M.S. RAMAIAH COLLEGE OF ARTS,SCIENCE AND COMMERCE

Course Outcomes for Bsc(Cs/Elec/Maths) Program

	Program	CourseCode	CourseName	COCode	CO
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Programming Concepts using C	CO3	Identify in details with examples Arrays: Declaring and Initializing, One Dimensional Arrays, Two Dimensional Arrays, Multi Dimensional Strings: Operations on strings, Arrays of strings, Storage Classes - Automatic, External, Static and Register Variables.
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Programming Concepts using C	CO4	Write down the characteristics of Structures - Declaring and Initializing, Nested structure, Array of Structure, Unions, typedef, enum, Bit fields. Pointers and functions, Call by value, Call by reference, Arrays of Pointers, Pointers and Structures, static and dynamic memory allocation, Memory allocation functions.
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Programming Concepts using C	CO5	Learn in details with examples Files - File modes, File operations, Text and Binary files, Command Line arguments. C Preprocessor directives, Macros ,Creating and implementing user defined header files
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Programming Concepts using C	CO1	Learn in details with application, if applicable, Introduction to Programming Concepts: Classification of Software, Modular Programming, Structured Programming, Algorithms and Flowcharts. Overview of C, C basis
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Programming Concepts using C	CO2	Specify the characteristics of Managing Input and Output Operation-Formatted and Unformatted I/O Functions , Decision Making Statements - if Statement, switch statement, ?: operator, Looping - while, do-while, for loop, Nested loop, break, continue, and goto statements. Functions in C
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C1S	Mathematics I	CO3	Write down the characteristics of Matrices and Determinents
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C1S	Mathematics I	CO1	Understand the characteristics of Differential Calculus
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C1S	Mathematics I	CO2	Identify in details with application, if applicable, Analytical Geometry

	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C1S	Mathematics I	CO4	Understand in depth Integral Calculus
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Basic Electronics	CO1	Understand in depth Identification of Electronic components and equipments
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Basic Electronics	CO2	Identify the details of Construct and verify the Thevinins, Maximum power transform theorem
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Basic Electronics	CO3	Write down the characteristics of semiconductor diode and its application
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Basic Electronics	CO4	Understand in details with application, if applicable, BJT and FET transistor working and its application
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C1S	Basic Electronics	CO5	Deliberate the details of Number system and coding
	B.Sc (Computer science/ Electronics/ Mathematics)	S2CC1S	Data Structures	CO1	Introduction and Overview: Definition, Elementary data organization, Data Structures, data structures operations, Abstract data types, algorithms complexity, time-space tradeoff. Preliminaries: Mathematical notations and functions, Algorithmic notations, control structures, Complexity of algorithms, asymptotic notations for complexity of algorithms. String Processing: Definition, Storing Stings, String as ADT,
	B.Sc (Computer science/ Electronics/ Mathematics)	S2CC1S	Data Structures	CO2	Learn the classification and characteristics of IntroArrays: Definition, Linear arrays, arrays as ADT, Representation of Linear Arrays in Memory, Traversing Linear arrays, Inserting and deleting, Sorting: Bubble sort, Insertion sort, Selection sort, Searching: Linear Search, Binary search, Multidimensional arrays, Matrices and Sparse matrices.duction and Overview
	B.Sc (Computer science/ Electronics/ Mathematics)	S2CC1S	Data Structures	CO3	Learn the characteristics of Linked list: Definition, Representation of Singly linked list in memory, Traversing a Singly linked list, Garbage collection, Header liked list, Circular linked list.: Definition, Linear arrays, arrays as ADT, Representation of Linear Arrays in Memory, Traversing Linear arrays, Inserting

