# RAGHU ENGINEERING COLLEGE

(Autonomous)
(Approved by AICTE, Affiliated to JNTU Kakinada)
(Accredited by NBA (CIVIL, EEE, MECH, ECE, CSE & NAAC 'A' Grade)
Dakamarri, Bheemunipatnam Mandal, Visakhapatnam Dist. – 531 162 (A.P.)
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**Department of Computer Science and Engineering**

**AR17 Regulation I B.Tech Course Outcomes**

| **1-1 Sem** | **Subject Name & Code: English-I (17EG101)** |
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| CO-1 | The learner will be able to fulfill the task-based and skill-based communication practices through the effective integration of listening, speaking, reading and writing. |
| CO-2 | The learner will realize the importance technical communicative competence and attain the Group dynamism through standard oral or written language models. |
| CO-3 | The learner will be developing his fluency by using appropriate grammar devices and verbiage for Effective communication in realtime situations. |
| CO-4 | Inculcate the lifelong reading habits contributing to academic accomplishment and individual Growth. |
| CO-5 | The learner will be able to apply his own ideas as informed opinions that are in dialogue with a larger community of interpreters, and understand how their own approach compares to the Variety of critical and theoretical approaches. |
| CO-6 | The learner will be able to demonstrate intercultural competence, knowledge of civic Responsibility and the ability to engage effectively in regional, national, and global communities. |
| **1-1 Sem** | **Subject Name & Code: Mathematics-I (17MA101)** |
| CO-1 | Develop the ability to solve linear differential equations of first order and use the knowledge Gain to certain engineering problems. |
| CO-2 | Develop the ability to solve linear differential equations of higher order and use the knowledge Gain to certain engineering problems. |
| CO-3 | Compute the improper integrals using Beta and Gamma functions. |
| CO-4 | Apply techniques of multivariable differential calculus to determine the extreme and series Expansions etc. of the functions of several variables. |
| CO-5 | Develop the ability to form partial differential equations and solve the partial differential Equations of first order. |
| CO-6 | Identify/ classify and solve the different types of partial differential equations of higher order. |
| **1-1 Sem** | **Subject Name & Code: Environmental Studies (17CH105)** |
| CO-1 | The student should have knowledge on the natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources. |
| CO-2 | The student should have knowledge on the concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web |
| CO-3 | The student should have knowledge on the biodiversity of India and the threats to biodiversity, and conservation practicesto protect the biodiversity. |
| CO-4 | The student should have knowledge on various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices. |
| CO-5 | The student should have knowledge on social issues both rural and urban environment and the possible means to combat the challenges. |
| CO-6 | The student should have knowledge on the environmental legislations of India and the first global initiatives towards sustainable development. About environmental assessment and the stages involved in EIA and the environmental audit. |
| **1-1 Sem** | **Subject Name & Code: Applied Physics (17PH101)** |
| CO-1 | Apply the basic principles and properties of Interference to construct and understanding the |

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| | Working mechanism of Interferometer. |
| CO-2 | Develop the Diffract meter by the usage of basic principles and properties of diffraction of light. |
| CO-3 | Construction of Polari meter and Laser by utilizing the principles of polarization of light and Characteristic properties of Laser and applications of fiber optics. |
| CO-4 | Verify the velocity of EM wave in isotropic medium by studying its propagation through Dielectric medium. |
| CO-5 | Identify the conductivity of solids by applying the principles of Quantum Mechanics & free Electron theory. |
| CO-6 | Classify the given semiconductor materials based on the band theory of solids by studying its Charge carriers through the Hall effect. |
| **1-1 Sem** | **Subject Name & Code: C Programming (17CS101)** |
| CO-1 | Notion of Operation of a CPU, Notion of an algorithm and computational procedure, editing and Executing programs in Linux. |
| CO-2 | Understanding C program structure, Data types and operators. |
| CO-3 | Understanding branching, iteration statements. |
| CO-4 | Understanding data representation using Arrays. |
| CO-5 | Modular programming and recursive solution formulation and understanding pointers and Dynamic memory allocation. |
| CO-6 | Understanding structures, union and files aspects of C. |
| **1-1 Sem** | **Subject Name & Code: Engineering Drawing (17ME103)** |
| CO-1 | Draw different types of lines, polygons and various scales used in Engineering Drawing practice |
| CO-2 | Draw orthographic projections of points in all quadrants and projection of straight lines inclined to one reference plane and inclined to both the reference planes. |
| CO-3 | Construct the projections of the various types of planes and solids, inclined to one reference Plane and inclined to both the reference planes. |
| CO-4 | Understand the principles of Isometric projections, and Conversion of isometric view to Orthographic view and vice versa. |
| CO-5 | Understand the fundamentals & applications of AutoCAD, and types of modeling such as 2D & 3D wire frame modeling. |
| CO-6 | Use AutoCAD software to draw Isometric projections, orthographic projections and modeling of Solids. |
| **1-1 Sem** | **Subject Name & Code: C Programming Lab (17CS111)** |
| CO-1 | Apply and practice logical ability to solve the problems. |
| CO-2 | Understand C programming development environment, compiling, debugging, and linking and executing a program using the development environment. |
| CO-3 | Analyzing the complexity of problems, Modularize the problems into small modules and then Convert them into programs. |
| **1-1 Sem** | **Subject Name & Code: Seminar On Current Affairs (17HS121)** |
| CO-1 | The students acquire knowledge on the National and International changes. |
| CO-2 | The students build basic analyzing ability of the real time challenges. |
| CO-3 | The students develop empathy towards societal issues. |
| CO-4 | The students improve their ability to voice their opinions. |
| CO-5 | The students sharpen their presentation skills. |
| CO-6 | The students know how to align their education and learning to the current scenarios. |
| **1-1 Sem** | **Subject Name & Code: Applied/Engineering Physics Lab (17PH111)** |
| CO-1 | Apply the working principles of laboratory experiments in optics, mechanics, electromagnetic and electronics and perform the experiments using required apparatus. |
| CO-2 | Compute the required parameter by suitable formula using experimental values (observed values) in mechanics, optics, electromagnetic and electronic experiments. |
| CO-3 | Analyze the experimental results through graphical interpretation. |
| CO-4 | Recognize the required precautions to carry out the experiment and handling the apparatus in the laboratory. |

