# SRKR ENGINEERING COLLEGE::BHIMAVARAM

## Department of Computer Science and Engineering

## R20

### COURSE OUTCOMES

**Program Name: B.Tech (Computer Science and Engineering)**
**Course Name: (ENGLISH)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| ENGLISH B20 HS 1101 | HS 1101.1 | Identify the context, topic and pieces of specific information by understanding and responding to the social or transactional dialogues spoken by native speakers of English |
| | HS 1101.2 | Apply suitable strategies for skimming and scanning to get the main idea of a text and locate specific information. |
| | HS 1101.3 | Build confidence and adapt themselves to the social and public discourses, discussions and presentations. |
| | HS 1101.4 | Apply the principles of writing to paragraphs, arguments, essays and formal/informal communication. |
| | HS 1101.5 | Construct sentences using proper grammatical structures and correct word forms.. |

**Course Name: (MATHEMATICS-I)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| MATHEMATICS-I B20 BS 1101 | BS 1101.1 | Solve a given system of linear algebraic equations |
| | BS 1101.2 | Determine Eigen values and Eigen vectors of a system represented by a matrix |
| | BS 1101.3 | Solve ordinary differential equations of first order and first degree |
| | BS 1101.4 | Apply the knowledge in simple applications such as Newton's law of cooling, orthogonal trajectories and simple electrical circuits |
| | BS 1101.5 | Solve linear ordinary differential equations of second order and higher order.. |
| | BS 1101.6 | Determine Laplace transform, inverse Laplace transform and solve linear ODE |

**Course Name: (APPLIED CHEMISTRY)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| APPLIED CHEMISTRY B20 BS 1103 | BS 1103.1 | Develop polymer composites, synthetic polymers and formulation of polymers and their use in design |
| | BS 1103.2 | Apply the knowledge about quality of water and its treatment methods for domestic and industrial applications. Understanding the principle, mechanism of corrosion and utilization of various techniques to control. |
| | BS 1103.3 | Develop the knowledge of fuels and their economics, advantages and limitations. Make use of the basic concepts of semiconductors and liquid crystals for engineering applications. |
| | BS 1103.4 | Identify constituents of various ceramic materials, characteristics and their appropriate use in construction. Apply the knowledge of electrochemistry principles to design energy storage. |

**Course Name: (PROGRAMMING FOR PROBLEM SOLVING USING C)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| PROGRAMMING FOR PROBLEM SOLVING USING C B20 CS 1101 | CS 1101.1 | Apply Precedence and Associativity rules to evaluate Expressions |
| | CS 1101.2 | Make use of Decision Making and Looping statements to solve various problems in C |
| | CS 1101.3 | Illustrate the importance of Arrays and Strings and to apply various operations on them |
| | CS 1101.4 | Solve various problems by making use of Structure and Union concepts |
| | CS 1101.5 | Design and implement programs to analyze the different pointer applications |
| | CS 1101.6 | Develop programs using Functions and Pointers.. |

**Course Name: (COMPUTER FUNDAMENTALS AND DIGITAL LOGIC)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| COMPUTER FUNDAMENTALS AND DIGITAL LOGIC B20 CS 1102 | CS 1102.1 | Familiar with computer fundamentals and internet of things concepts.. |
| | CS 1102.2 | Differentiate binary, decimal, octal and hexadecimal number system. |
| | CS 1102.3 | Implement the Boolean functions using logic gates and Simplification Boolean expression using K-Map. |
| | CS 1102.4 | Implement various combinational circuits |
| | CS 1102.5 | Implement various Sequential circuits. |

**Course Name: (PROGRAMMING FOR PROBLEM SOLVING USING C LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| PROGRAMMING FOR PROBLEM SOLVING USING C LAB B20 CS 1103 | CS 1103.1 | Write, Trace and Debug the programs and correct syntax and logical errors. |
| | CS 1103.2 | Solve various Problems by making use of Arrays, Strings, Structures, Unions and Pointers |
| | CS 1103.3 | Solve a complex problem by decomposing into several modules by using Functions |
| | CS 1103.4 | Apply various File I/O operations |