					and deleting, Sorting: Bubble sort, Insertion sort, Selection sort, Searching: Linear Search, Binary search, Multidimensional arrays, Matrices and Sparse matrices.duction and Overview
	B.Sc (Computer science/ Electronics/ Mathematics)	S2CC1S	Data Structures	CO4	Stacks – Definition, Array representation of stacksStack as ADT, Arithmetic Expressions: Polish Notation, Application of Stacks, Recursion, Towers of Hanoi, recursive procedures by stack. Queues – Definition, Array representation of queue, Types of queue: Simple queue, Circular queue, Double ended queue , Priority queue
	B.Sc (Computer science/ Electronics/ Mathematics)	S2CC1S	Data Structures	CO5	Write down the characteristics of Graphs: Graph theory terminology, Sequential representation of Graphs: Adjacency matrix, traversing a Graph. Tree – Definitions, Binary trees, Representing binary trees in memory, Traversing binary trees
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C2S	Mathematics II	CO1	Specify the classification and characteristics of Differential calculus
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C2S	Mathematics II	CO2	Identify the characteristics of integral calculus
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C2S	Mathematics II	CO4	Understand in details with examples Group Theory
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C2S	Mathematics II	CO4	Write down in details with examples Differential Equations -I
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C2S	Electronic Circuits & Special Purpose devices	CO1	Deliberate in details with examples small signal amplifiers
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C2S	Electronic Circuits & Special Purpose devices	CO2	Deliberate the characteristics of Power and tuned amplifier
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C2S	Electronic Circuits & Special Purpose devices	CO3	Specify in depth Differential amplifier
	B.Sc (Computer science/	SE1C2S	Electronic Circuits & Special Purpose devices	CO4	Understand in depth Feedback and oscillators

	Electronics/ Mathematics)				
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C2S	Electronic Circuits & Special Purpose devices	CO5	Identify in depth special purpose devices
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C3S	Linear Integrated Circuits & C Programming	CO1	Learn the details of Integrted circuit and operational amplifier
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C3S	Linear Integrated Circuits & C Programming	CO2	Write down in depth Application of OP-AMP and IC 555 Timer
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C3S	Linear Integrated Circuits & C Programming	CO3	Write down in details with application, if applicable, Introduction to C programming
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C3S	Linear Integrated Circuits & C Programming	CO4	Specify in details with application, if applicable, Decision making, branching & looping
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C3S	Linear Integrated Circuits & C Programming	CO5	Learn the characteristics of structure and unions in C
	B.Sc (Computer science/ Electronics/ Mathematics)	SCSC3S	Database Management System and Software Engineering	CO1	Specify in details with application, if applicable, software and software engineering ,process model,agile development,extreme programming
	B.Sc (Computer science/ Electronics/ Mathematics)	SCSC3S	Database Management System and Software Engineering	CO2	Deliberate the classification and characteristics of Requirement modeling,data modeling,component level design
	B.Sc (Computer science/ Electronics/ Mathematics)	SCSC3S	Database Management System and Software Engineering	CO3	Specify in depth Quality concepts,software testing strategies.
	B.Sc (Computer science/ Electronics/ Mathematics)	SCSC3S	Database Management System and Software Engineering	CO4	Learn the details of Relational database concepts

	B.Sc (Computer science/ Electronics/ Mathematics)	SCSC3S	Database Management System and Software Engineering	CO5	learn the different SQL Commands
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C3S	Mathematics III	CO1	Sequences of Real Numbers
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C3S	Mathematics III	CO2	Series of Real Numbers
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C3S	Mathematics III	CO3	Differential Calculus
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C3S	Mathematics III	CO4	Learn the characteristics of cosets in group theory
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P3S	Linear Integrated Circuits & C Programming	CO1	Understand in details with examples integrated circuit and operational amplifiers
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P3S	Linear Integrated Circuits & C Programming	CO2	Specify in details with examples applications of operational amplifier and IC 555
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1P3S	Mathematics practicals III	CO3	Specify in depth series of real numbers
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1P3S	Mathematics practicals III	CO4	Specify in details with application, if applicable, differential calculus
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1P3S	Mathematics practicals III	CO1	Specify the characteristics of basics in group theory
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1P3S	Mathematics practicals III	CO2	Identify in details with application, if applicable, sequences of real numbers
	B.Sc (Computer science/	SM1C4S	Mathematics IV	CO1	Deliberate the characteristics of groups, normal subgroups