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| CO-5 | Demonstrate the working principles, procedures and applications. |
| CO-6 | The ability to use applied physics techniques and tools, including laboratory instrumentation. |
| **1-1 Sem** | **Subject Name & Code: English Communication Skills Lab (17EG111)** |
| CO-1 | The learner will develop LSRW skills through various language learning activities |
| CO-2 | The learner will learn to distinguish informal speech from formal speech through role plays. |
| CO-3 | The learner will be able to use rhythm and intonation with proper accent in his speech |
| CO-4 | The learner will be able to pronounce words using the rules they have been taught |
| CO-5 | The learner will be able to utilize the computer-assisted multi-media instruction to enable individualized and independent language learning |
| CO-6 | The learner will be able to use English language fluently and neutralize their mother tongue Influence |
| **1-2 Sem** | **Subject Name & Code: English II (17EG201)** |
| CO-1 | The learner will be able to fulfill the task-based and skill-based communication practices through the effective integration of listening, speaking, reading and writing. |
| CO-2 | The learner will realize the importance technical communicative competence and attain the Group dynamism through standard oral or written language models. |
| CO-3 | The learner will be developing his fluency by using appropriate grammar devices and verbiage for Effective communication in realtime situations. |
| CO-4 | Inculcate the lifelong reading habits contributing to academic accomplishment and individual Growth. |
| CO-5 | The learner will be able to apply his own ideas as informed opinions that are in dialogue with a larger community of interpreters, and understand how their own approach compares to the Variety of critical and theoretical approaches. |
| CO-6 | The learner will be able to demonstrate intercultural competence, knowledge of civic Responsibility and the ability to engage effectively in regional, national, and global communities. |
| **1-2 Sem** | **Subject Name & Code: Mathematics-II (17MA203)** |
| CO-1 | Develop the ability to solve linear differential equations of first order and use the knowledge Gain to certain engineering problems. |
| CO-2 | Develop the ability to solve linear differential equations of higher order and use the knowledge Gain to certain engineering problems. |
| CO-3 | Compute the improper integrals using Beta and Gamma functions. |
| CO-4 | Apply techniques of multivariable differential calculus to determine the extreme and series Expansions etc. of the functions of several variables. |
| CO-5 | Develop the ability to form partial differential equations and solve the partial differential Equations of first order. |
| CO-6 | Identify/ classify and solve the different types of partial differential equations of higher order. |
| **1-2 Sem** | **Subject Name & Code: Mathematics-III (17MA201)** |
| CO-1 | Solve the linear system of equations using the concepts of rank, Gauss elimination, Gauss-Jordan and Gauss Seidal methods. |
| CO-2 | Solve eigenvalues and eigenvectors of a square matrices. |
| CO-3 | Extend the concept of integration of two and three dimensions and support it through applications in engineering. |
| CO-4 | Appraise the Laplace transform technique and use it to solve various engineering problems. |
| CO-5 | Find the gradient and directional derivative of a scalar function and divergence, curl of a vector function. |
| CO-6 | Apply line, surface and volume integrals to find work done by a force, flux and interpret vector integral theorems. |
| **1-2 Sem** | **Subject Name & Code: Applied Chemistry (17CH201)** |
| CO-1 | Plastics are nowadays used in household appliances; also they are used as composites (FRP) in aerospace industries. |
| CO-2 | Fuels as a source of energy are a basic need of any industry, particularly industries like thermal power stations, steel industry, fertilizer industry etc., and hence they are introduced. |

