



Department of Information Technology
K. K. Wagh Institute of Engineering Education and Research
Hirabai Haridas Vidyanagari, Amrut Dham, Panchavati, Nashik-422003

Vision:

Excellence in Technical Education to nurture competent IT professionals

Mission:

- To provide comprehensive education through structured and dynamic learning systems to the students in the ever growing and technically challenging world of information and computing.
- To foster creativity, productivity, innovation, integrity and social awareness among the students for the development of novel IT solutions for contributing aptly to society and life at large.



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Programme Educational Objectives (PEO's):

PEO1: Graduates of the program will possess strong fundamental concepts in mathematics, science, engineering and technology to address technological challenges.

PEO2: Possess knowledge and skills in the field of Computer Science & Engineering and Information technology for analyzing, designing and implementing complex engineering problems of any domain with innovative approaches.

PEO3: Possess an attitude and aptitude for research, entrepreneurship and higher studies in the field of Computer Science & Engineering and Information Technology.

PEO4: Have commitment to ethical practices, societal contributions through communities and lifelong learning.

PEO5: Possess better communication, presentation, time management and team work skills leading to responsible & competent professionals and will be able to address challenges in the field of IT at global level.



Program Outcomes:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research based knowledge and research methods including design of experiments, analysis & interpretation of data and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling to complex engineering activities, with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as member or leader in diverse teams, and in multidisciplinary settings.



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PO10:Communication: Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12:Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



Course Outcomes:

SE – Sem I

Subject 1: Discrete Structures (214441)

At the end of this course, Students will be able to

- CO214441.1.** Apply basic concepts of permutations, combinations and discrete probability to solve given scenario.
- CO214441.2.** Apply mathematical propositions and formal proof techniques to check the truthfulness of real life situation.
- CO214441.3.** Solve problems related to discrete objects using concepts of relation and function.
- CO214441.4.** Select proper graph technique to solve real life problems related to graph theory.
- CO214441.5.** Apply tree traversal techniques to solve given problem.
- CO214441.6.** Use concepts of groups and rings to solve given problem.

Subject 2: Computer Organization and Architecture (214442)

At the end of this course, Students will be able to

- CO214442.1** Understand the basics of computer architecture and solve the problems based on computer arithmetic.
- CO214442.2** Understand the basics of machine instruction execution in processor organization.
- CO214442.3** Understand different micro-operations sequence involved in given instruction.
- CO214442.4** Understand the concepts related to memory and I/O operations.
- CO214442.5** Acquire knowledge about instruction level parallelism and different constraints involved in pipeline process.
- CO214442.6** Understand the basics of parallel organization to enhance the performance of computer (processor) system.



Subject 3: Digital Electronics and Logic Design (214443)

At the end of this course, Students will be able to

- CO214443.1** Understand basics of number system and characteristics of TTL/CMOS logic families
- CO214443.2** Use logic functions representation for simplification with K-Maps and QuineMc-Cluskey minimization techniques
- CO214443.3** Design and implement combinational circuits using SSI & MSI chips
- CO214443.4** Analyze sequential circuits like Flip-Flops (Truth Table, Excitation table), their conversion & design to implement various applications
- CO214443.5** Identify the digital circuits, Input/Outputs to replace by PLA and FPGA
- CO214443.6** Simulate and test Combinational and Sequential circuits using VHDL

Subject 4: Fundamentals of Data Structures (214444)

At the end of this course, Students will be able to

- CO214444.1.** Apply appropriate constructs of C language, coding standards and algorithmic foundations for solving problems and programming.
- CO214444.2.** Use dynamic memory allocation concepts and file handling operations in various application developments.
- CO214444.3.** Analyze an algorithm with respect to time and space complexity.
- CO214444.4.** Select appropriate searching and/or sorting technique for application development.
- CO214444.5.** Use appropriate sequential data structure operations for problem solving and programming.
- CO214444.6.** Use appropriate linked list operations for problem solving and programming.



Subject 5: Problem Solving and Object Oriented Programming (214445)

At the end of this course, Students will be able to

CO214445.1 Model a real life problem into computer programming.

CO214445.2 Break a problem into logical pieces and develop algorithms for solving simple problems.

CO214445.3 Abstract data and entities from the problem domain to build suitable object model.

