# Department of Second Year Engineering
## Course Outcomes [CO'S]
## CLASS: SECOND YEAR (IT) [2019 COURSE]

| Course Outcome | |
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| **Sr. No** | **Name of Subject** |
| 1 | **214441: Discrete Mathematics** |
| | **CO1:** Formulate and apply formal proof techniques and solve the problems with logical reasoning.<br>**CO2:** Analyze and evaluate the combinatorial problems by using probability theory.<br>**CO3:** Apply the concepts of graph theory to devise mathematical models.<br>**CO4:** Analyze types of relations and functions to provide solution to computational problems.<br>**CO5:** Identify techniques of number theory and its application.<br>**CO6:** Identify fundamental algebraic structures. |
| 2 | **214442:Logic Design & Computer Organization** |
| | **CO1:** Perform basic binary arithmetic & simplify logic expressions.<br>**CO2:** Grasp the operations of logic ICs and Implement combinational logic functions using ICs.<br>**CO3:** Comprehend the operations of basic memory cell types and Implement sequential logic functions using ICs.<br>**CO4:** Elucidate the functions & organization of various blocks of CPU.<br>**CO5:** Understand CPU instruction characteristics, enhancement features of CPU.<br>**CO6:** Describe an assortment of memory types (with their characteristics) used in computersystems andbasic principle of interfacing input, output devices. |
| 3 | **214443:Data Structure & Algorithms** |
| | **CO1:** Perform basic analysis of algorithms with respect to time and space complexity.<br>**CO2:** Select appropriate searching and/or sorting techniques in the application development.<br>**CO3:** Implement abstract data type (ADT) and data structures for given application.<br>**CO4:** Design algorithms based on techniques like brute -force, divide and conquer, greedy, etc.<br>**CO5:** Apply implement learned algorithm design techniques and data structures to solveproblems.<br>**CO6:** Design different hashing functions and use files organizations. |
| 4 | **214448: Object Oriented Programming Lab** |

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| | **CO1:** Differentiate various programming paradigms.<br>**CO2:** Identify classes, objects, methods, and handle object creation, initialization, andDestruction to model real-world problems.<br>**CO3:** Identify relationship among objects using inheritance and polymorphism principles.<br>**CO4:** Handle different types of exceptions and perform generic programming.<br>**CO5:** Use of files for persistent data storage for real world application.<br>**CO6:** Apply appropriate design patterns to provide object-oriented solutions. |
| 5 | **214445: Basics of Computer Network** |
| | **CO1:** Understand and explain the concepts of communication theory and compare functions ofOSI and TCP/IP model.<br>**CO2:** Analyze data link layer services, error detection and correction, linear block codes, cyclicCodes, framing and flow control protocols.<br>**CO3:** Compare different access techniques, channelization and IEEE standards.<br>**CO4:** Apply the skills of subnetting, supernetting and routing mechanisms.<br>**CO5:** Differentiate IPv4 and IPv6.<br>**CO6:** Illustrate services and protocols used at transport layer. |
| 6 | **207003: Engineering Mathematics III** |
| | **CO1:** Solve Linear differential equations, essential in modelling and design of computer-based systems.<br>**CO2:** Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.<br>**CO3:** Apply Statistical methods like correlation& regression analysis and probability theory fordata analysis and predictions in machine learning.<br>**CO4:** Solve Algebraic &Transcendental equations and System of linear equations using numerical techniques.<br>**CO5:** Obtain Interpolating polynomials, numerical differentiation and integration, numerical Solutions of ordinary differential equations used in modern scientific computing. |
| 7 | **214451: Processor Architecture** |
| | **CO1**: Apprehend architecture and memory organization of PIC 18 microcontroller.<br>**CO2**: Implement embedded C programming for PIC 18. |