	Electronics/ Mathematics)				
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C4S	Mathematics IV	CO2	Write down the classification and characteristics of fourier series
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C4S	Mathematics IV	CO3	Understand in details with examples differential calculus
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C4S	Mathematics IV	CO4	Write down in depth laplace transforms
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C4S	Mathematics IV	CO5	Deliberate in depth differential equations-II
	B.Sc (Computer science/ Electronics/ Mathematics)	SE104S	Digital Electronics & Verilog	CO2	Understand in details with application, if applicable, Combinational logic circuits
	B.Sc (Computer science/ Electronics/ Mathematics)	SE104S	Digital Electronics & Verilog	CO3	Write down the details of sequential logic circuits
	B.Sc (Computer science/ Electronics/ Mathematics)	SE104S	Digital Electronics & Verilog	CO4	Deliberate the characteristics of Introduction to Verilog
	B.Sc (Computer science/ Electronics/ Mathematics)	SE104S	Digital Electronics & Verilog	CO5	Understand the classification of verilog modeling and the characteristics of Dataflow and behavioural modeling
	B.Sc (Computer science/ Electronics/ Mathematics)	SE104S	Digital Electronics & Verilog	CO1	Learn the characteristics of Boolean algebra and logic gates
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1P4S	Mathematics practicals IV	CO1	Learn in depth groups, normal subgroups
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1P4S	Mathematics practicals IV	CO2	Specify the details of differential equations

	B.Sc (Computer science/ Electronics/ Mathematics)	SM1P4S	Mathematics practicals IV	CO3	Understand the classification and characteristics of fourier series
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1P4S	Mathematics practicals IV	CO4	Learn in details with examples differential calculus
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1P4S	Mathematics practicals IV	CO5	Deliberate the characteristics of laplace transforms
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C51	Communication I	CO1	Learn in details with examples noise and transmission lines
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C51	Communication I	CO2	Write down the characteristics of analog modulation techniques
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C51	Communication I	CO3	Write down in details with examples radio receivers
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C51	Communication I	CO4	Deliberate in depth antennas
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C51	Communication I	CO5	Learn the details of television
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C52	Microprocessors & Instrumentation	CO1	Specify the characteristics of microprocessor and its classifications
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C52	Microprocessors & Instrumentation	CO2	Understand the detailed architecture and pin configuaration of 8085
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C52	Microprocessors & Instrumentation	CO3	Deliberate the characteristics of instruction set in 8085
	B.Sc (Computer science/	SE1C52	Microprocessors & Instrumentation	CO4	The detail study of stack operation, microprograming, IO operation and interfacing in 8085

	Electronics/ Mathematics)				
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C52	Microprocessors & Instrumentation	CO5	Understand the details of Measurment systems and Transducers
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C52	Microprocessors & Instrumentation	CO6	Deliberate the classification and characteristics of charectaristics of Biomedical instruments
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C51	Object Oriented Programming using JAVA	CO1	Understand in depth Introduction to java
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C51	Object Oriented Programming using JAVA	CO2	Learn in details with examples Classes, Arrays, Strings, Vectors and Interfaces
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C51	Object Oriented Programming using JAVA	CO3	Deliberate in details with examples Packages, and Multithreaded Programming
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C51	Object Oriented Programming using JAVA	CO4	Understand the details of Applet Programming, Graphics Programming, Input/Output
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C52	Visual Programming	CO5	Specify in details with application, if applicable, Interfacing other application,MDI,splitter windows,exception handling
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C52	Visual Programming	CO1	Understand in depth Visual Programming,Events,methods,properties,controls
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C52	Visual Programming	CO2	Understand in depth Data types,functions,procedures,arrays
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C52	Visual Programming	CO3	Identify in depth OOPs methods and properties,class modules,DLL's
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C52	Visual Programming	CO4	Write down the characteristics of Visual C++ programming,vc++ components,resources,MFC file handling

