## Galgotias College of Engineering and Technology, Greater Noida

**Statements of Course Outcomes (COs) and Mapping with Program Outcomes (POs) and Program Specific Outcomes (PSOs) : Dept. of CSE : 2020-21**

| S. No | Sub Code | COx | Statement of Course Outcomes (COs) | Kx | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO 1 | PSO 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Statement of Course Outcomes (COs) Upon completion of topic concerned, students will be able to :** | Blooms Knowledge Level | Engineering knowledge | Problem Analysis | Design/development of solutions | Conduct investigations of complex problems | Modern tool usage | The Engineer and Society | Environment & sustainability | Ethics | Individual and team work | Communications | Project management and finance | Life Long Learning | *Design computer based systems using theoretical computer science that demonstrate the comprehension of the trade-offs involve in the design choice* | *Design, develop and test software for different applications with real time constraints* |
| 1 | KAS 301 | CO-1 | Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place asEngineers. | K2 | - | - | - | - | - | 2 | - | 2 | - | 3 | - | 3 | - | - |
| | | CO-2 | Students will utilize the technical writing for the purposes of Technical Communication and its exposure in variousdimensions. | K3 | - | - | - | - | - | - | - | - | 2 | 3 | - | 3 | - | - |
| | | CO-3 | Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience. | K2 | - | - | - | - | - | - | - | - | 2 | 3 | - | 3 | - | - |
| | | CO-4 | Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence. | K1 | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | - |
| | | CO-5 | It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics. | K2 | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | - |
| | | | **KAS 301** | | | | | | | **2.00** | | **2.00** | **2.00** | **3.00** | | **3.00** | | |
| 2 | KNC 301/ KNC 401 | CO-1 | To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats | K3 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | - |
| | | CO-2 | To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats. | K2 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | - |
| | | CO-3 | To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques. | K2 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |
| | | CO-4 | To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios. | K3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 2 | 3 | 2 |
| | | CO-5 | To articulate the well knowncyber attack incidents, explain the attack scenarios, and explain mitigation techniques. . | K1 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| | | | **KNC 301** | | **3.00** | **2.40** | **2.00** | | | | | | | | | **2.00** | **3.00** | **2.00** |
| 3 | KOE 038 | CO-1 | Understand the concept of PN junction and special purpose diodes. | K3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-2 | Study the application of conventional diode and semiconductor diode. | K2 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-3 | Analyse the I-V characteristics of BJT and FET. | K2 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-4 | Analyse the of Op-Amp, amplifiers, integrator, and differentiator | K3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-5 | Understand the concept of digital storage oscilloscope and compare of DSO with analog oscilloscope. | K1 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | | **KOE 038** | | **3.00** | **2.80** | **1.80** | | | | | | | | | **3.00** | **3.00** | **3.00** |
| 4 | KCS 301 | CO-1 | Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications | $K_1$, $K_2$ | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| | | CO-2 | Discuss the computational efficiency of the sorting and searching algorithms | $K_2$ | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| | | CO-3 | Implementation of Trees and Graphs and perform various operations on these data s | $K_3$ | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| | | CO-4 | Understanding the concept of recursion, application of recursion and its implementat | $K_4$ | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| | | CO-5 | Identify the alternative implementations of data structures with respect to its perform | $K_5$, $K_6$ | 2 | 2 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| | | | **KCS 301** | | **2.80** | **2.80** | **3.00** | **2.00** | | | | | | | | **2.00** | **3.00** | **2.00** |
| 5 | KCS 302 | CO-1 | Study of the basic structure and operation of a digital computer system. | $K_1$, $K_2$ | 3 | 2 | 2 | 1 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-2 | Analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating-point arithmetic operations. | $K_2$, $K_4$ | 3 | 3 | 3 | 1 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-3 | Implementation of control unit techniques and the concept of Pipelining | $K_3$ | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-4 | Understanding the hierarchical memory system, cache memories and virtual memory | $K_2$ | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-5 | Understanding the different ways of communicating with I/O devices and standard I/O interfaces | $K_2$, $K_4$ | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | | **KCS 302** | | **3.00** | **2.40** | **2.40** | **1.60** | | | | | | | | **3.00** | **3.00** | **3.00** |
| 6 | KCS 303 | CO-1 | Write an argument using logical notation and determine if the argument is or is not valid. | $K_3$, $K_4$ | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 | - |
| | | CO-2 | Understand the basic principles of sets and operations in sets | $K_1$, $K_2$ | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 | - |
| | | CO-3 | Demonstrate an understanding of relations and functions and be able to determine their properties. | $K_3$ | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 | - |
| | | CO-4 | Demonstrate different traversal methods for trees and graphs. | $K_1$, $K_4$ | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 | - |