CO214445.4 Design an application in C++ using object-oriented principles such as Abstraction, Encapsulation, Inheritance & Polymorphism.

CO214445.5 Develop programs in C++ that appropriately utilize key object-oriented concepts like template, Exception handling and console IO operations.

Subject 6: Communication Skills (214449)

At the end of this course, Students will be able to

CO214449.1 Build vocabulary by means of communication via direct Communication and indirect communication.

CO214449.2 Improve Pronunciation skills and understanding between various phonetic sounds during communication.

CO214449.3 Understand various rules and means of written communication

CO214449.4 To identify the problem while communicating and overcome them for effective communication.

CO214449.5 Understand, analyze and interpret the essentiality of grammar and its proper usage.



SE – Sem II

Subject 1: Engineering Mathematics – III (207003)

At the end of this course, Students will be able to

- CO207003.1** Do mathematical modeling of systems using differential equations and solve the differential equations using appropriate method.
- CO207003.2.** Find Fourier, Inverse Fourier & Z transforms, use Z transforms to solve first and second order difference equation.
- CO207003.3.** Understand the different techniques of statistical Analysis. Use of probability and probability distribution.
- CO207003.4** Recognize nature of vector fields. Use different vector differential operators.
- CO207003.5** Understand the various integral theorems relating line, surface and volume integrals. Evaluate line, surface & Volume integrals & its Applications
- CO207003.6** Analyze functions of complex variables in terms of continuity, differentiability and analyticity.

Subject 2: Processor Architecture and Interfacing (214451)

At the end of this course, Students will be able to

- CO214451.1** Understand basic architectural features of 80386 microprocessor and use Assembly language programming.
- CO214451.2** Explain concept of memory management using segment registers and features of privileged instructions.
- CO214451.3** Describe paging, multitasking and interrupt structure of 80386 microprocessor.
- CO214451.4** Understand architecture and memory organization of 8051 microcontroller.
- CO214451.5** Explain timers and interrupts of 8051 microcontroller.
- CO214451.6** Implement microcontroller based programs for various real time applications using timers, ADC & DAC interfacing



Subject 3: Data Structures and Files (214452)

At the end of this course, Students will be able to

CO214452.1 Select appropriate data structures as per the specified problem definition.

CO214452.2 Apply linear and nonlinear data structures for the given scenario.

CO214452.3 Compare proper graph techniques and select appropriate to solve real life problems.

CO214452.4 Describe the hash function, concepts of collision and its resolution methods in detail.

CO214452.5 Explain data structure such as heaps, AVL tree, B+ tree, splay trees and file organizations.

CO214452.6 Analyze algorithms and to determine algorithm correctness and time efficiency class.

Subject 4: Foundations of Communication and Computer Network (214453)

At the end of this course, Students will be able to

CO214453.1 Understand data/signal transmission over communication media

CO214453.2 Recognize usage of various modulation techniques in communication

CO214453.3 Differentiate between analog and digital modulation techniques

CO214453.4 Understand different error correction and detection techniques and their constraints.

CO214453.5 Analyze various spread spectrum and multiplexing techniques

CO214453.6 Acquaint with different networking transmission media and their standards



Subject 5: Computer Graphics (214456)

At the end of this course, Students will be able to

- CO214456.1** Apply mathematics and logic to develop computer programs for elementary graphic operations.
- CO214456.2** Solve complex graphics problems by using knowledge of 2D/3D transformation and projection.
- CO214456.3** Use concepts like segmentation & clipping to build a computer graphics application.
- CO214456.4** Develop the competency to understand the concepts related to computer vision and animations.
- CO214456.5** Demonstrate the knowledge of curves and fractals to build interactive graphics application.

TE – Sem I

Subject 1: Theory of Computation(314441)

At the end of this course, Students will be able to

- CO314441.1** Design finite automata for a given language description.
- CO314441.2** Formulate the mathematical expression for the formal languages.
- CO314441.3** Construct grammar and apply normal forms to Context Free Grammar (CFG).
- CO314441.4** Construct pushdown automata and post machine for a given language description.
- CO314441.5** Design turing machine based on a given language description.
- CO314441.6** Deduce the decidability and reducibility of a given problem and justify its complexity category



Subject 2: Database Management Systems (314442)

At the end of this course, Students will be able to

CO314442.1 Compare various database models such as ER, EER, RDBMS and will be able to create logical design of database.