**Course Name: (APPLIED CHEMISTRY LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| Applied Chemistry LAB B20 BS 1108 | BS 1108.1 | Gain technical knowledge of measuring, operating and testing of chemical instruments and equipments. Carrying out different types of chemical reactions for analysing different materials in micro level quantities. |
| | BS 1108.2 | Analyze and generate experimental skills to enhance the analytical thinking capabilities in the modern trends in engineering and technology. |

**Course Name: (COMPUTER ENGINEERING WORKSHOP)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| COMPUTER ENGINEERING WORKSHOP B20 CS 1104 | CS 1104.1 | Identify, assemble and update the components of a computer |
| | CS 1104.2 | Configure, evaluate and select hardware platforms for the implementation and execution of computer applications, services and systems |
| | CS 1104.3 | Make use of tools for converting pdf to word and vice versa. |
| | CS 1104.4 | Develop presentation, documents and small applications using productivity tools such as word processor, presentation tools, spreadsheets, HTML, LaTex |

**SEMESTER: 2** **COURSE YEAR: 2020-2021**

**Course Name: (MATHEMATICS-II)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| MATHEMATICS-II B20 BS 1201 | BS1201.1 | Determine Fourier series and half range series of functions |
| | BS 1201.2 | Determine Fourier transforms of non-periodic functions and also use them to evaluate integrals |
| | BS 1201.3 | Compute partial derivatives, total derivative and Jacobians |
| | BS 1201.4 | Find maxima/minima of functions of two variables and evaluate some real definite integrals |
| | BS 1201.5 | Form partial differential equations and solve Lagrange linear equation. Solve linear higher order homogeneous and non-homogeneous PDEs |
| | BS 1201.6 | Find theoretical solution of one-dimensional wave equation and one-dimensional heat equation |

**Course Name: (APPLIED PHYSICS)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| APPLIED PHYSICS B20 BS 1202 | BS 1202.1 | Interpret the behavior of light radiation in interference and diffraction Phenomena and their applications. |
| | BS 1202.2 | Explain the classification and properties of dielectric and magnetic materials suitable for engineering applications. |
| | BS 1202.3 | Understand the basics of modern optical technologies like lasers and optical fibers and their utility in various fields |
| | BS 1202.4 | Explain the important aspects of semiconductors and electrical conductivity in them |
| | BS 1202.5 | Understand the basics of technology of Ultrasonic's in various fields and demonstrate the synthesis and applications of nonmaterial's. |

**Course Name: (MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE B20BS1204 | BS 1204.1 | Write and verify the arguments for their validity using propositional and predicate logic |
| | BS 1204.2 | Utilize different counting methods in their fields of study |
| | BS 1204.3 | Make use of various types of relations and their properties. |
| | BS 1204.4 | Identify different Lattices and Boolean expressions. |
| | BS 1204.5 | Formulate and solve the recurrence relations. |
| | BS 1204.6 | Utilize the concepts in graphs and trees |

**Course Name: (COMPUTER ORGANIZATION)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| COMPUTER ORGANIZATION B20 CS 1202 | CS 1202.1 | Identify basic building blocks of a computer. |
| | CS 1202.2 | Design of computer functional blocks. |
| | CS 1202.3 | Identify Regular operation of a computer |
| | CS 1202.4 | Identify the parameters that enhance system performance. |

**Course Name: (DATA STRUCTURES)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| DATA STRUCTURES B20 CS 1203 | CS 1203.1 | Demonstrate the concept of recursion, the way arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory. |
| | CS 1203.2 | Implement stacks, linked lists, queues and trees and apply them to solve different Computer Science problems and Engineering problems. |
| | CS 1203.3 | Compare alternative implementations of data structures with respect to performance |
| | CS 1203.4 | Apply the principal algorithms for sorting and searching to the given data and analyze the computational efficiency |
| | CS 1203.5 | Make use of Graphs to solve real life applications. |

**Course Name: (APPLIED PHYSICS LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| APPLIED PHYSICS LAB B20 BS 1207 | BS1207.1 | Get hands on experience in setting up experiments and using the instruments / equipment individually |
| | BS1207.2 | Get introduced to using new / advanced technologies and understand their significance |