| | | CO-5 | Model problems in Computer Science using graphs and trees. | $K_2$, $K_6$ | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 | - |
| | | | **KCS 303** | | **3.00** | **2.80** | **2.00** | **2.00** | | | | | | | | **3.00** | **2.00** | |
| 7 | KCS 351 | CO-1 | Remember and understand basic data structure concepts. | K3 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-2 | Choose the appropriate data structure for algorithm design. | K3 | 3 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-3 | Apply fundamental of data structure for Sorting, Searching, Stack & Queues | K3 | 3 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | | **KCS 351** | | **2.67** | **2.67** | **2.67** | **2.67** | **2.00** | | | | | | | **3.00** | **3.00** | **3.00** |
| 8 | KCS 352 | CO-1 | Understand the operations of digital logic circuits and the organization of computer system. | K3 | 3 | 2 | 1 | 1 | 1 | - | - | - | - | - | - | 1 | 3 | - |
| | | CO-2 | Design digital logic circuit for Input / Output and Arithmetic and Logical Unit | K3 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 1 | 3 | - |
| | | CO-3 | Design and Implement the circuit for Control Unit of the Computer System. | K3 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 1 | 3 | - |
| | | | **KCS 352** | | **3.00** | **2.67** | **2.33** | **1.67** | **1.67** | | | | | | | **1.00** | **3.00** | |
| 9 | KCS 353 | CO-1 | Implement the concepts of set theory and mathematical induction. | K3 | 3 | 3 | 3 | - | 2 | - | - | - | - | - | - | 3 | 2 | 2 |
| | | CO-2 | Implement the concept of recursion and Boolean algebra. | K3 | 3 | 3 | 3 | - | 2 | - | - | - | - | - | - | 3 | 2 | 2 |
| | | CO-3 | Implement state of art problems using the concepts of discrete structures. | K3 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 3 | 2 | 2 |
| | | | **KCS 353** | | **3** | **3** | **3** | **2** | **2** | **-** | **-** | **-** | **-** | **-** | **-** | **3** | **2** | **2** |
| 10 | KCS 354 | CO-1 | Discover potential research areas in the field of Computer Science and Engineering. | K2 | 2 | 3 | 2 | 1 | 2 | 1 | 2 | 2 | 3 | 3 | 1 | 3 | 3 | 3 |
| | | CO-2 | Work as a responsible member and possibly a leader of a team in developing software solutions. | K2 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 3 | 3 | 3 | 2 | 3 | 3 |
| | | CO-3 | Self learn new tools, algorithms, and/or techniques that contribute to the software solution of the project. | K3 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 3 | 3 | 2 | 2 | 3 | 3 |
| | | | **KCS 354** | | **2.67** | **3.00** | **2.67** | **2.33** | **2.67** | **1.67** | **1.33** | **1.33** | **3.00** | **3.00** | **2.00** | **2.33** | **3.00** | **3.00** |

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| 11 | KCS 401 | CO-1 | Understand the structure and functions of OS | $K_1, K_2$ | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 2 | 2 | 2 |
| | | CO-2 | Learn about Processes, Threads and Scheduling algorithms. | $K_1, K_2$ | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 2 | 2 | 2 |
| | | CO-3 | Understand the principles of concurrency and Deadlocks | $K_2$ | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-4 | Learn various memory management scheme | $K_2$ | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-5 | Study I/O management and File systems. | $K_2, K_4$ | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | | **KCS 401** | | **2.60** | **2.60** | **2.00** | **2.00** | **2.00** | | | | | | | **2.60** | **2.60** | **2.60** |
| 12 | KCS 451 | CO-1 | Understand and remember various CPU scheduling, memory management, process s | K2 | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 1 | 3 | 3 |
| | | CO-2 | Analyse and apply the various operating system algorithms. | K3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | 2 | 3 | 3 |
| | | CO-3 | Implement and execute the various operating system algorithms | K3 | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 2 | 3 | 3 |
| | | | **KCS 451** | | **2.67** | **2.67** | **2.67** | **3.00** | **2.50** | | | | | | | **1.67** | **3.00** | **3.00** |
| 13 | KCS 402 | CO-1 | Analyse and design finite automata, pushdown automata, Turing machines, formal languages, and grammars | $K_4, K_6$ | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | 3 | 3 | 2 |
| | | CO-2 | Analyse and design, Turing machines, formal languages, and grammars | $K_4, K_6$ | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 3 | 3 | 2 |
| | | CO-3 | Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving | $K_1, K_5$ | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 3 | 3 | 2 |
| | | CO-4 | Prove the basic results of the Theory of Computation | $K_2, K_3$ | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| | | CO-5 | State and explain the relevance of the Church-Turing thesis | $K_1, K_5$ | 2 | 2 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| | | | **KCS 402** | | **2.80** | **2.60** | **2.60** | **2.20** | | | | | | | | **2.60** | **3.00** | **2.00** |
| 14 | KCS 452 | CO-1 | Understand 8085, 8086 microprocessor and familiarize with the assembly level programming | K2 & K3 | 2 | 2 | 2 | - | 2 | 1 | - | - | 2 | - | - | 2 | 3 | 3 |
| | | CO-2 | Interface various devices to the microprocessor | K3 | 3 | 3 | 3 | 3 | 2 | 1 | - | - | 2 | - | - | 2 | 3 | 3 |
| | | CO-3 | Measure and record the experimental data, analyze the results, and prepare a formal laboratory report | K3 | 3 | 3 | 3 | 3 | 2 | 1 | - | - | 2 | - | - | 2 | 3 | 3 |
| | | KCS 452 | | | 2.6667 | 2.667 | 2.667 | 3 | 2 | 1 | | | 2 | | | 2 | 3 | 3 |
| 15 | KCS 403 | CO-1 | Apply a basic concept of digital fundamentals to Microprocessor based personal computer system. | $K_3, K_4$ | 3 | - | - | - | 1 | - | - | - | - | - | - | - | - | - |
| | | CO-2 | Analyze a detailed s/w & h/w structure of the Microprocessor. | $K_2, K_4$ | 3 | - | - | - | 2 | - | - | - | - | - | - | - | - | - |
| | | CO-3 | Illustrate how the different peripherals (8085/8086) are interfacedwith Microprocessor. | $K_3$ | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 |