CO314442.2 Formulate database queries using SQL DML/DDI/DCL commands.

CO314442.3 Recognize the processes applied for Transaction Management and query optimization as well as formulate database queries using PL/SQL.

CO314442.4 Visualize concurrency control and recovery protocols used in RDBMS as well as interpret parallelism applied in distributed databases.

CO314442.5 Learn use of emerging database technologies for large scale data management and formulate database queries using MongoDB.

CO314442.6 Understand and analyze various data mining techniques applied over transactional data stored in data warehouse.

Subject 3: Software Engineering & Project Management (314443)

At the end of this course, Students will be able to

CO314443.1 Apply process models for software development and understand parameters for software quality assurance.

CO314443.2 Analyze software requirements for a given application by applying various modeling techniques.

CO314443.3 Understand project planning, execution, tracking, audit and closure of project.

CO314443.4 Describe principles of agile development, discuss the SCRUM process and distinguish agile process model from other process models

CO314443.5 Classify project management, monitoring and control tools.

CO314443.6 Understand IT project management through life cycle of the project and future trends in IT Project Management.



Subject 4: Operating System(314444)

At the end of this course, Students will be able to

CO314444.1 To understand role of operating systems along with basic commands for shell programming.

CO314444.2 To understand and implement concepts of processes, scheduling algorithms and threads.

CO314444.3 To apply concepts of process synchronization, mutual exclusion and deadlock handling.

CO314444.4 To understand various memory management techniques.

CO314444.5 To interpret I/O management and File system in operating system

CO314444.6 To understand Linux specific OS modules and design of system calls in kernel space.

Subject 5: Human-Computer Interaction (314445)

At the end of this course, Students will be able to

CO314445.1 Understand basics of HCI and principles of user-centered design (UCD) approach.

CO314445.2 Examine human factors in HCI design such as memory, thinking & emotions.

CO314445.3 Understand models, paradigms & context of interaction.

CO314445.4 Design effective user-interfaces following a structured and organized UCD process.

CO314445.5 Evaluate usability of a user-interface design using golden rules, guidelines & evaluations methods.

CO314445.6 Apply cognitive models for predicting human-computer-interactions.

Subject 6: Software Laboratory III (314448)

At the end of this course, Students will be able to

CO314448.1 Identify the needs of users through requirement gathering.

CO314448.2 Apply the concepts of Software Engineering process models for project development.



CO314448.3 Apply the concepts of HCI for user-friendly project development.

CO314448.4 Deploy website on live webserver and access through URL.

CO314448.5 Understand, explore and apply various web technologies.

CO314448.6 Develop team building for efficient project development.

TE – Sem II

Subject 1: Computer Network Technology (314450)

At the end of this course, Students will be able to

CO314450.1 Understand services offered by important layers of OSI model.

CO314450.2 Differentiate addressing techniques and use of protocols in network and transport layer.

CO314450.3 Implement and test different protocols of application layers such as FTP, TELNET and HTTP.

CO314450.4 Select appropriate wireless standards based on requirements of applications.

CO314450.5 Understand the architecture and MAC (Media Access Control) protocols of WSN (Wireless Sensor Network).

CO314450.6 Understand and explore recent trends in network domain.

Subject 2: Systems Programming (314451)

At the end of this course, students will be able to:

CO314451.1 Understand concept of system program and implement one pass and two pass assembler.

CO314451.2 Design macro assembler, macro preprocessor and loader.

CO314451.3 Use LEX tool for generation of lexical analyzer.

CO314451.4 Use YACC tool for generation of syntax analyzer.

CO314451.5 Generate Intermediate Code Formats and understand storage allocation.

CO314451.6 Apply code optimization in the compilation process.



Subject 3: Design and Analysis of Algorithms (314452)

At the end of this course, students will be able to:

- CO314452.1** Calculate computational complexity using asymptotic notations for various algorithms.
- CO314452.2** Apply Divide & Conquer as well as Greedy approach to design algorithms.
- CO314452.3** Practice principle of optimality.
- CO314452.4** Illustrate different problems using Backtracking.
- CO314452.5** Compare different methods of Branch and Bound strategy.
- CO314452.6** Explore the concept of P, NP, NP-complete, NP-Hard and parallel algorithms.