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| CO-3 | The basics for the construction of galvanic cells as well as some of the sensors used in instruments are introduced. Also if corrosion is to be controlled, one has to understand the mechanism ofcorrosion which itself is explained by electrochemical theory. |
| CO-4 | With the increase in demand, a wide variety of materials are coming up; some of them have excellent engineering properties and a few of these materials are introduced. |
| CO-5 | Understanding of crystal structures will help to understand the conductivity, semiconductors and superconductors. Magnetic properties are also studied. |
| CO-6 | With the increase in demand for power and also with depleting sources of fossil fuels, the demand for alternative sources of fuels is increasing. Some of the prospective fuel sources areintroduced. |
| **1-2 Sem** | **Subject Name & Code: Object Oriented Programming Through C++ (17CS205)** |
| CO-1 | Understand object-oriented programming concepts. |
| CO-2 | Be able to explain the difference between object oriented programming and procedural programming. |
| CO-3 | Be able to program using C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling, etc. |
| CO-4 | Be able to build C++ classes using appropriate encapsulation and design principles. |
| CO-5 | Be able to improve problem solving skills. |
| CO-6 | Be able to apply object oriented or non-object oriented techniques to solve bigger computing problems. |
| **1-2 Sem** | **Subject Name & Code: Digital Logic Design (17EC201)** |
| CO-1 | An ability to define different number systems and their conversions, binary addition and subtraction, 2's complement representation and operations with this representation. |
| CO-2 | An ability to understand Boolean algebra theorems and apply of K-maps for simplification logic functions with Logic gates implementation |
| CO-3 | An ability to understand and design standard combinational circuits along with programmable logic devices |
| CO-4 | An ability to understand latches and flip-flops, Analysis and Synthesis of sequential logic circuits (FSMs) |
| CO-5 | An ability to understand and design different registers and counters. |
| **1-2 Sem** | **Subject Name & Code: Applied/Engineering Chemistry Lab (17CH211)** |
| CO-1 | Student's will come to know about determination of hardness of water and alkalinity of water by volumetric analysis. |
| CO-2 | Good knowledge on determination of metal ions concentration in various samples using volumetric analysis. |
| CO-3 | Student exposed to different methods of chemical preparation and analysis of metals and chemical compounds by redox titrations. |
| CO-4 | Student's will come to know about how to determine the pH of various samples. |
| CO-5 | Students will come to know about how to determine the strength of acids and bases by instrumentation. |
| CO-6 | Acquire some experimental skills to work efficiently and safely in a chemical laboratory. |
| **1-2 Sem** | **Subject Name & Code: IT workshop (17CS213)** |
| CO-1 | Common understanding of concepts, patterns of decentralization implementation |
| CO-2 | Identified opportunities for coordinated policy responses, capacity building and implementation of best practices |
| CO-3 | Identified instruments for improved decentralization to the local level |
| CO-4 | Identified strategies for overcoming constraints to effective decentralization and sustainable management at different levels |
| **1-2 Sem** | **Subject Name & Code: Object Oriented Programming Through C++ Lab (17CS211)** |
| CO-1 | Prepare object-oriented design for small/medium scale problems. |
| CO-2 | Demonstrate the differences between traditional imperative design and object-oriented design |
| CO-3 | Understand the role of inheritance, polymorphism, dynamic binding and generic structures in building reusable code |

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| CO-4 | Use classes written by other programmers when constructing their systems |
| **1-2 Sem** | **Subject Name & Code: Seminar on Science and its impact (17HS221)** |
| CO-1 | The students will develop basic awareness on latest scientific advancements. |
| CO-2 | They will be able to relate their knowledge with the broader scientific application in society. |
| CO-3 | They will be able to comprehend the impact of science in finding solutions for environmental and Sustainability challenges. |
| CO-4 | They will be able to acknowledge the importance of constant learning about scientific Evolution. |
| CO-5 | Students will learn to structure their thoughts on scientific advancements. |
| CO-6 | The students will learn to think proactively towards public health and safety. |

**Signature of the HOD**

Head of the Department
Computer Science & Engineering
Raghu Engineering College (A)
VISAKHAPATNAM-531162

**Signature of the Principal**

PRINCIPAL
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**Department of Computer Science and Engineering**