| | | CO-4 | Analyze the properties of Microprocessors(8085/8086) | $K_4$ | 3 | - | - | 3 | - | - | - | - | - | - | - | - | 3 | - |
| | | CO-5 | Evaluate the data transfer information through serial & parallel ports. | $K_5$ | 3 | - | - | - | - | - | - | - | - | - | - | 2 | 3 | - |
| | | | KCS 403 | | 3 | 3 | 3 | 2.5 | 1.5 | | | | | | | 2 | 3 | 3 |
| 16 | KCS 453 | CO-1 | Learn and understand the basic concepts and constructs of Python programming. | K2 | 2 | 2 | 2 | 3 | 2 | - | - | - | 2 | - | - | - | | 3 |
| | | CO-2 | Analyze and apply the appropriate programming constructs for problem solving. | K3 & K4 | 3 | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | | 3 |
| | | CO-3 | Implement projects using Python programming skills. | K3 | 3 | 3 | 3 | 3 | 2 | 1 | - | - | 2 | - | 2 | 2 | 3 | 3 |
| | | | KCS 453 | | 2.6667 | 2.667 | 2.667 | 3 | 2 | 1 | | | 2 | | 2 | 2 | 3 | 3 |
| 17 | KAS 402 | CO-1 | Remember the concept of partial differential equation and to solve partial differential equations | K1 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | 1 | - | - |
| | | CO-2 | Analyze the concept of partial differential equations to evaluate the problemsconcerned with partial differential equations | K4 | 3 | 3 | 1 | 3 | 2 | - | - | - | - | - | - | 1 | - | - |
| | | CO-3 | Understand the concept of correlation, moments, skewness and kurtosis and curve fitting | K2 | 3 | 1 | 1 | 1 | - | - | - | - | - | - | - | 1 | - | - |
| | | CO-4 | Remember the concept of probability to evaluate probability distributions | K1 | 3 | 1 | 1 | 3 | - | - | - | - | - | - | - | 1 | - | - |
| | | CO-5 | Apply the concept of hypothesis testing and statistical quality control to create control charts | K3 | 3 | 1 | 3 | 1 | 3 | - | - | - | - | - | - | 1 | - | - |
| | | | **KAS 402** | | **3.00** | **1.60** | **1.40** | **2.00** | **2.50** | | | | | | | **1.00** | | |
| 18 | KVE 401 | CO-1 | Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society | K2 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-2 | Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body. | K2 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-3 | Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society | K2 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-4 | Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature. | K3 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-5 | Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work. | K2 & K3 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | | **KVE 401** | | **-** | **-** | **-** | **-** | **-** | **3** | **3** | **3** | **3** | **2** | **-** | **3** | **-** | **-** |
| 19 | KCS 501 | CO-1 | Apply knowledge of database for real life applications. | K3 | 1 | 1 | 3 | - | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-2 | Apply query processing techniques to automate the real time problems of databases | K2 | 2 | 2 | 1 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-3 | Identify and solve the redundancy problem in database tables using normalization. | K2 | 2 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-4 | Understand the concepts of transactions, their processing so they will familiar with broad range of database management issues including data integrity, security and recovery. | K3 | 2 | 2 | 1 | 2 | 1 | - | - | - | - | - | - | 3 | 2 | 3 |
| | | CO-5 | Design, develop and implement a small database project using database tools. | K1 | 2 | 2 | 2 | 2 | 1 | - | - | - | - | - | - | 3 | 2 | 3 |
| | | | **KCS 501** | | **1.8** | **1.8** | **2** | **2** | **1.6** | - | - | - | - | - | - | **2.4** | **2** | **3** |
| 20 | KCS 551 | CO-1 | Understand and apply oracle 11 g products for creating tables, views, indexes, sequences and other database objects. Design and implement a database schema for company data base, banking data base, library information system, payroll processing system, student information system. | K3 | 1 | 1 | 2 | - | 2 | 1 | - | - | 2 | - | 2 | - | 2 | - |
| | | CO-2 | Write and execute simple and complex queries using DDL, DML, DCL and TCL | K2 | 1 | 1 | 2 | 1 | - | - | - | - | - | - | - | 2 | 2 | - |
| | | CO-3 | Write and execute PL/SQL blocks, procedure functions, packages and triggers, curs | K2 | 1 | 1 | 2 | 2 | 2 | 1 | - | - | 2 | - | 2 | 2 | 2 | - |
| | | | **KCS 551** | | **1.00** | **1.00** | **2.00** | **1.50** | **2.00** | **1.00** | | | **2.00** | | **2.00** | **2.00** | **2.00** | |
| 21 | KCS 502 | CO-1 | Acquire knowledge of different phases and passes of the compiler and also able to use the compiler tools like LEX, YACC, etc. Students will also be able to design different types of compiler tools to meet the requirements of the realistic constraints of compilers. | K3 | 2 | 1 | 2 | - | - | - | - | | - | - | - | 2 | 1 | - |
| | | CO-2 | Understand the parser and its types i.e. Top-Down and Bottom-up parsers and construction of LL, SLR, CLR, and LALR parsing table. | K2 | 2 | 2 | 3 | - | 1 | - | - | - | - | - | - | 2 | 3 | 1 |
| | | CO-3 | Implement the compiler using syntax-directed translation method and get knowledge about the synthesized and inherited attributes. | K3 | 2 | 2 | 2 | - | 1 | - | - | - | - | - | - | 3 | 3 | 1 |
| | | CO-4 | Acquire knowledge about run time data structure like symbol table organization and different techniques used in that. | K3 | 2 | 2 | 2 | - | 1 | - | - | - | - | - | - | 2 | 3 | 2 |
| | | CO-5 | Understand the target machine's run time environment, its instruction set for code generation and techniques used for code optimization. | K1 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| | | | **KCS 502** | | **2.20** | **2.00** | **2.40** | **2.00** | **1.25** | | | | | | | **2.40** | **2.60** | **1.50** |

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| 22 | KCS 552 | CO-1 | Identify patterns, tokens & regular expressions for lexical analysis. | K3 | 3 | 3 | 3 | 3 | 3 | 2 | - | | - | 2 | - | 2 | 3 | 3 |
| | | CO-2 | Design Lexical analyser for given language using C and LEX /YACC tools | K4 | 3 | 3 | 3 | 3 | 3 | 2 | - | - | - | 2 | - | 2 | 3 | 3 |