Subject 4: Cloud Computing (314453)

At the end of this course, Students will be able to

- CO314453.1** Summarize the key concepts, technologies, challenges and possible applications of state-of-the-art cloud computing.
- CO314453.2** Identify the architecture, infrastructure and common standards of cloud computing.
- CO314453.3** Illustrate cloud programming environments and real life applications of cloud computing.
- CO314453.4** Evaluate challenges in cloud computing and delve it into effective solutions.
- CO314453.5** Correlate cloud trends with ubiquitous computing and understand cloud enabling technologies for internet of things.
- CO314453.6** Analyze emerging trends in cloud computing.

Subject 5: Data Science and Big Data Analytics (314454)

At the end of this course, students will be able to:

- CO314454.1** Understand and apply Big data primitives and fundamentals for application development.
- CO314454.2** Apply various mathematical models for Big Data.



CO314454.3 Explore and demonstrate programming platforms like Hadoop and different Big data processing techniques.

CO314454.4 Analyze Big data applications using R, Hive and RHadoop.

CO314454.5 Understand needs challenges and techniques for big data visualization for data analysis.

CO314454.6 Understand big data technologies applications and impact.

BE – Sem I

Subject 1: Information & cyber security (414453)

At the end of this course, students will be able to

CO414453.1 Utilize basic cryptographic techniques in application development.

CO414453.2 Identify methods for authentication, access control, intrusion detection and prevention.

CO414453.3 Apply the scientific method to digital forensics and perform forensic investigations.

CO414453.4 Create computer forensics awareness.

CO414453.5 Experiment with computer forensics tools.

Subject 2: Machine Learning & Applications (414454)

At the end of this course, Students will be able to

CO414454.1. To model the learning primitives of machine learning.

CO414454.2. To build and apply classification models for implementation of supervised learning.

CO414454.3. To build and apply regression models for implementation of supervised learning.

CO414454.4. To implement logical models using distance-based, rule-based and tree-based primitives for supervised and unsupervised learning.



CO414454.5. To build and apply probabilistic models for implementation of supervised learning.

CO414454.6. To understand recent trends in machine learning through deep learning with neural networks.

Subject 3: Software Design & Modeling (414455)

At the end of this course, Students will be able to

CO414455.1. Classify object oriented methodologies, basics of Unified Modeling Language (UML).

CO414455.2. Apply analysis process for implementation of use case modeling, domain/class modeling

CO414455.3. Use interaction and behavior modeling.

CO414455.4. Illustrate design process, access layer and view layer class design.

CO414455.5. Use and implement GRASP principles and GoF design patterns.

CO414455.6. Summarize architectural design principles and guidelines in the various type of application development.

Subject 5: Wireless Communications (414456 A)

At the end of this course, Students will be able to

CO414456A.1. Understand the basics of propagation of radio signals.

CO414456A.2. Understand the basic concepts of basic Cellular System and the design requirements.

CO414456A.3. Have an understanding of the basic principles behind radio resource management techniques such as power control, channel allocation and handoffs.

CO414456A.4. Gain insights into various mobile radio propagation models and how the diversity can be exploited to improve performance.



CO414456A.5. Gain knowledge and awareness of the technologies for how to effectively share spectrum through multiple access techniques i.e. TDMA, CDMA, FDMA etc.

CO414456A.6. Have in-depth understanding of the design consideration and architecture for different Wireless Systems like GSM, CDMA, GPRS etc.

CO414456A.7. Understanding of the emerging trends in Wireless communication like WiFi, WiMAX, Software Defined Radio (SDR) and related issues and challenges.

Subject 6: Natural Language Processing (414456 B)

At the end of this course, Students will be able to

CO414456B.1. Interpret organization of natural language understanding system.

CO414456B.2. Solve problems of syntax analysis using various parsing methods and augmented grammar to incorporate features in parsing.

CO414456B.3. Justify use of statistical methods for efficient parsing.

CO414456B.4. Explain techniques used for ambiguity resolution

CO414456B.5. Explain techniques used for semantic interpretation

CO414456B.6. Understand processes used for generating knowledge representation

Subject 7: Usability Engineering (414456 C)

At the end of this course, Students will be able to

CO414456C.1. Justify the theory of usability evaluation approaches, methods and techniques.

CO414456C.2. Compare and evaluate strengths and weaknesses of various approaches, methods and techniques.

