | CO3:Implement tools on Deep Learning techniques. |
| 23 | II-I | MTCSE2101 | Deep Learning | CO2:Discuss the Neural Network training, various random models. |
| | | | | CO3:Explain different types of deep learning network models. |
| | | | | CO3:Explain different types of deep learning network models. |
| | | | | CO4:Classify the Probabilistic Neural Networks. |
| | | | | CO5:Implement tools on Deep Learning techniques. |
| 24 | II-I | MTCSE2101 | Social Network Analysis | CO1:After the completion of the course, student will be able to |
| | | | | CO2:Demonstrate social network analysis and measures. |
| | | | | CO3:Analyze random graph models and navigate social networks data |
| | | | | CO4:Apply the network topology and Visualization tools. |
| | | | | CO5:Analyze the experiment with small world models and clustering models. |
| | | | | CO6:Compare the application driven virtual communities from social network Structure. |
| 25 | II-I | MTCSE2101 | Python Programming | CO1:Understand and comprehend the basics of python programming. |



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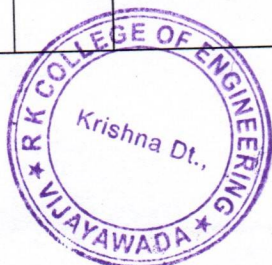


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| | | | | <p>CO2:Demonstrate the principles of structured programming and be able to describe, design, implement, and test structured programs using currently accepted methodology.</p> <p>CO3:Explain the use of the built-in data structures list, sets, tuples and dictionary.</p> <p>CO4:Make use of functions and its applications.</p> <p>CO5:Identify real-world applications using oops, files and exception handling provided by python.</p> |
| 26 | II-I | MTCSE2101 | Principles Of Cyber Security | <p>CO1:Apply cyber security architecture principles.</p> <p>CO2:Describe risk management processes and practices.</p> <p>CO3:Appraise cyber security incidents to apply appropriate response</p> <p>CO4:Distinguish system and application security threats and vulnerabilities.</p> <p>CO5:Identify security tools and hardening techniques</p> |
| 27 | II-I | MTCSE2101 | Internet Of Things | <p>CO1:Summarize on the term 'internet of things' in different contexts.</p> <p>CO2:Analyze various protocols for IoT.</p> <p>CO3:Design a PoC of an IoT system using Rasperry Pi/Arduino</p> <p>CO4:Apply data analytics and use cloud offerings related to IoT.</p> <p>CO5:Analyze applications of IoT in real time scenario</p> |
| 28 | II-I | MTCSE2101 | Machine Learning | <p>CO1:Domain Knowledge for Productive use of Machine Learning and Diversity of Data.</p> <p>CO2:Demonstrate on Supervised and Computational Learning</p> <p>CO3:Analyze on Statistics in learning techniques and Logistic Regression</p> <p>CO4:Illustrate on Support Vector Machines and Perceptron Algorithm</p> <p>CO5:Design a Multilayer Perceptron Networks and classification of decision tree</p> |
| 29 | II-I | MTCSE2101 | Digital Forensics | <p>CO1:Understand relevant legislation and codes of ethics</p> <p>CO2:Computer forensics and digital detective and various processes, policies and procedures</p> |



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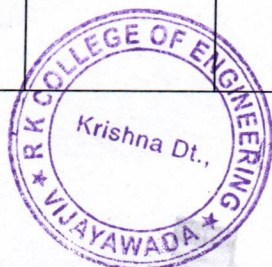
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| | | | | CO3:E-discovery, guidelines and standards, E-evidence, tools and environment. |
| | | | | CO4:Email and web forensics and network forensics |
| 30 | II-I | MTCSE2101 | Next Generation Databases | CO1:Explore the relationship between Big Data and NoSQL databases |
| | | | | CO2:Work with NoSQL databases to analyze the big data for useful business applications. |
| | | | | CO3:Work with different data models to suit various data representation and storage needs. |
| 31 | II-II | MTCSE2201 | (Dissertation) Dissertation Phase – I And Phase – li | CO1:Ability to synthesize knowledge and skills previously gained and applied to an in-depth study and execution of new technical problem. |
| | | | | CO2:Capable to select from different methodologies, methods and forms of analysis to produce a suitable research design, and justify their design. |
| | | | | CO3:Ability to present the findings of their technical solution in a written report. |
| | | | | CO4:Presenting the work in International/ National conference or reputed journals. |
| 32 | II-II | MTCSE2201 | Audit 1 And 2: English For Research Paper Writing | CO1:Understand that how to improve your writing skills and level of readability |
| | | | | CO2:Learn about what to write in each section |
| | | | | CO3:Understand the skills needed when writing a Title Ensure the good quality of paper at very first time submission |
| 33 | II-II | MTCSE2201 | Audit 1 And 2: Disaster Management | CO1:learn to demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response. |
| | | | | CO2:critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives. |
| | | | | CO3:develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations. |
| | | | | CO4:critically understand the strengths and weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country or the countries they work in |



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| 34 | II-II | MTCSE2201 | Audit 1 And 2: Sanskrit For Technical Knowledge | CO1:Understanding basic Sanskrit language CO2:Ancient Sanskrit literature about science & technology can be understood CO3:Being a logical language will help to develop logic in students |
| 35 | II-II | MTCSE2201 | Audit 1 And 2: Value Education | CO1:Knowledge of self-development CO2:Learn the importance of Human values CO3:Developing the overall personality |
| 36 | II-II | MTCSE2201 | Audit 1 And 2: Constitution Of India | CO1:Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics. CO2:Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India. CO3:Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] CO4:Discuss the passage of the Hindu Code Bill of 1956. |
| 37 | II-II | MTCSE2201 | Audit 1 And 2: Pedagogy Studies | CO1:What pedagogical practices are being used by teachers in formal and informal classrooms in developing countries? CO2:What is the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners? CO3:How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy? |
| 38 | II-II | MTCSE2201 | Audit 1 And 2: Stress Management By Yoga) | CO1:Develop healthy mind in a healthy body thus improving social health also CO2:Improve efficiency |
| 39 | II-II | MTCSE2201 | Audit 1 And 2: Personality Development Through Life Enlightenment Skills | CO1:Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life CO2:The person who has studied Geeta will lead the nation and mankind to peace and prosperity CO3:Study of Neetishatakam will help in developing versatile personality of students |

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