**AR17 Regulation II B.Tech Course Outcomes**

| **2-1 Sem** | **Subject Name & Code: Python Programming (17CS301)** |
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| CO-1 | Understand variables, keywords in python. |
| CO-2 | Elaborate operators, expressions and control flow in python. |
| CO-3 | Comparing Tuples, Sets, Dictionaries, Sequences. |
| CO-4 | Building applications using python functions and packages. |
| CO-5 | Developing object-oriented principles in python. |
| CO-6 | Building python programs using Regular Expressions. |
| **2-1 Sem** | **Subject Name & Code: Computer Organization (17CS302)** |
| CO-1 | Gains knowledge on the architecture of modern computer. |
| CO-2 | Gains knowledge on how to analyze the Performance of a computer using machine instructions and programs. |
| CO-3 | Gains knowledge on Assembly language programming. |
| CO-4 | Gains knowledge on Input-output organization. |
| CO-5 | Gains knowledge on Memory Systems. |
| CO-6 | Gains knowledge on Processing Unit and Micro programmed control. |
| **2-1 Sem** | **Subject Name & Code: Mathematical Foundations of Computer Science (17MA301)** |
| CO-1 | Rewrite mathematical arguments using logical connectives and quantifiers and verify the validity of logical flow of arguments using propositional logic, and truth tables. |
| CO-2 | Verify the validity of logical flow of arguments using predicate logic, identify and give examples of various types of relations and describe various properties of the relations. |
| CO-3 | Student will able to demonstrate skills in solving Mathematical problems |
| CO-4 | Apply the basic permutations and combinations to determine Probabilities. (Application) |
| CO-5 | Solve various types of recurrence relations |
| CO-6 | Determine isomorphism of graphs and spanning tree of a given graph using DFS / BFS. Also determine minimal spanning tree of a given graph. |
| **2-1 Sem** | **Subject Name & Code: Mathematical Foundations of Computer Science (17HS302)** |
| CO-1 | Understand Managerial Economics, demand Analysis, Measurement of Demand and Demand Forecasting. |
| CO-2 | Application of production tools and techniques to increase the production, Analyse production functions and application of cost control techniques. |
| CO-3 | Understand concepts of Markets, Theories of the Firm & Pricing Policies. |
| CO-4 | Evaluate types of Business Organization and Business Cycles. |
| CO-5 | Understand of Accounting & Financing Analysis and Prepare Financial Statements and the usage of various accounting tools for Financial Analysis. |
| CO-6 | To evaluate various investment project proposals with the help of capital budgeting techniques for decision making. |
| **2-1 Sem** | **Subject Name & Code: Data Structures through C++ (17CS303)** |
| CO-1 | Understand the linear data structure like array using the concept of ADTs. |
| CO-2 | Implement Stacks and Queues ADTs using templates in C++ language. |

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| CO-3 | Understand the List representation and analyze various applications of linked list and its variants. |
| CO-4 | Understand the concepts of non-linear data structures such as binary trees and binary search trees. |
| CO-5 | Understand the Graph Abstract Data Type and its applications. |
| CO-6 | Implement various sorting technique. |
| **2-1 Sem** | **Subject Name & Code: Python Programming Lab (17CS311)** |
| CO-1 | Development of procedure-oriented programming using python. |
| CO-2 | Design of data encapsulation, hiding and abstraction principles by using python. |
| CO-3 | Development of multi-threading and packages. |
| **2-1 Sem** | **Subject Name & Code: Data Structures through C++ Lab (17CS312)** |
| CO-1 | Development of real time applications with linear and non-linear data structures. |
| CO-2 | Implement shortest path algorithms. |
| **2-1 Sem** | **Subject Name & Code: Free Open-Source Software Lab (17CS313)** |
| CO-1 | Acquire the basics of Open-Source Software (Linux) command. |
| CO-2 | Implementing file handling using the shell scripts in Unix. |
| CO-3 | Simulate the system calls using C programs in Unix environment. |
| **2-2 Sem** | **Subject Name & Code: Operating Systems (17CS401)** |
| CO-1 | Survey the operating system services. |
| CO-2 | Evaluate Scheduling algorithms for process management. |
| CO-3 | Evaluate process synchronization techniques for concurrency. |
| CO-4 | Compare various memory management schemes. |
| CO-5 | Evaluate Process synchronization techniques for deadlocks. |
| CO-6 | Analyze the structure of file systems on secondary storage devices. |
| **2-2 Sem** | **Subject Name & Code: Java Programming (17CS402)** |
| CO-1 | Understand the object-oriented concepts and java features. |
| CO-2 | Identifying classes and objects in various applications. |
| CO-3 | Implementing the concepts of inheritance, packages and exceptions. |
| CO-4 | Implementing multithreading using threads concept in java. |
| CO-5 | Understand the concepts of Collection Framework. |
| CO-6 | Develop various java programs using Applet and AWT components. |
| **2-2 Sem** | **Subject Name & Code: Advanced Data Structures (17CS403)** |
| CO-1 | Understand external sorting and use parallel buffers to sort elements in disk.. |
| CO-2 | Understand concept of hashing and apply it to indexing large tables or data bases. |
| CO-3 | Understand operations on heap and apply it to merge heaps. |
| CO-4 | Undrstand and analyze and interpret different balanced search trees like AVL tree, Red-Black Tree and Splay trees. |
| CO-5 | Understand the operations on different multi-way search trees like B-Tree and B+-Trees. |
| CO-6 | Understand the operations of digital search structures like tries and patrical and apply them to solve problems. |
| **2-2 Sem** | **Subject Name & Code: Database Management Systems (17CS404)** |
| CO-1 | Understand architecture of database systems. |
| CO-2 | Apply Relational Model to design and manipulate a Database. |
| CO-3 | Apply Queries, Constraints, Triggers on databases. |
| CO-4 | Design a Database using Normalization techniques. |
| CO-5 | Determine Database transactions as per concurrency and ACID properties. |
| CO-6 | Evaluate methods for storing and indexing Database Files. |
| **2-2 Sem** | **Subject Name & Code: Automata and Compiler Design (17CS405)** |
| CO-1 | Analyze and design finite automata, and realize the use of Lexical analyzer. |