**Course Name: (COMMUNICATION SKILLS LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| COMMUNICATION SKILLS LAB B20 HS 1202 | HS 1202.1 | Apply their linguistic competence in all LSRW skills to professional and personal settings. |
| | HS 1202.2 | Apply communication skills learnt through various language learning activities to their advancement in academics and competitive examinations |
| | HS 1202.3 | Draft job application letters, E-Mail messages and other writing discourses. |
| | HS 1202.4 | Adopt professional etiquette consistent with formal settings. |
| | HS 1202.5 | Improve fluency and clarity in both spoken and written English. |

**Course Name: (DATA STRUCTURES LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| DATA STRUCTURES LAB B20 CS 1206 | CS 1206.1 | Student will be able to write programs to implement stacks and queues. |
| | CS 1206.2 | Ability to implement various searching and sorting techniques. |
| | CS 1206.3 | Ability to implement programs using trees and graphs. |

**Course Name: (PROFESSIONAL ETHICS AND HUMAN VALUES)**

| OURSE | COURSE OUTCOMES | |
|---|---|---|
| PROFESSIONAL ETHICS AND HUMAN VALUES B20 MC 1202 | MC 1202.1 | Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field. Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships and field work. |
| | MC 1202.2 | Identify the multiple ethical interests at stake in a real-world situation or practice and Articulate what makes a particular course of action ethically defensible. |
| | MC 1202.3 | Assess their own ethical values and the social context of problems. |
| | MC 1202.4 | Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects |
| | MC 1202.5 | Integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research |

**Course Name: (NATIONAL SERVICE SCHEME (NSS))**

| OURSE | COURSE OUTCOMES | |
|---|---|---|
| NATIONAL SERVICE SCHEME(NSS) B20 MC 1203 | MC1203.1 | understand general orientation about community service, voluntarism role and responsibility of NSS volunteer. |
| | MC1203.2 | Analyze about the community he live in. |
| | MC1203.3 | Asses the life in adopted villages. |
| | MC1203.4 | Identify the importance of national days and attain participation in it. |

**SEMESTER: 3** **COURSE YEAR: 2021-2022**

**Course Name: (NUMERICAL METHODS & VECTOR CALCULUS COMMON)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| NUMERICAL METHODS & VECTOR CALCULUS COMMON B20 BS 2101 | BS 2101.1 | Determine a real root of an algebraic or transcendental equation. Fit an interpolation formula and perform interpolation for equally spaced and unequally spaced data. |
| | BS 2101.2 | Evaluate numerically certain definite integrals. Solve a first order ordinary differential equation by Euler and RK methods. |
| | BS 2101.3 | Evaluate double integrals and determine the areas. |
| | BS 2101.4 | Evaluate triple integrals and determine the volumes. |
| | BS 2101.5 | Find the gradient of a scalar function, divergence and curl of a vector function. |
| | BS 2101.6 | Solve simple problems using vector integral theorems. |

**Course Name: (OBJECT ORIENTED PROGRAMMING THROUGH C++)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| OBJECT ORIENTED PROGRAMMING THROUGH C++ B20CS2101 | CS 2101.1 | Illustrate the process of Object Oriented Paradigm. |
| | CS 2101.2 | Demonstrate classes, member functions, constructors and their importance in developing real world applications. |
| | CS 2101.3 | Apply C++ features such as Inheritance, operator overloading to make programs reusable. |
| | CS 2101.4 | Understand Dynamic Memory Management techniques using pointers. |
| | CS 2101.5 | Apply the concept of Generic Programming and Exception handling to build an efficient and error free code. |

**Course Name: (SOFTWARE ENGINEERING)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| SOFTWARE ENGINEERING B20CS2102 | CS 2102.1 | Understand different software process models and their significance. |
| | CS 2102.2 | Distinguish various requirements identification procedures. |
| | CS 2102.3 | Identify different methods for requirement analysis modeling. |
| | CS 2102.4 | Differentiate various aspects of system design and software architectures. |
| | CS 2102.5 | Apply software quality assurance and testing strategies. |

**Course Name: (OPERATING SYSTEMS)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| OPERATING SYSTEMS B20 CS 2103 | CS 2103.1 | Describe various generations of Operating System and functions of Operating System, System calls |
| | CS 2103.2 | Describe the concept of process, threads and analyze various CPU Scheduling Algorithms and IPC |
| | CS 2103.3 | Illustrate memory management strategies |
| | CS 2103.4 | illustrate deadlocks, files and Secondary-Storage Structure |
| | CS 2103.5 | Summarize Security and Protection Mechanism in Operating Systems. Understand the Operating System like UNIX/Linux and Windows |