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| 2 | **314442: Operating Systems** |
| | **CO1:** Explain the role of Modern Operating Systems.<br>**CO2:** Apply the concepts of process and thread scheduling.<br>**CO3:** Illustrate the concept of process synchronization, mutual exclusion and thedeadlock.<br>**CO4:** Implement the concepts of various memory management techniques.<br>**CO5:** Make use of concept of I/O management and File system.<br>**CO6:** Understand Importance of System software. |
| 3 | **314443: Machine Learning** |
| | **CO1:** Apply basic concepts of machine learning and different types of machine learning algorithms.<br>**CO2:** Differentiate various regression techniques and evaluate their performance.<br>**CO3:** Compare different types of classification models and their relevant application.<br>**CO4:** Illustrate the tree-based and probabilistic machine learning algorithms.<br>**CO5:** Identify different unsupervised learning algorithms for the related real-world problems.<br>**CO6:** Apply fundamental concepts of ANN. |
| 4 | **314444: Human Computer Interaction** |
| | **CO1:** Explain importance of HCI study and principles of user-centered design (UCD) approach.<br>**CO2:** Develop understanding of human factors in HCI design.<br>**CO3:** Develop understanding of models, paradigms, and context of interactions.<br>**CO4:** Design effective user-interfaces following a structured and organized UCD process.<br>**CO5:** Evaluate usability of a user-interface design.<br>**CO6:** Apply cognitive models for predicting human-computer-interactions. |
| 5 | **314445(B): Elective -I : Advanced Database Management System** |
| | **CO1:** Differentiate relational and object-oriented databases.**CO2:** Illustrateparallel & distributed database architectures.<br>**CO3:** Apply concepts of NoSQL Databases.<br>**CO4:** Explainconceptsofdata warehouse and OLAP technologies.<br>**CO5:** Apply data mining algorithms and various software tools. |
| | **CO6:** Comprehend emerging and enhanced data models for advanced applications. |
| 6 | **314451: Computer Network and Security** |

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| | **CO3:** Use concepts of timers and interrupts of PIC 18.<br>**CO4:** Demonstrate real life applications using PIC 18.<br>**CO5:** Analyze architectural details of ARM processor. |
| 8 | **214452: Database Management System** |
| | **CO1:** Apply fundamental elements of database management systems.<br>**CO2:** Design ER-models to represent simple database application scenarios.<br>**CO3:** Formulate SQL queries on data for relational databases.<br>**CO4:** Improve the database design by normalization & to incorporate query processing.<br>**CO5:** Apply ACID properties for transaction management and concurrency control.<br>**CO6:** Analyze various database architectures and technologies |
| 9 | **214453: Computer Graphics** |
| | **CO1:** Apply mathematical and logical aspects for developing elementary graphics operationslike scan conversion of points, lines, circle, and apply it for problem solving.<br>**CO2:** Employ techniques of geometrical transforms to produce, position and manipulateObjects in 2 dimensional and 3-dimensional space respectively.<br>**CO3:** Describe mapping from a world coordinates to device coordinates, clipping, andprojections in order to produce 3D images on 2D output device.<br>**CO4:** Apply concepts of rendering, shading, animation, curves and fractals using computergraphics tools in design, development and testing of 2D, 3D modeling applications.<br>**CO5**: Perceive the concepts of virtual reality. |
| 10 | **214454: Software Engineering** |
| | **CO1:** Classify various software application domains.<br>**CO2:** Analyze software requirements by using various modeling techniques.<br>**CO3:** Translate the requirement models into design models.<br>**CO4:** Apply planning and estimation to any project.<br>**CO5:** Use quality attributes and testing principles in software development life cycle.<br>**CO6:** Discuss recent trends in Software engineering by using CASE and agile tools. |

## Third Year Information Technology

| Course Outcome | |
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| Sr. No | Name of Subject |
| 1 | **314441: Theory of Computation** |
| | **CO1:** Construct finite automata and its variants to solve computing problems.<br>**CO2:** Write regular expressions for the regular languages and finite automata.<br>**CO3:** Identify types of grammar, design and simplify Context Free Grammar.<br>**CO4:** Construct Pushdown Automata machine for the Context Free Language.<br>**CO5:** Design and analyze Turing machines for formal languages.<br>**CO6:** Understand decidable and undecidable problems, analyze complexity classes. |