| | | CO-3 | Design and analyse top down and bottom up parsers. | K4 | 3 | 3 | 3 | 3 | 3 | 2 | - | - | - | 2 | - | 2 | 3 | 3 |
| | | **KCS 552** | | | **3.00** | **3.00** | **3.00** | **3.00** | **3.00** | **2.00** | | | | **2.00** | | **2.00** | **3.00** | **3.00** |
| 23 | KCS 503 | CO-1 | Design new algorithms, prove them correct, and analyze their asymptotic and absolute runtime and memory demands. | (K4, K6) | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | 3 | 1 | 3 |
| | | CO-2 | Find an algorithm to solve the problem (create) and prove that the algorithm solves the problem correctly (validate) | (K5, K6) | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 3 | 1 | 3 |
| | | CO-3 | Understand the mathematical criterion for deciding whether an algorithm is efficient, and know many practically important problems that do not admit any efficient algorithms. | (K2, K5) | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 3 | 1 | 3 |
| | | CO-4 | Apply classical sorting, searching, optimization and graph algorithms. | (K2, K4) | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 3 | 1 | 3 |
| | | CO-5 | Understand basic techniques for designing algorithms, including the techniques of recursion, divide-and-conquer, and greedy. | (K2, K3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 1 | 3 |
| | | **KCS 503** | | | **3.00** | **2.80** | **2.80** | **2.25** | | | | | | | | **3.00** | **1.00** | **3.00** |
| 24 | KCS 553 | CO-1 | Implement algorithm to solve problems by iterative approach. (K2, K4) | K2,K4 | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-2 | Implement algorithm to solve problems by Greedy algorithm Divide and Conquer approach (K3,K4, K5) | K3, K4, K5 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-3 | Implement algorithm to solve problems by Dynamic programming, backtracking, branch and bound approach. (K3,K4, K5) | K3, K4, K5 | 3 | 3 | 3 | 3 | 2 | 1 | - | - | - | - | - | 3 | 3 | 3 |
| | | **KCS 553** | | | **2.67** | **2.67** | **2.67** | **2.50** | **2.00** | **1.00** | | | | | | **3.00** | **3.00** | **3.00** |
| 25 | KCS 056 | CO-1 | Recognize the feasibility of applying a soft computing methodology for a particular problem. | K4 | 3 | 2 | 1 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | CO-2 | Understand the concepts and techniques of soft computing and foster their abilities in designing and implementing soft computing based solutions for real-world and engineering problems. | K2 | 3 | 3 | 1 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | CO-3 | Apply neural networks to pattern classification and regression problems and compare solutions by various soft computing approaches for a given problem. | K3 | 3 | 2 | 1 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | CO-4 | Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems. | K3 | 3 | 3 | 1 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | CO-5 | Apply genetic algorithms to combinatorial optimization problems. | K3 | 3 | 3 | 2 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | **KCS 056** | | | **3.00** | **2.60** | **1.20** | **1.00** | | | | | | | | **3.00** | **3.00** | |
| 26 | KCS 051 | CO-1 | Describe the life cycle phases of Data Analytics through discovery, planningandbuilding. | K3 | 3 | - | - | - | - | - | - | - | 2 | 2 | 2 | 2 | 3 | 3 |
| | | CO-2 | Understand and apply Data Analysis Techniques. | K2 | 3 | 2 | 2 | 1 | - | - | - | - | 2 | 2 | - | 2 | 3 | 3 |
| | | CO-3 | Implement various Data streams. | K2 | 3 | 3 | 2 | 2 | - | 2 | - | - | - | 2 | 2 | 3 | 3 | 3 |
| | | CO-4 | Understand item sets, Clustering, frame works & Visualizations. | K3 | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-5 | Apply R tool for developing and evaluating real time applications. | K1 | 3 | 2 | 3 | 3 | 2 | - | - | - | 2 | 3 | 2 | 2 | 3 | 3 |
| | | **KCS 051** | | | **3.00** | **2.50** | **2.50** | **2.25** | **2.50** | **2.00** | | | **2.00** | **2.25** | **2.00** | **2.40** | **3.00** | **3.00** |
| 27 | KCS 054 | CO-1 | To Understand the application development and analyze the insights of object oriented programming to implement application | K2 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | 3 | 3 |
| | | CO-2 | To Understand, analyze and apply the role of overall modeling concepts (i.e. System, structural) | K2, K3, K4 | 3 | 2 | 2 | 1 | - | - | - | - | - | - | - | 2 | 3 | 3 |
| | | CO-3 | To Understand, analyze and apply oops concepts (i.e. abstraction, inheritance) | K2, K3, K4 | 3 | 3 | 2 | 2 | - | 2 | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-4 | To learn concepts of C++ for understanding the implementation of object oriented concepts | K2 | 3 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-5 | To learn the programming concepts to implement object oriented modeling. | K2 | 3 | 2 | 3 | 3 | 2 | - | - | - | - | - | - | 2 | 3 | 3 |
| | | **KCS 054** | | | **3.00** | **2.50** | **2.50** | **2.25** | **2.00** | **2.00** | | | | | | **2.40** | **3.00** | **3.00** |
| 28 | KNC 502 | CO-1 | Identify and explore the basic features and modalities about Indian constitution. | K3 | - | - | - | - | - | 3 | 2 | - | 1 | - | - | 2 | - | - |
| | | CO-2 | Differentiate and relate the functioning of Indian parliamentary system at the center a | K2 | - | - | 2 | - | - | 3 | 2 | - | - | - | - | 2 | - | - |
| | | CO-3 | Differentiate different aspects of Indian Legal System and its related bodies. | K2 | - | - | 2 | - | - | 2 | 3 | - | - | - | - | - | - | - |
| | | CO-4 | Discover and apply different laws and regulations related to engineering practices. | K3 | - | - | **3** | - | - | **3** | **2** | - | - | - | - | **2** | - | - |
| | | CO-5 | Correlate role of engineers with different organizations and governance models | K1 | - | - | **2** | - | - | **2** | **3** | - | - | - | - | - | - | - |
| | | **KNC 502** | | | | | **2.25** | | | **2.60** | **2.40** | | **1.00** | | | **2.00** | | |
| 29 | KCS 055 | CO-1 | To understand the need for machine learning for various problem solving | K3 | 2 | 3 | 2 | 3 | 3 | - | - | - | 2 | - | - | 3 | 2 | 3 |