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| CO-2 | Construct and identify the differences of top down and bottom-up parsers. |
| CO-3 | Syntax directed translation, synthesized and inherited attributes and Generate different types of intermediate codes. |
| CO-4 | Analyze and identify different types of formal languages, and grammars. |
| CO-5 | Design the good symbol table, to access easily. |
| CO-6 | Apply machine independent code optimization and code generation techniques. |
| **2-2 Sem** | **Subject Name & Code: Java Programming Lab (17CS411)** |
| CO-1 | Implement java programs using basic concepts, classes and objects. |
| CO-2 | Apply the concepts of Inheritance, Threads and Exceptions in java programs. |
| CO-3 | Develop java programs using applets and AWT. |
| **2-2 Sem** | **Subject Name & Code: OS&CD Lab (17CS412)** |
| CO-1 | Develop C programs for process scheduling, Memory Management, Deadlock Avoidance |
| CO-2 | Implement LEX, YACC tools. |
| CO-3 | Implement Parsing Techniques. |
| **2-2 Sem** | **Subject Name & Code: Database Management Systems Lab (17CS413)** |
| CO-1 | Make use of DDL and DML commands for Database design and manipulation. |
| CO-2 | Utilize Sub-Query, Nested Query and Joins concepts in a given problem-domain. |
| CO-3 | Develop programs in PL/SQL with Procedures, Functions, Cursors, Packages. |
| **2-2 Sem** | **Subject Name & Code: Technical seminar (17CS421)** |
| CO-1 | The students will be able to analyze a current topic of professional interest and present it before an audience |
| CO-2 | The student will be able to identify an engineering problem, analyze it and propose work plan it. |

**Signature of the HOD**

Head of the Department
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**Signature of the Principal**

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**Department of Computer Science and Engineering**

**AR17 Regulation III B.Tech Course Outcomes**

| **3-1 Sem** | **Subject Name & Code: Statistics with R Programming (17CS501)** |
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| CO-1 | Identify discrete and continuous random variables and data structures in R. |
| CO-2 | Apply discrete and continuous probability distributions to the given data and execute R-functions for probability distributions. |
| CO-3 | Explain sampling distribution, estimation and R-functions for constructing confidence intervals. |
| CO-4 | Write R program for standard statistical test. |
| CO-5 | Apply ANOVA for the given data and execute R-commands for ANOVA. |
| CO-6 | Apply the concepts of correlation and regression to the given statistical data using R-function and making use of R-graphic functions to visualize the data. |
| **3-1 Sem** | **Subject Name & Code: Design and Analysis of Algorithms (17CS502)** |
| CO-1 | Apply searching and sorting techniques to solve various problems. |
| CO-2 | Apply the concepts of graph theory. |
| CO-3 | Apply the concepts of tress in various applications. |
| CO-4 | Analyze minimum cost spanning tree, shortest path problems. |
| CO-5 | Apply dynamic programming technique to various problems. |
| CO-6 | Apply backtracking technique to various problems. |
| **3-1 Sem** | **Subject Name & Code: Web Application Development (17CS503)** |
| CO-1 | Design web pages with basic html tags and CSS. |
| CO-2 | Design web pages with java script. |
| CO-3 | Apply XML for web document with XML parsers. |
| CO-4 | Build web applications using PHP. |
| CO-5 | Develop PERL scripts for web applications. |
| CO-6 | Design applications using Ruby. |
| **3-1 Sem** | **Subject Name & Code: Computer Networks (17CS504))** |
| CO-1 | Conceptualize the data communication models using OSI/ISO and TCP/IP protocol architectures. |
| CO-2 | Implement different switching techniques |
| CO-3 | Analyze protocols implemented in data link layer for error and flow control |
| CO-4 | Analyze the features of MACprotocols and routing mechanisms. |
| CO-5 | Analyze the features and operations of protocols in transport layer. |
| CO-6 | Analyze the features of application layer protocols |
| **3-1 Sem** | **Subject Name & Code: Internet of Things (17CS531)** |
| CO-1 | Gains knowledge on overview of IOT |
| CO-2 | Acquires ability to learn business models for business processes in IOT. |
| CO-3 | Becomes familiar with design principles of web connectivity for connected devices |
| CO-4 | Builds knowledge on Internet connectivity principles |
| CO-5 | Develops the procedure of data acquiring, organizing and analytics in IOT. |
| CO-6 | Realize the data collection, storage & computing in IOT. |