**Course Name: (PYTHON PROGRAMMING)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| PYTHON PROGRAMMING B20 CS 2104 | CS 2104.1 | Understand the basic principles of python programming. |
| | CS 2104.2 | Apply the knowledge of python programming to perform operations on data structures. |
| | CS 2104.3 | Solve the coding tasks using functions and modular programming. |
| | CS 2104.4 | Use OOP principles and File concepts to solve different problems. |
| | CS 2104.5 | Handle different exceptions raised in python and apply GUI for providing interface to various problems. |

**Course Name: (OBJECT ORIENTED PROGRAMMING LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| OBJECT ORIENTED PROGRAMMING LAB B20 CS 2105 | CS 2105.1 | Able to develop simple programs using classes, objects and constructors in C++. |
| | CS 2105.2 | Able to implement Inheritance and polymorphism in C++ |
| | CS 2105.3 | Implement Object Oriented Programs using Templates and Exception Handling. |

**Course Name: (PYTHON PROGRAMMING LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| PYTHON PROGRAMMING LAB B20 CS 2106 | CS 2106.1 | Apply the basics of programming in the Python language |
| | CS 2106.2 | Solve coding tasks related to conditional execution, and loops |
| | CS 2106.3 | Implement the operations of different data structures. |
| | CS 2106.4 | Solve coding tasks related to the fundamental notions and techniques used in object oriented programming |

**Course Name: (OPERATING SYSTEMS LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| OPERATING SYSTEMS LAB B20 CS 2107 | CS 2107.1 | To use Unix utilities and perform basic shell control of the utilities |
| | CS 2107.2 | To use the Unix file system and file access control |
| | CS 2107.3 | To use of an operating system to develop software |
| | CS 2107.4 | Students will be able to use Linux environment efficiently |
| | CS 2107.5 | Solve problems using bash for shell scripting |

**Course Name: (WEB APPLICATION DEVELOPMENT USING FULL STACK)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| WEB APPLICATION DEVELOPMENT USING FULL STACK B20 CS 2108 | CS 2108.1 | Analyze a web page and identify its elements and attributes. |
| | CS 2108.2 | Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet |
| | CS 2108.3 | Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone. |
| | CS 2108.4 | Create web pages using HTML and Cascading Style Sheets. |

**Course Name: (ENGLISH PROFICIENCY)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| ENGLISH PROFICIENCY B20 MC 2103 | MC 2103.1 | Improve speaking skills. |
| | MC 2103.2 | Enhance their listening capabilities |
| | MC 21033 | Learn and practice the skills of composition writing |
| | MC 2103.4 | Enhance their reading and understanding of different texts. |
| | MC 2103.5 | Improve their communication both in formal and informal contexts. |
| | MC 2103.6 | Be confident in presentation skills. |

**SEMESTER: 4** **COURSE YEAR: 2021-2022**

**Course Name: (PROBABILITY AND STATISTICS)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| PROBABILITY AND STATISTICS B20 BS 2201 | BS 2201.1 | Understand the concepts of data science and identify a random variable as discrete/continuous and analyse it. |
| | BS 2201.2 | Determine statistical measures like Mean, Variance and generating functions in terms of Expectations. |
| | BS 2201.3 | Determine a best suitable curve for a given data using the method of least squares. |
| | BS 2201.4 | Determine correlation coefficient and regression lines. |
| | BS 2201.5 | Solve simple problems based on discrete and continuous probability distributions. |
| | BS 2201.6 | Apply testing of hypothesis for getting inferences about Population Parameters based on Sample statistic. |

**Course Name: (DATABASE MANAGEMENT SYSTEMS)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| DATABASE MANAGEMENT SYSTEMS B20 CS 2201 | CS 2201.1 | Describe fundamental concepts a relational database |
| | CS 2201.2 | Create, maintain and manipulate a relational database using SQL |
| | CS 2201.3 | Apply Conceptual and Logical database design |
| | CS 2201.4 | Apply normalization for database design |
| | CS 2201.5 | Illustrate Storage management and Transaction management techniques. |