| | | CO-2 | To understand a wide variety of learning algorithms and how to evaluate models generated from data | K2 | 2 | 2 | 3 | 2 | 3 | - | - | - | 2 | - | - | 3 | 2 | 3 |
| | | CO-3 | To understand the latest trends in machine learning | K2 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-4 | To design appropriate machine learning algorithms and apply the algorithms to a real-world problem | K3 | 2 | 3 | 3 | 3 | 3 | - | - | - | 3 | - | - | 3 | 2 | 3 |
| | | CO-5 | To optimize the models learned and report on the expected accuracy that can be achieved by applying the models | K1 | 3 | 3 | 3 | 3 | 3 | - | - | - | 3 | - | - | 3 | 2 | 3 |
| | | **KCS 055** | | | **2.2** | **2.6** | **2.6** | **2.6** | **2.8** | **-** | **-** | **-** | **2.5** | **-** | **-** | **2.8** | **2** | **3** |
| 30 | KNC 501 | CO-1 | To acquaint the students with legacies of constitutional development in India and help those to understand the most diversified legal document of India and philosophy behind it. | K2 | - | - | - | - | - | 3 | 2 | - | 1 | - | - | 2 | - | - |
| | | CO-2 | To make students aware of the theoretical and functional aspects of the Indian Parliamentary System. | K2 | - | - | 2 | - | - | 3 | 2 | - | - | - | - | 2 | - | - |
| | | CO-3 | To channelize students' thinking towards basic understanding of the legal concepts and its implications for engineers. | K3 | - | - | 2 | - | - | 2 | 3 | - | - | - | - | - | - | - |
| | | CO-4 | To acquaint students with latest intellectual property rights and innovation environment with related regulatory framework. | K3 | - | - | **3** | - | - | **3** | **2** | - | - | - | - | **2** | - | - |
| | | CO-5 | To make students learn about role of engineering in business organizations and e-governance. | K3 | - | - | **2** | - | - | **2** | **3** | - | - | - | - | - | - | - |
| | | **KNC 501** | | | - | - | **2.25** | - | - | **2.6** | **2.4** | - | **1** | - | - | **2** | - | - |
| 31 | KCS 601 | CO-1 | Explain various software characteristics and analyze different software Development Models. | K1,K2 | 1 | - | - | - | - | - | - | - | - | - | - | 2 | 2 | 1 |
| | | CO-2 | Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards. | K1,K2 | 2 | 2 | - | - | 2 | - | - | - | 1 | 1 | - | 2 | 2 | 1 |
| | | CO-3 | Compare and contrast various methods for software design. | K2,K3 | 2 | - | 2 | - | 2 | - | - | - | - | 2 | - | 2 | 2 | 2 |
| | | CO-4 | Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing. | K3 | 2 | - | 2 | - | 2 | - | - | - | 2 | 2 | - | 2 | 2 | 2 |
| | | CO-5 | Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis. | K5 | 2 | - | - | - | 2 | 2 | - | - | 2 | 2 | 3 | 2 | 2 | 2 |
| | | **KCS 601** | | | **1.8** | **2** | **2** | **-** | **2** | **2** | **-** | **-** | **1.67** | **1.75** | **3** | **2** | **2** | **1.6** |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | KCS 602 | CO-1 | Explain web development Strategies and Protocols governing Web. | K3 | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-2 | Develop Java programs for window/web-based applications. | K2 | 2 | 2 | 3 | 2 | 3 | - | - | - | 2 | - | - | 2 | 2 | 3 |
| | | CO-3 | Design web pages using HTML, XML, CSS and JavaScript. | K2 | 2 | 2 | 3 | 2 | 3 | - | - | - | 2 | - | - | 2 | 2 | 3 |
| | | CO-4 | Creation of client-server environment using socket programming | K3 | 2 | 3 | 3 | 3 | 3 | - | - | - | 3 | - | - | 3 | 2 | 3 |
| | | CO-5 | Building enterprise level applications and manipulate web databases using JDBC | K1 | 2 | 3 | 3 | 2 | 3 | - | - | - | 3 | - | - | 2 | 2 | 3 |
| | | CO-6 | Design interactive web applications using Servlets and JSP | K2 | 3 | 3 | 3 | 3 | 3 | - | - | - | 3 | - | - | 3 | 2 | 3 |
| | | **KCS 602** | | | **2.16** | **2.5** | **3** | **2.33** | **3** | **-** | **-** | **-** | **2.6** | **-** | **-** | **2.33** | **2** | **3** |
| 33 | KCS 603 | CO-1 | Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission. | K3 | 2 | 1 | 2 | - | - | - | - | | - | - | - | 2 | - | - |
| | | CO-2 | Apply channel allocation, framing, error and flow control techniques | K2 | 2 | 2 | 3 | - | 1 | 1 | - | - | - | - | - | 2 | 1 | 1 |
| | | CO-3 | Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism. | K2 | 2 | 2 | 2 | - | 1 | 1 | - | - | - | - | - | 3 | 1 | 1 |
| | | CO-4 | Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism. | K3 | 2 | 2 | 2 | - | 1 | 1 | - | - | - | - | - | 2 | 2 | 1 |
| | | CO-5 | Explain the functions offered by session and presentation layer and their Implementation. | K1 | 3 | 3 | 3 | - | 2 | 1 | 1 | - | - | - | - | 3 | 2 | 1 |
| | | CO-6 | Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and VPN. | K2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | - | - | - | - | 2 | 2 | 1 |
| | | **KCS 603** | | | **2.17** | **2** | **2.33** | **1** | **1.2** | **1** | **1.5** | **-** | **-** | **-** | **-** | **2.33** | **1.6** | **1** |
| 34 | KCS 061 | CO-1 | Demonstrate knowledge of Big Data Analytics concepts and its applications in business. | $K_1$,$K_2$ | 3 | 3 | - | 1 | - | - | - | - | - | - | - | 3 | 2 | 2 |
| | | CO-2 | Demonstrate functions and components of Map Reduce Framework and HDFS. | $K_1$,$K_2$ | 3 | 3 | 1 | 3 | 3 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-3 | Discuss Data Management concepts in NoSQL environment. | $K_6$ | 3 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-4 | Explain process of developing Map Reduce based distributed processing applications | $K_2$,$K_5$ | 2 | 3 | 3 | 2 | 3 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-5 | Explain process of developing applications using HBASE, Hive, Pig etc | $K_2$,$K_5$ | 2 | 3 | 3 | 1 | 3 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | **KCS 061** | | | **2.6** | **2.8** | **2.5** | **1.8** | **3** | **-** | **-** | **-** | **-** | **-** | **-** | **3** | **2.8** | **2.8** |
| 35 | KCS 063 | CO-1 | Illustrate the need and the challenges in the design of hard and soft real time systems. | $K_3$ | 2 | 2 | 2 | 1 | - | - | - | - | - | - | - | 1 | 2 | 2 |
| | | CO-2 | Compare different scheduling algorithms and the schedulable criteria. | $K_4$ | 3 | 3 | 2 | 2 | 1 | - | - | - | - | - | - | 2 | 3 | 2 |