| 3-1 Sem | **Subject Name & Code: Web Application Development Lab (17CS511)** |
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| CO-1 | Develop static, Dynamic web pages, XML files. |
| CO-2 | Demonstrate the constructs of Ruby scripting Language. |
| CO-3 | Write programs using Perl language. |
| CO-4 | Build dynamic client server web applications with PHP. |
| **3-1Sem** | Subject Name & Code: **R Programming Lab** (17CS512) |
| CO-1 | Write R programs for various concepts like vectors,matrices,arrays,loops, control statements. |
| CO-2 | Write R programs for functions, probability distributions, statistic applications, regression models. |
| **3-1 Sem** | **Subject Name & Code: Design of Algorithms Lab (17CS513)** |
| CO-1 | Implement merge sort,quick sort, BFS, DFS |
| CO-2 | Implement minimum cost spanning tree, shortest path algorithms. |
| CO-3 | Implement Warshalls algorithm, back tracking technique. |
| **3-1 Sem** | **Subject Name & Code: Technical seminar (17EG521)** |
| CO-1 | The students will be able to analyze a current topic of professional interest and present it before an audience |
| CO-2 | The student willbeable to identify an engineering problem, analyze it and propose work plan it. |
| **3-1 Sem** | **Subject Name & Code: Mini Project-1 (17CS461)** |
| CO-1 | Identify problem statement in latest technology |
| CO-2 | Communicate effectively to present ideas clearly to specific audience |
| CO-3 | Apply collaborative skills through working in a team to achieve common goals |
| CO-4 | Acquire practical knowledge on the implementation of perceptions studied through the programme |
| **3-2 Sem** | **Subject Name & Code: Software Engineering (17CS601)** |
| CO-1 | To understand the software life cycle models. |
| CO-2 | Define and develop a software project from requirement gathering to implementation. |
| CO-3 | Obtain knowledge about principles and practices of software engineering and User Interface Design. |
| CO-4 | Obtain knowledge about coding and testing. |
| CO-5 | Obtain knowledge about Software Reliability and Quality Management of software systems. |
| CO-6 | Focus on the fundamentals of maintenance of software systems and reuse. |
| **3-2 Sem** | **Subject Name & Code: Unix Programming (17CS602)** |
| CO-1 | Documentation will demonstrate good organization and readability. |
| CO-2 | File processing projects will require data organization, problem solving and research. |
| CO-3 | Scripts and programs will demonstrate simple effective user interfaces. |
| CO-4 | Scripts and programs will demonstrate effective use of structured programming. |
| CO-5 | Scripts and programs will be accompanied by printed output demonstrating completion ofa test plan. |
| CO-6 | Commands for understanding Process Management. |
| **3-2 Sem** | **Subject Name & Code: Data Ware Housing and Mining (17CS603)** |
| CO-1 | Understand stages in building a Data Warehouse. |
| CO-2 | Understand the need and importance of preprocessing techniques. |
| CO-3 | Understand the need and importance of Similarity and dissimilarity techniques. |
| CO-4 | Understand more classification techniques like Decision Tree Classification. |
| CO-5 | Analyze and evaluate performance of algorithms for Association Rules. |
| CO-6 | Analyze Classification and Clustering algorithms. |