CO414456C.3. Design and implement a usability test plan based on modeling or requirements specification.

CO414456C.4. Choose appropriate approaches, methods and techniques to evaluate the usability of a specified interactive system.



Subject 8: Multi core and Concurrent Systems (414456 D)

At the end of this course, Students will be able to

CO414456D.1. Know types of parallel machine and to know multicore and concurrent systems in detail.

CO414456D.2. Know the ways to measure the performance of multicore systems.

CO414456D.3. Understand need of multicore and concurrent system programming.

CO414456D.4. Know the different approaches for multicore and concurrent programming.

CO414456D.5. Use and apply the approaches learned, for application development.

CO414456D.6. Understand and explore recent trends in multicore and concurrent system programming.

Subject 9: Business Analytics and Intelligence (414456 E)

At the end of this course, Students will be able to

CO414456E.1. Comprehend the Information Systems and development approaches of Intelligent Systems.

CO414456E.2. Evaluate and rethink business processes using information systems.

CO414456E.3. Propose the Framework for business intelligence.

CO414456E.4. Get acquainted with the Theories, techniques, and considerations for capturing organizational intelligence.

CO414456E.5. Align business intelligence with business strategy.

CO414456E.6. Apply the techniques for implementing business intelligence systems.

Subject 10: Software Defined Networks (414457 A)

At the end of this course, Students will be able to

CO414457A.1. Acquire fundamental knowledge of SDN exploring the need, characteristics, and architecture of SDN.

CO414457A.2. Recognize OpenFlow protocols and its forwarding, pipeline model.

CO414457A.3. Understand different methodologies for sustainable SDN.



CO414457A.4. Comprehend IT Infrastructure for SDN.

CO414457A.5. Acquiring knowledge of OpenFlow protocols, visualization.

Subject 11: Soft Computing (414457 B)

At the end of this course, Students will be able to

CO414457B.1 Tackle problems of interdisciplinary nature.

CO414457B.2. Find an alternate solution, which may offer more adaptability, resilience and optimization.

CO414457B.3 Gain knowledge of soft computing domain which opens up a whole new career option.

CO414457B.4. Tackle real world research problems.

Subject 12: Software Testing and Quality Assurance (414457C)

At the end of this course, Students will be able to

CO414457C.1 Test the software by applying testing techniques to deliver a product free from bugs.

CO414457C.2 Examine the scenario and to select the proper testing technique.

CO414457C.1 Explore the test automation concepts, tools, and estimation of cost, schedule based on standard metrics.

CO414457C.1 Understand basics of Software Quality Assurance system and discuss the different components to detect, classify, prevent and remove defects.

CO414457C.1 Study quality assurance models like ISO 9000, CMM, CMMI& SPICE and to choose the appropriate one.

CO414457C.1 Conduct formal inspections, record and evaluate results of inspections.

Subject 13: Compiler Construction (414457 D)

At the end of this course, Students will be able to

CO414457D.1. Understand the structure of compilers.

CO414457D.2. Understand the basic and advanced techniques used in compiler construction.

CO414457D.3. Understand the basic data structures used in compiler construction such as abstract syntax.



CO414457D.4. Cognitive skills (thinking and analysis)- Design and implement a compiler using a software engineering approach.

CO414457D.5. Align business intelligence with business strategy.

CO414457D.6. Apply the techniques for implementing business intelligence systems.

Subject 14: Gamification (414457 E)

At the end of this course, Students will be able to

CO414457E.1. Write programs to solve problems using gamification and open source tools.

CO414457E.2. Apply gamification for Mobile and Web Applications.

CO414457E.3. Solve problems for multi-core or distributed, concurrent/Parallel environments.

BE – Sem II

Subject 1: Distributed Computing System (414462)

At the end of this course, Students will be able to

CO414462.1 Understand and apply the principles and desired properties of distributed systems to different application areas.

CO414462.2 Understand and implement appropriate communication and / or coordination algorithm to develop a distributed application.

CO414462.3 Recognize the inherent difficulties that arise due to distributed-ness of computing resources.

CO414462.4 Apply distributed file / multimedia system to develop a distributed application.

CO414462.5 Understand and implement a distributed web based application.

CO414462.6 Identify the challenges in developing distributed applications.