| | | CO-3 | Discuss resource sharing methods in real time environment | $K_3$ | 2 | 3 | 3 | 2 | 1 | 1 | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-4 | Compare and contrast different real time communication and medium access control techniques. | $K_4$, $K_5$ | 3 | 3 | 2 | 2 | 2 | 1 | 1 | - | - | - | 2 | 2 | 2 | 3 |
| | | CO-5 | Analyze real time Operating system and Commercial databases | $K_2$, $K_4$ | 3 | 3 | 3 | 2 | 2 | 1 | 1 | - | - | - | 2 | 2 | 3 | 2 |
| | | **KCS 063** | | | **2.6** | **2.8** | **2.4** | **1.8** | **1.5** | **1** | **1** | **-** | **-** | **-** | **2** | **1.8** | **2.4** | **2.4** |
| 36 | KCS 062 | CO-1 | Explain the basic concepts of two-dimensional signal acquisition, sampling, quantization and color model. | $K_1$, $K_2$ | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | - |
| | | CO-2 | Apply image processing techniques for image enhance mentin both the spatial and frequency domains. | $K_2$, $K_3$ | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| | | CO-3 | Apply and compare image restoration techniques in both spatial and frequency domain. | $K_2$, $K_3$ | 3 | 3 | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 |
| | | CO-4 | Compare edge based and region based segmentation algorithms for ROI extraction. | $K_3$, $K_4$ | 3 | 3 | - | 3 | - | - | - | - | - | 2 | - | - | 2 | 2 |
| | | CO-5 | Explain compression techniques and descriptors for image processing. | $K_2$, $K_3$ | 3 | 3 | - | 3 | - | 3 | - | - | - | 2 | - | 2 | 2 | 2 |
| | | **KCS 062** | | | **3** | **3** | **-** | **2.7** | **-** | **3** | **-** | **-** | **-** | **2** | **-** | **2** | **2.2** | **2** |
| 37 | KCS 652 | CO-1 | Develop static web pages using HTML | K3 | 3 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-2 | Develop Java programs for window/web-based applications. | K3,K4 | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 2 | 3 |
| | | CO-3 | Design dynamic web pages using Javascript and XML. | K4, K5 | 3 | 3 | 3 | 3 | 3 | - | - | - | 3 | - | - | 2 | 2 | 3 |
| | | CO-4 | Design dynamic web page using server site programming Ex. ASP/JSP/PHP | K4,K5 | 3 | 3 | 3 | 3 | 3 | | | | 3 | | | 2 | 2 | 3 |
| | | CO-5 | Design server site applications using JDDC,ODBC and section tracking API | K3,K5 | 3 | 3 | 3 | 3 | 3 | | | | 2 | | | 2 | 2 | 3 |
| | | **KCS 652** | | | **3** | **2.8** | **2.8** | **2.8** | **2.6** | **-** | **-** | **-** | **2.67** | **-** | **-** | **2.2** | **2** | **3** |
| 38 | KCS 651 | CO-1 | Identifyambiguities,inconsistenciesandincompletenessfromRequirementsspecificationandstatefunctionaland non-functionalrequirement | K3 | 3 | 3 | 2 | - | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-2 | Identifydifferentactorsandusecasesfromagivenproblemstatementanddrawusecasediagramtoassociate usecases with differenttypesof relationship | K3 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 3 | 2 | 3 |
| | | CO-3 | Drawaclassdiagramafteridentifyingclassesandassociationamongthem | K4,K6 | 3 | 3 | 3 | 3 | 2 | 1 | - | - | - | - | - | 3 | 2 | 3 |
| | | CO-4 | Graphicallyrepresent variousUMLdiagrams ,andassociationsamongthemandidentifythelogical sequence ofactivitiesundergoinginasystem, andrepresentthempictorially | K4 | 3 | 3 | 3 | 2 | 2 | 1 | - | - | - | - | - | 3 | 2 | 3 |
| | | CO-5 | Abletousemodernengineeringtoolsforspecification,design,implementationandtesting | K3 | 3 | 3 | 3 | 3 | 2 | 1 | - | - | - | - | - | 3 | 2 | 3 |
| | | **KCS 651** | | | **3** | **3** | **2.8** | **2.5** | **2** | **1** | **-** | **-** | **-** | **-** | **-** | **2.8** | **2** | **3** |
| 39 | KCS 653 | CO-1 | Simulate different network topologies | K4, K6 | 2 | 2 | 1 | 1 | - | - | - | - | - | - | - | 1 | 3 | 3 |
| | | CO-2 | Implement various framing methods of Data Link Layer | K4, K6 | 2 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 3 |
| | | CO-3 | Implement various Error and flow control techniques | K3 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-4 | Implement network routing and addressing techniques | K3 | 2 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 3 |
| | | CO-5 | 5 Implement transport and security mechanisms | K3 | 2 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 3 |
| | | **KCS 653** | | | **2.2** | **2.8** | **2.6** | **1.8** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **1.8** | **2.8** | **3** |
| 40 | KOE 069 | CO-1 | To help the students having the clarity about human aspirations, goal, activities and purpose oflife. | K2 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-2 | To facilitate the competence to understand the harmony in nature/existence and participationof human being in the nature/existence. | K3 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-3 | To help the students to develop the understanding of human tradition and its varioucomponents. | K4 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | **KOE 069** | | | **-** | **-** | **-** | **-** | **-** | **3** | **3** | **3** | **3** | **2** | **-** | **3** | **-** | **-** |
| 41 | RCS 701 | CO-1 | Define the characterization of Distributed Systems, TheoreticalFoundation for Distributed System and Concepts in Message PassingSystems. | $K_2$ | 1 | 1 | 1 | - | 2 | - | - | - | - | - | - | 1 | - | - |
| | | CO-2 | Explain the Distributed Mutual Exclusion and Distributed Deadlock Detection. | $K_2$, $K_3$ | 2 | 3 | 2 | - | - | - | - | - | - | - | - | 2 | 1 | 1 |
| | | CO-3 | Apply the Agreement Protocols andDistributed Resource Management. | $K_3$ , $K_4$ | 2 | 3 | 3 | - | - | - | - | - | - | - | - | 2 | 3 | - |
| | | CO-4 | Analyze the Failure Recovery in Distributed Systems andFault Tolerance. | $K_2$ , $K_3$ | 2 | 2 | 2 | - | 3 | 1 | - | - | - | - | - | 2 | - | - |
| | | CO-5 | Evaluate the Transactions and Concurrency Control, Distributed Transactions and replication. | K3 | 2 | 2 | 3 | - | 2 | 1 | - | - | - | - | - | 2 | 2 | 3 |
| | | CO-6 | Design the distributed systems. | $K_2$ , $K_4$ | 2 | 2 | 3 | 1 | 2 | 1 | - | - | - | - | - | 2 | 2 | 3 |
| | | **RCS 701** | | | **1.8** | **2.2** | **2.3** | **1** | **2.25** | **1** | **-** | **-** | **-** | **-** | **-** | **1.8** | **2** | **2.33** |