| 3-2 Sem | Subject Name & Code: E-Commerce (17CS633) |
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| CO-1 | Gains Knowledge on framework of e-commerce. |
| CO-2 | Gains Knowledge on concepts of electronic payment systems. |
| CO-3 | Gains Knowledge on concepts of Intra Organizational Commerce. |
| CO-4 | Gains Knowledge on Corporate digital library. |
| CO-5 | Gains Knowledge on Consumer search and resource Discovery. |
| CO-6 | Gains Knowledge on digital video and electronic commerce. |
| **3-2 Sem** | **Subject Name & Code: Management Science (17HS602)** |
| CO-1 | After completion of this course the student will acquire the knowledge on management function, Global leadership and organizational behavior. |
| CO-2 | Application of control charts in various operations is possible and work study |
| | and method study improves the production expectations. |
| CO-3 | Will be familiarized with the concept of Functional Management. |
| CO-4 | Will be familiarized with the concept of Project Management. |
| CO-5 | Will be familiarized with the concept of Strategic Management. |
| CO-6 | Application of modern tools and techniques in cost control, quality control, and business process Reengineering. |
| **3-2 Sem** | **Subject Name & Code: Unix Programming Lab (17CS611)** |
| CO-1 | Implement various shell commands. |
| CO-2 | Write shell programs for various applications. |
| **3-2 Sem** | **Subject Name & Code: Data Warehousing and Data Mining Lab (17CS612)** |
| CO-1 | Demonstrate data pre-processing techniques. |
| CO-2 | Implement association rule mining in WEKA. |
| CO-3 | Implement classification rule process in WEKA. |
| CO-4 | Implement clustering rule process in WEKA. |
| **3-2 Sem** | **Subject Name & Code: Skill Course Lab - I (17CS651)** |
| CO-1 | To design and develop a Web page using HTML which includes different tags along with its attributes and also styling the webpage contents with the help of CSS. |
| CO-2 | Utilize JavaScript programming concepts such as variables, arrays, conditionals, loops and functions. |
| CO-3 | Learn how to analyze a web page and identify its elements and attributes, implement Directives, Controllers and filters in Angular JS. |
| **3-2 Sem** | **Subject Name & Code: Technical seminar (17EG621)** |
| CO-1 | The students will be able to analyze a current topic of professional interest and present it before an audience |
| CO-2 | The student will be able to identify an engineering problem, analyze it and propose work plan it. |
| **3-2 Sem** | **Subject Name & Code: Mini Project-2 (17CS661)** |
| CO-1 | Identify problem statement in latest technology |
| CO-2 | Communicate effectively to present ideas clearly to specific audience |
| CO-3 | Apply collaborative skills through working in a team to achieve common goals |
| CO-4 | Acquire practical knowledge on the implementation of perceptions studied through the programme |

**Signature of the HOD**

Head of the Department
Computer Science & Engineering
Raghu Engineering College (A)

**Signature of the Principal**

PRINCIPAL
RAGHU ENGINEERING COLLEGE

# RAGHU ENGINEERING COLLEGE

(Autonomous)
(Approved by AICTE, Affiliated to JNTU Kakinada)
(Accredited by NBA (CIVIL, EEE, MECH, ECE, CSE & NAAC 'A' Grade)
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**Department of Computer Science and Engineering**

**AR17 Regulation IV B.Tech Course Outcomes**

| **4-1Sem** | **Subject Name & Code: Unified Modelling Language** (17CS701) |
|---|---|
| CO-1 | Gains knowledge on the Structure of Complex systems |
| CO-2 | Gains Knowledge on UML basic components |
| CO-3 | Gains Knowledge on Conceptual model of UML |
| CO-4 | Gains knowledge on Basic Behavioural Modelling |
| CO-5 | Gains Knowledge on Advanced Behavioural Modelling |
| CO-6 | Gains Knowledge on Architectural Modelling |
| **4-1 Sem** | **Subject Name & Code: Software Architecture and Design Patterns (17CS702)** |
| CO-1 | Understand the architecture, creating it and moving from one to any, different structural patterns. |
| CO-2 | Analyze the architecture and build the system from the components. |
| CO-3 | Learns that design patterns are solutions, and they can solve many problems that can be encountered in the future. |
| CO-4 | Understands the structure of design patterns |
| CO-5 | Gains Knowledge on behavioural design patterns |
| CO-6 | Do a case study in utilizing architectural structures and design patterns |
| **4-1 Sem** | **Subject Name & Code: Mobile Computing (17CS703)** |
| CO-1 | Explain the basics of mobile Computing. |
| CO-2 | Able to take any new technical issue related to this new paradigm and come up with a solution(s). |
| CO-3 | Describe the functionality of Wireless data link layer |
| CO-4 | Describe the functionality of Mobile IP . |
| CO-5 | Describe the functionality of Mobile Transport Layer |
| CO-6 | Able to understand the platforms and protocols used in mobile environment. |
| **4-1 Sem** | **Subject Name & Code: Introduction to Embedded Systems (17EC741)** |
| CO-1 | Understand basic concept of embedded systems, hardware and software issues and applications |
| CO-2 | Understand, analyze and apply the various types of sensors and applications, memory interface, and communication interface with respect to embedded systems |
| CO-3 | Understand and analyze various firmware development approaches, languages and methods of implementation. |
| CO-4 | Understand and analyze the operating system concepts and fundaments of real time operating systems for Embedded Systems. |
| CO-5 | Know,Analyze and apply the embedded hardware and software development approaches and methods. |
| CO-6 | Know and apply the familiarity with tools for development and testing the embedded systems |
| **4-1 Sem** | **Subject Name & Code: Software Testing Methodologies (17CS731)** |
| CO-1 | Purpose of Testing and flow graphs and path Testing |
| CO-2 | Make use of Transactional flow testing and Data flow testing |
| CO-3 | Applying Domain testing and Path testing |
| CO-4 | Applying Syntax testing and Logical based testing on programs |
| CO-5 | Understanding of State, State Graph and Graph Matrices |