Subject 2: Ubiquitous Computing (414463)

At the end of this course, Students will be able to

CO414463.1 Demonstrate the knowledge of design of Ubicomp and its applications

CO414463.2 Explain smart devices and services used Ubicomp



CO414463.3 Describe the significance of actuators and controllers in real time application design

CO414463.4 Use the concept of HCI to understand the design of automation applications

CO414463.5 Classify Ubicomp privacy and explain the challenges associated with Ubicomp privacy

CO414463.6 Get the knowledge of ubiquitous and service oriented networks along with Ubicomp management

Subject 3: Internet of Things (414464 A)

At the end of this course, Students will be able to

CO414464 A.1 Understand fundamental requirements and architecture of IOT.

CO414464 A.2 Understand IOT application based on different network architecture.

CO414464 A.3 Understand and implement smart object interface using wireless technology for IOT application.

CO414464 A.4 Understand the need of IPv6 and 6LoWPAN.

CO414464 A.5 Design and implement IOT applications based on different IOT platforms.

CO414464 A.6 Understand and implement IOT application based on cloud Services and interface.

Subject 4: Information Storage and Retrieval (414464B)

At the end of this course, Students will be able to

CO414464 B.1 Student should be able to understand the concept of Information retrieval.

CO414464 B.2 Student should be able to deal with storage and retrieval process of text and multimedia data.

CO414464 B.3 Student should be able to evaluate performance of any information retrieval system.

CO414464 B.4 Student should be able to design user interfaces.

CO414464 B.5 Student should be able to understand importance of recommender system.



CO414464 B.6 Student should be able to understand concept of multimedia and distributed information retrieval.

Subject 5: Multimedia Techniques (414464 C)

At the end of this course, Students will be able to

CO414464 C.1To understand basics of multimedia and its applications.

CO414464 C.2To apply text and image processing through algorithms and file formats.

CO414464 C.3To understand audio and video processing through file formats.

CO414464 C.4To implement tools and techniques for animation and virtual reality.

CO414464 C.5To interpret rendering techniques usage in multimedia.

CO414464 C.6To understand advances in multimedia through android and gaming principles.

Subject 6: Internet and Web Programming (414464D)

At the end of this course, students will be able to

CO414464D.1 Demonstrate static website using basic tools.

CO414464D.2 Develop client side programming skills.

CO414464D.3 Develop server side programming skills.

CO414464D.4 Understand web services and handle content management tools.

CO414464D.5Develop mobile website using mobile web development tools.

CO414464D.6 Understand aspects of web security and cyber ethics

Subject 7: Computational Optimization (414464 E)

At the end of this course, students will be able to

CO414464 E.1 Learn and implement various optimization techniques.

CO414464 E.2 Learn model real-world problems in optimization framework.



CO414464 E.3 Apply various optimization models to solve optimization problems in computer-science & IT Engineering.

Subject 8: Rural Technologies and Community Development (414465 A)

At the end of this course, students will be able to

CO414465 A.1 Understand rural development model.

CO414465A.2 Learn different measures in rural development and its impact on overall economy.

CO414465A.3 Understand and learn importance of technologies in rural and community development.

CO414465A.4 Understand and learn importance of technologies in rural and community development.

Subject 9: Parallel Computing(414465 B)

At the end of this course, students will be able to

CO414465 B.1 Understand fundamentals in parallel computing.

CO414465 B.2 Understand and learn importance of technologies including different hardware structures used in parallel computing.

CO414465 B.3 Understand challenges and opportunities in parallel computing.

Subject 10: Computer Vision(414465 C)

At the end of this course, students will be able to

CO414465 C.1 Implement fundamental image processing techniques required for computer vision.

CO414465 C. Implement boundary tracking techniques.

CO414465 C.3 Apply Hough Transform for line, circle, and ellipse detections.

CO414465 C.4 Implement motion related techniques.

CO414465 C.5 Develop skills to develop applications using computer vision techniques.



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Subject 11: Social Media Analytics (414465 D)

At the end of this course, students will be able to

CO414465 D.1 Understand the basics of Social Media Analytics.

CO414465 D.2 Explain the significance of Data mining in Social media.

CO414465 D.3 Demonstrate the algorithms used for text mining.

CO414465 D.4 Apply network measures for social media data.

CO414465 D.5 Explain Behavior Analytics techniques used for social media data.

CO414465 D.6 Apply social media analytics for Facebook and Twitter kind of applications.