	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C51	Mathematics V	CO1	Understand the classification and characteristics of Rings,Integral Domain,Fields
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C51	Mathematics V	CO3	Learn in depth Numerical Methods
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C51	Mathematics V	CO2	Understand the characteristics of vector differential calculus
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C52	Mathematics VI	CO3	Specify the characteristics of calculus of variation
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C52	Mathematics VI	CO1	Specify the details of line and multiple integrals
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C52	Mathematics VI	CO2	Write down in depth Integral Theorems
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P51	Communication I	CO1	Introduction to noise and transmission line
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P51	Communication I	CO2	Analog modulation techniques
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P51	Communication I	CO3	Structural study of Radio recievers and its Applications
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P51	Communication I	CO4	Deliberating the functioning of Antennas and its charectaristics
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P51	Communication I	CO5	Identify in depth of Television
	B.Sc (Computer science/	SE1P52	Microprocessors & Instrumentation	CO1	Write down in depth Introduction to minmax kit 8085

	Electronics/ Mathematics)				
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P52	Microprocessors & Instrumentation	CO2	Understand in details with examples Write a assembly language programm to transfer a data from one location to another location
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P52	Microprocessors & Instrumentation	CO3	Write down in depth Write a assembly language programm to Perform Addition, subtraction, multiplication and division operation in 8085
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P52	Microprocessors & Instrumentation	CO4	Identify the characteristics of Program to find number of ones and zeroes, factorial of numbers
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1P52	Microprocessors & Instrumentation	CO5	Identify the classification and characteristics of Programm to interface 8085 with stepper motor and DAC
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C61	Communication II	CO1	Deliberate the details of Digital communication
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C61	Communication II	CO2	Specify in details with examples RADAR system
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C61	Communication II	CO3	Understand the classification and characteristics of Satellite communication
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C61	Communication II	CO4	Learn the characteristics of Optical fiber communication
	B.Sc (Computer science/ Electronics/ Mathematics)	SE1C61	Communication II	CO5	Learn the characteristics of Cellular communication and wireless LANs
	B.Sc (Computer science/ Electronics/ Mathematics)	SW1C62	Microcontrollers	CO1	Introduction to Microcontroller, stuctural study of 8051
	B.Sc (Computer science/ Electronics/ Mathematics)	SW1C62	Microcontrollers	CO2	Addressing mode, Instruction set and Interrupts in 8051

	B.Sc (Computer science/ Electronics/ Mathematics)	SW1C62	Microcontrollers	CO3	8051 programming in C
	B.Sc (Computer science/ Electronics/ Mathematics)	SW1C62	Microcontrollers	CO4	Configuring the Timer/Counter and interfacing of pheripheral devices with 8051
	B.Sc (Computer science/ Electronics/ Mathematics)	SW1C62	Microcontrollers	CO5	Introduction to PIC microcontrollers and its interfacing with LCD
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C61	Web Programming	CO1	Learn the characteristics and Fundamentals of web
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C61	Web Programming	CO2	Identify in details with application, if applicable, Java Script
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C61	Web Programming	CO3	Identify in depth Java Script and HTML documents
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C61	Web Programming	CO4	Learn in details with examples about CSS and XML
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C62	Computer Networks	CO4	Learn the characteristics of Internetworking
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C62	Computer Networks	CO2	Understand the characteristics of Packets, frames and error detection, hardware identification
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C62	Computer Networks	CO3	Understand in details with application, if applicable, Extending LANs, WAN technology and routing
	B.Sc (Computer science/ Electronics/ Mathematics)	SC2C62	Computer Networks	CO1	Learn in depth Introduction to computer networks,Transmission media,long distance communication
	B.Sc (Computer science/	SM1C61	Mathematics VII	CO1	Write down the characteristics of Linear Algebra

	Electronics/ Mathematics)				
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C61	Mathematics VII	CO2	Understand in details with application, if applicable, Orthogonal Curvilinear coordinates
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C61	Mathematics VII	CO3	Learn in details with application, if applicable, Partial Differential Equations
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C62	Mathematics VII	CO1	Understand the classification and characteristics of Complex Analysis
	B.Sc (Computer science/ Electronics/ Mathematics)	SM1C62	Mathematics VII	CO2	Understand in details with examples Numerical Methods-II