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| CO-6 | Implementing Software Testing tools |
| **4-1 Sem** | **Subject Name & Code: Mobile Application development Lab (17CS711)** |
| CO-1 | Develop pop-up menus using J2ME Programming concepts. |
| CO-2 | Apply essential Android Programming concepts. |
| CO-3 | Develop various Android applications related to layouts & rich uses interactive interfaces. |
| **4-1 Sem** | **Subject Name & Code: Unified Modelling Language Lab(17CS712)** |
| CO-1 | Gains Knowledge on Conceptual model of UML |
| CO-2 | Gains knowledge on Basic Behavioural Modelling |
| CO-3 | Gains Knowledge on Advanced Behavioural Modelling. |
| CO-4 | Gains Knowledge on Architectural Modelling |
| **4-1 Sem** | **Subject Name & Code: Skill Course Lab – II (17CS751)** |
| CO-1 | Analyze a web page and identify its elements and attributes, implement Directives, Controllers and filters in Angular JS. |
| CO-2 | Create AngularJS Forms and validate the data. |
| CO-3 | Use modules in Node JS (i.e., nodemailer, nodemon, fs, mongodb…) |
| CO-4 | Connect server(nodeJS) to mongoDB and perform select find,insert,update and remove operations on collection in the mongodb database. |
| CO-5 | Working with ExpressJS |
| CO-6 | Create an application using four technologies MongoDB, ExpressJS, AngularJS, NodeJS (MEAN) |
| **4-1 Sem** | **Subject Name & Code: Technical seminar (17CS721)** |
| CO-1 | The students will be able to analyze a current topic of professional interest and present it before an audience |
| CO-2 | The student will be able to identify an engineering problem, analyze it and propose work plan it. |
| **4-2 Sem** | **Subject Name & Code: Distributed Systems (17CS801)** |
| CO-1 | Describe important characteristics of distributed systems and the salient architectural features of such systems. |
| CO-2 | Describe the features and applications of important standard protocols which are used in distributed systems |
| CO-3 | gains the knowledge of inter-process and inter object communication in a distributed environment |
| CO-4 | Understanding the support of Operating systems for distributed systems |
| CO-5 | Develop a familiarity with distributed file systems. |
| CO-6 | Understand about the transactions and deadlocks in distributed environment. |
| **4-2 Sem** | **Subject Name & Code: Cryptography and Network Security (17CS802)** |
| CO-1 | To be familiarity with information security awareness and a clear understanding of its importance. |
| CO-2 | To master fundamentals of secret and public cryptography |
| CO-3 | To master protocols for security services |
| CO-4 | To be familiar with network security threats and countermeasures |
| CO-5 | To be familiar with network security designs using available secure solutions (such asPGP, SSL, IPSec, etc) |
| CO-6 | To be familiar with Email and web security, viruses, firewalls, digital right management, and other topics |
| **4-2 Sem** | **Subject Name & Code: Software Project Management (17CS832)** |
| CO-1 | To understand the basic concepts and issues of software project management |
| CO-2 | To effectively plan the software project |
| CO-3 | To implement the project plans through managing people, communication and change |
| CO-4 | To select and employ mechanism for tracking software projects |

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|---|---|
| CO-5 | Conduct activities to successfully complete and close software project |
| CO-6 | To develop the skills for tracking and controlling software deliverables |
| **4-2 Sem** | **Subject Name & Code: AIR POLLUTION AND CONTROL (17CE732)** |
| CO-1 | Decide the ambient air quality based on the analysis of air pollutants |
| CO-2 | Suggest methods for controlling automobile pollution |
| CO-3 | Judge the plume behavior in a prevailing environmental condition |
| CO-4 | Suggest methods for controlling noise pollution |
| CO-5 | Design particulate and gaseous control measures for an industry |
| CO-6 | Suggest Environmentally friendly fuels |
| **4-2 Sem** | **Subject Name & Code: Technical seminar (17CS871)** |
| CO-1 | The students will be able to analyze a current topic of professional interest and present it before an audience |
| CO-2 | The student will be able to identify an engineering problem, analyze it and propose work plan it. |
| **4-2 Sem** | **Subject Name & Code: Project (17CS821)** |
| CO-1 | Identify problem statement in latest technology |
| CO-2 | Communicate effectively to present ideas clearly to specific audience |
| CO-3 | Apply collaborative skills through working in a team to achieve common goals |
| CO-4 | Acquire practical knowledge on the implementation of perceptions studied through the programme |

**Signature of the HOD**

Head of the Department
Computer Science & Engineering
Raghu Engineering College (A)
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**Signature of the Principal**

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