**Course Name: (DESIGN AND ANALYSIS OF ALGORITHMS)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| DESIGN AND ANALYSIS OF ALGORITHMS B20 CS 2202 | CS 2202.1 | Apply mathematical analysis methods to analyse the algorithm running times using asymptotic notations |
| | CS 2202.2 | Compare and understand how the choice of data structures impact the performance of various greedy algorithms |
| | CS 2202.3 | Describe, apply and analyze the complexities of Dynamic Programming Algorithms |
| | CS 2202.4 | Describe, apply and analyze the complexity of Backtracking and Branch and Bound, and explain the situations which call for usage of these paradigms |
| | CS 2202.5 | Infer lower bounds for common problems like searching, sorting, merging, selection, Understand the concepts of P, NP classes |

**Course Name: (JAVA PROGRAMMING)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| JAVA PROGRAMMING B20 CS 2203 | CS 2203.1 | Recall the syntax and semantics of java programming language and basic concepts of OOP. |
| | CS 2203.2 | Relate array data structure and string manipulation operations |
| | CS 2203.3 | Develop reusable programs using the concepts of inheritance, interfaces and packages |
| | CS 2203.4 | Apply the concept of Exception handing and multithreading to build an efficient and error free code. |
| | CS 2203.5 | Develop a program that manages input & output streams and apply JDBC to interface with database. |

**Course Name: (MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY B20 HS 2201 | HS 2201.1 | Equip oneself with the knowledge of estimating the Demand and demand elasticities for a product. |
| | HS 2201.2 | Have knowledge of Cost and its types and ability to calculate BEP |
| | HS 2201.3 | Understand the nature of different markets |
| | HS 2201.4 | Understand Pricing Practices prevailing in today's business world |
| | HS 2201.5 | Prepare Financial Statements and know how to calculate Profit & Loss for a firm |
| | HS 2201.6 | Know Types of capital and their sources and know how to calculate Depreciation |

**Course Name: (DATABASE MANAGEMENT SYSTEMS LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| DATABASE MANAGEMENT SYSTEMS LAB B20 CS 2204 | CS 2204.1 | Utilize SQL to execute queries for creating database and performing data manipulation operations |
| | CS 2204.2 | Apply Queries using SQL |
| | CS 2204.3 | Build PL/SQL programs including stored procedures, functions, cursors and triggers |

**Course Name: (R PROGRAMMING LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| R PROGRAMMING LAB B20 CS 2205 | CS 2205.1 | Access online resources for R and import new function packages into the Rworkspace |
| | CS 2205.2 | Import, review, manipulate and summarize data-sets in R |
| | CS 2205.3 | Explore data-sets to create testable hypotheses and identify appropriate statistical tests |
| | CS 2205.4 | Perform appropriate statistical tests using R |
| | CS 2205.5 | Create and edit visualizations with R |

**Course Name: (JAVA PROGRAMMING LAB)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| JAVA PROGRAMMING LAB B20 CS 2206 | CS 2206.1 | Develop simple programs using command line arguments, arrays, vectors and strings. |
| | CS 2206.2 | Demonstrate Classes, Objects, Constructors, Methods and Runtime Polymorphism. |
| | CS 2206.3 | Develop reusable programs using the concepts of inheritance, interfaces and packages. |
| | CS 2206.4 | Develop Applications using exception handing and multithreading. |
| | CS 2206.5 | Apply the concepts of Java IO Files and database in real time problem solving. |

**Course Name: (APPLICATIONS OF PYTHON USING NUMPY AND PANDAS)**

| COURSE | COURSE OUTCOMES | |
|---|---|---|
| APPLICATIONS OF PYTHON USING NUMPY AND PANDAS B20CS 2207 | CS 2207.1 | Explain how data is collected, managed and stored for processing |
| | CS 2207.2 | Understand the workings of various numerical techniques, different descriptive measures of Statistics, correlation and regression to solve the engineering problems |
| | CS 2207.3 | Understand how to apply some linear algebra operations to n-dimensional arrays |
| | CS 2207.4 | Use NumPy perform common data wrangling and computational tasks in Python. |