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| 42 | RCS 751 | CO-1 | Understand and remember fundamentals of distributed networking approaches. | K2 & K3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 2 | - | - |
| | | CO-2 | Understand and remember the certain algorithms approaches in distributed computing. | K4, K5 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | 2 | - | - |
| | | CO-3 | Implementation of these advance computing algorithms and execute. | K4, K5 | 3 | 3 | 3 | 3 | 2 | 1 | - | - | 2 | - | 2 | 2 | - | - |
| | | **RCS 751** | | | **2.6** | **2.6** | **2.6** | **2.6** | **2** | **1** | **-** | **-** | **2** | **-** | **2** | **2** | **-** | **-** |
| 43 | RCS 702 | CO-1 | Recall the fundamental concepts of Intelligence, knowledge representation and Artificial Intelligence. | K2,K4 | 0.3 | - | - | - | - | - | - | - | - | - | - | 2 | 3 | 3 |
| | | CO-2 | Understand what intelligent drives are and where to use AI concept. | K2 | 3 | 2 | 2 | 1 | - | - | - | - | - | - | - | 2 | 3 | 3 |
| | | CO-3 | Apply the AI methodology to create an intelligent agent and explore the area of AI and their applications. | K3 | 3 | 3 | 2 | 2 | - | 2 | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-4 | Analyse the concept of reasoning and machine learning of AI in real world and analyse their impacts. | K5 | 3 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | CO-5 | Evaluate the AI impacts on Pattern recognition and perform statistical analysis for measuring outcome of the system. | K3 | 3 | 2 | 3 | 3 | 2 | - | - | - | - | - | - | 2 | 3 | 3 |
| | | CO-6 | Analyse the impact of AI based applications. | | 3 | 2 | 3 | - | 3 | 2 | - | - | - | - | - | 3 | 3 | 3 |
| | | **RCS 702** | | | **3** | **2.4** | **2.6** | **2.25** | **2.3** | **2** | **-** | **-** | **-** | **-** | **-** | **2.5** | **3** | **3** |
| 44 | RCS 071 | CO-1 | Explain the concepts and architecture of Neural Networks. | K | 3 | 2 | 1 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | CO-2 | Explain and apply Back Propagation Neural Network Architectures and Algorithms | K | 3 | 3 | 1 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | CO-3 | Explain and apply the concepts of fuzzy sets, theory, operations and properties. | K | 3 | 2 | 1 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | CO-4 | Explain and apply Fuzzy Membership and fuzzy Rules | K | 3 | 3 | 1 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | CO-5 | Demonstrate fuzzy controllers and its industrial applications. | | 3 | 3 | 2 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | CO-6 | Describe the basic concepts and apply working principles of Genetic Algorithm | K | 3 | 3 | 1 | 1 | - | - | - | - | - | - | - | 3 | 3 | - |
| | | **RCS 071** | | | **3** | **2.6** | **1.16** | **1** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **3** | **3** | **-** |
| 45 | RCS 075 | CO-1 | Demonstrate the fundamental of cloud and their computation over parallel and distributed computing. | K2 | 3 | 2 | 2 | 1 | - | - | - | - | - | - | - | 3 | 2 | 2 |
| | | CO-2 | Understand the concept of virtualization and their mechanism with service-oriented architecture. | K2 | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 2 | 2 |
| | | CO-3 | Organize the cloud data in Public, Private and Hybrid Clouds on cloud storage. | K2 | 2 | 3 | 3 | 3 | 2 | 2 | - | - | 2 | 2 | - | 3 | 3 | 3 |
| | | CO-4 | Examine the cloud data by Resource provisioning methods and implement global security on it. | K3 | 3 | 3 | 3 | 3 | 3 | 2 | - | - | 3 | 3 | 2 | 2 | 3 | 3 |
| | | CO-5 | Analyze the virtual box and programming environment can be applied over Google app engine. | K4 | 3 | 3 | 3 | 3 | 3 | 2 | - | - | 3 | 3 | 3 | 3 | 3 | 3 |
| | | **RCS 075** | | | **2.8** | **2.8** | **2.6** | **2.4** | **2.5** | **2** | **-** | **-** | **2.66** | **2.66** | **2.5** | **2.8** | **2.6** | **2.6** |
| 46 | RCS 080 | CO-1 | Describe and explain the concept machine learning. | K2,K4 | 3 | 3 | 2 | 3 | 2 | 1 | - | - | - | 1 | - | 2 | - | 3 |
| | | CO-2 | Describe and explain decision tree and artificial Neural Network. | K2 | 3 | 3 | 2 | 3 | 2 | 1 | - | - | - | 1 | - | 2 | - | 3 |
| | | CO-3 | Explain hypothesis and Bayesian network in machine learning | K3 | 3 | 3 | 2 | 3 | 2 | 1 | - | - | - | 1 | - | 2 | - | 3 |
| | | CO-4 | Explain and apply computational learning and instance-based learning. | K5 | 3 | 3 | 2 | 3 | 2 | 1 | - | - | - | 1 | - | 2 | - | 3 |
| | | CO-5 | Illustrate the genetic algorithm. | K3 | 3 | 3 | 2 | 3 | 2 | 1 | - | - | - | 1 | - | 2 | - | 3 |
| | | CO-6 | Explain and illustrate the reinforcement learning. | | 3 | 3 | 2 | 3 | 2 | 1 | - | - | - | 1 | - | 2 | - | 3 |
| | | **RCS 080** | | | **3** | **3** | **2** | **3** | **2** | **1** | **-** | **-** | **-** | **1** | **-** | **2** | **-** | **3** |
| 47 | RCS 086 | CO-1 | Define and explain Machine Learning, Linear Models and Training networks | K2 | 3 | 3 | 3 | 1 | - | - | - | - | - | - | - | 2 | 1 | - |
| | | CO-2 | Illustrate different operations and architectures of Deep Network | K4 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 2 | - |
| | | CO-3 | Apply Dimensionality Reduction in Deep Networks | K5 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 2 | - |
| | | CO-4 | Explain and apply Optimization in Deep Networks | K3 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 2 | - |
| | | CO-5 | Explain and apply Generalization in Deep Networks | K4 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 2 | - |
| | | CO-6 | Analyse and determine different case studies of Deep Learning applications | | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 | 3 | 3 |
| | | **RCS 086** | | | **3** | **3** | **3** | **2** | **3** | **-** | **-** | **-** | **-** | **-** | **-** | **2.16** | **2** | **3** |
| 48 | ROE 074 | CO-1 | Students having the clarity about human aspirations, goal, activities and purpose of life. | K2 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-2 | Students understand Human being (the knower,the experiencer, the doer} and its expansion, its interconnectedness & co-existence. | K4 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-3 | Students develop the competence of realization about co-existence through self exploration, self awareness& self evaluation. | K5 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-4 | Students analyze that the process of inner evolution is particularly awakening to activities of self realization, understanding & contemplation in the self. | K3 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-5 | Students appreciate comprehensive knowledge about the co-existence & participate in the larger order through realization,thought, behavior & work. | K4 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | **ROE 074** | | | **-** | **-** | **-** | **-** | **-** | **3** | **3** | **3** | **3** | **2** | **-** | **3** | **-** | **-** |
| 49 | ROE 088 | CO-1 | The students learn about different type of relations with expression & human conduct to attain comprehensive human goals. | K2 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-2 | Students understand about the conceptual frame work of undivided society as well as undivided human order. | K2,K3 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-3 | Student develop the exposure for transition from current state to the undivided society & universal human order. | K2 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-4 | Students appreciate universal human order as continuity & expanse of order in living from family order to world family order. | K2 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | CO-5 | Students analyse current state & possibilities of participation in this direction to undivided society as well as universal human order. | K2 | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 | - | 3 | - | - |
| | | **ROE 088** | | | **-** | **-** | **-** | **-** | **-** | **3** | **3** | **3** | **3** | **2** | **-** | **3** | **-** | **-** |
| 50 | RCS 851 | CO-1 | To identify and understand the latest technology and research fields | K3 | 1 | 2 | 2 | 2 | 3 | 2 | - | 2 | 2 | 3 | - | - | 1 | 2 |
| | | CO-2 | To develop efficient presentation skills and effective communication skills | K3 | 1 | 2 | 2 | 2 | 3 | 2 | - | 2 | 2 | 3 | - | - | 1 | 2 |
| | | CO-3 | To understand and promote the use of ICT and develop document preparing skills | K4,K5 | 1 | 2 | 2 | - | 3 | 2 | - | 2 | 2 | 3 | - | - | 1 | 2 |
| | | **RCS 851** | | | **1** | **2** | **2** | **2** | **3** | **2** | **-** | **2** | **2** | **3** | **-** | **-** | **1** | **2** |
| 51 | KNC 402 | CO-1 | To read and write simple Python programs. | K2 | 2 | 3 | 3 | - | 3 | - | 3 | 2 | 2 | - | - | 3 | 2 | 2 |
| | | CO-2 | To develop Python programs with conditionals and loops. | K4,K5 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | - | - | 2 | 3 | 3 |
| | | CO-3 | To define Python functions and to use Python data structures – lists, tuples, dictionaries | K2,K3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | - | - | 3 | 3 | 3 |
| | | CO-4 | To do input/output with files in Python | K4 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | - | - | 2 | 3 | 3 |
| | | CO-5 | To do searching,sorting and merging in Python | K4,K5 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | - | - | 3 | 3 | 3 |
| | | **KNC 402** | | | **2.8** | **3** | **2.8** | **2.75** | **3** | **2.75** | **2.4** | **2** | **2.8** | **-** | **-** | **2.6** | **2.8** | **2.8** |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | KCS 554 | CO-1 | Discover potential research areas in the field of Computer Science and Engineering. | K2 | 2 | 3 | 2 | 1 | 2 | 1 | 2 | 2 | 3 | 3 | 1 | 3 | 3 | 3 |
| | | CO-2 | Work as a responsible member and possibly a leader of a team in developing software solutions. | K3,K4 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 3 | 3 | 3 | 2 | 3 | 3 |
| | | CO-3 | Self learn new tools, algorithms, and/or techniques that contribute to the software solution of the project. | K3,K6 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 3 | 3 | 2 | 2 | 3 | 3 |
| | | **KCS 554** | | | **2.6** | **3** | **2.6** | **2.3** | **2.6** | **1.6** | **1.3** | **1.3** | **3** | **3** | **2** | **2.6** | **3** | **3** |
| 53 | RCS 754/852 | CO-1 | Able to develop a design solution, test and validate the conformance of the developed prototype against the original requirements of the problem | | 2 | 3 | 2 | 1 | 2 | 1 | 2 | 2 | 3 | 3 | 1 | 3 | 3 | 3 |
| | | CO-2 | Work as a responsible member and possibly a leader of a team in developing software solutions | | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 3 | 3 | 3 | 2 | 3 | 3 |
| | | CO-3 | Self learn new tools, algorithms, and/or techniques that contribute to the software solution of the project | | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 3 | 3 | 2 | 2 | 3 | 3 |
| | | RCS 754/852 | | | **2.6** | **3** | **2.6** | **2.3** | **2.6** | **1.6** | **1.3** | **1.3** | **3** | **3** | **2** | **2.6** | **3** | **3** |
| 54 | RCS 753 | CO-1 | An ability to work in actual working environment. | | 3 | 3 | 3 | - | 2 | - | - | - | 3 | - | - | 2 | 3 | 3 |
| | | CO-2 | An ability to utilize technical resources | | 3 | 3 | 2 | - | 2 | - | - | - | 3 | - | - | 2 | 3 | 3 |
| | | CO-3 | An ability to write technical documents and give oral presentations related to the work completed | | 2 | 2 | 2 | - | 2 | - | - | - | 3 | - | - | 2 | 3 | 3 |
| | | RCS 753 | | | **2.6** | **2.6** | **2.33** | **-** | **2** | **-** | **-** | **-** | **3** | **-** | **-** | **2** | **3** | **3** |
| 55 | RCS 752 | CO-1 | To Understand and remember the basic concepts of prolog programming. | | 3 | 3 | 3 | 3 | 2 | 1 | - | - | 1 | - | - | 3 | 3 | 3 |
| | | CO-2 | To Implement the recursion and sequences using prolog programming | | 3 | 3 | 3 | 3 | 2 | 1 | - | - | 1 | - | - | 3 | 3 | 3 |
| | | CO-3 | To Implement the various applications of Artificial Intelligence using prolog | | 2 | 2 | 2 | 3 | 2 | 1 | - | - | 1 | - | - | 3 | 3 | 3 |
| | | RCS 752 | | | **2.6** | **2.6** | **2.6** | **3** | **2** | **1** | **-** | **-** | **1** | **-** | **-** | **3** | **3** | **3** |