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Hutatma Rajguru Mahavidyalaya, Rajgurunagar

Department of Computer Science

A.Y.2020-21

Course Outcome (SEM- I)
F.Y.B.Sc.(Computer Science)

CS-111- Computer Science Paper-I - Problem Solving Using Computer And C Programming-I

By the end of this course students will be able to

CO1- Draw the flowchart and design an algorithm for a given problem by using operators.

CO2- Develop conditional and iterative statement to write C programs.

CO3- Understand user defined function to solved real time problems.

CO4- C Programs that use pointers to access arrays.

CO5-String Manipulation and functions..

CO6- Understand user defined data types including structures and union to solve problems.

CO7- Implement C Programs using pointers and to allocate memory using dynamic memory

management functions.

CO8- Exercise files concepts to show input and output of files in C.

Course Outcome (SEM- I)
F.Y.B.Sc. (Computer Science)

CS-112-Computer Science Paper-II–Database Management System

By the end of this course students will be able to

CO1- Understand terms related to database design and management.

CO2- Understand the objective of the data and information management.

CO3- Understand the database development process.

CO4- To understand the relational model and relational database management system.

CO5-Asses data and information requirements.

CO6-Conceptual data models.

CO7-Develop logical data models.

CO8-Evaluate the normality of logical data model and correct any anomalies.

CO9-Implement the relational database using RDBMS.

CO10-Retrive Data using SQL.

Course Outcome (SEM- I)
F.Y.B.Sc. (Computer Science)

CS-113-Computer Science Paper-III–Practical based on CS-111 and CS-112

By the end of this course students will be able to

CO1-Apply the specification of syntax rules for numerical constants and variables, data types.

CO2- To use Arithmetic, Conditional, Logical and Relational operators and other C construct.

CO3- Write a c program using decision making, branching, looping construct.

CO4- Apply and write C Program to implement 1-D and 2-D arrays.

CO5-Write programs using functions.

CO6-Apply basic concept of database system and application.

CO7-Use the basic of SQL and construct queries using SQL in database creation and interaction.

CO8-Design a commercial relational database system (MYSQL) by writing SQL using the system.

CO9-Analyze and select storage and recovery techniques of database management system.

ELC-111–Electronic Science Paper-I-Semiconductor Devices and Basic Electronic Systems

By the end of this course students will be able to

CO1- To analyze basic PN junctions in semi-conductor devices under various conditions

CO2- To design and analyze simple rectifiers and voltage regulators using diodes.

CO3- To describe the behavior of special purpose diodes.

CO4-Do design and analyze simple BJT and MOSFET circuits.

ELC-112–Electronic Science Paper-II-Principles of Digital Electronics

By the end of this course students will be able to

CO1- Convert different type of codes and number systems which are used in digital

communication and computer systems.

CO2- The ability to understand, analyze and design various combinational circuits

CO3- To compare different types of logic families which are the basic unit of different types of

logic gates on the basis of cost, capacity, performance and efficiency.

CO4- Design various logic gates and simplify Boolean equations.

CO5- Illustrate reduction of logical expressions using Boolean algebra and k-map method.

ELC-113–Electronic Science Paper-III-Electronics Practical

By the end of this course students will be able to

CO1- Distinguish between analog and digital systems.

CO2- Identify the various digital ICs and understand their operation

CO3- Apply Boolean laws and K-map to simplify the digital circuits

CO4- Ability to identify basic requirements for a design application and propose a cost effective
solution.

CO5-The ability to identify and prevent various hazards and timing problems in a digital design.

CO6- To develop skill to build, and troubleshoot digital circuits.

CO7-Acquire a basic knowledge in solid state electronics including diodes, MOSFET, BJT, and
operational amplifier.

CO8- Develop the ability to analyze and design analog electronic circuits using discrete
components.

CO9- Observe the amplitude and frequency responses of common amplification circuits

Course Outcome (SEM- I)
F.Y.B.Sc. (Computer Science)

MTC-111–Mathematics Paper-I-Matrix algebra

By the end of this course students will be able to

CO1 : perform matrix operations

CO2 : find the inverse of a matrix

CO3 : Obtain row reduction and echelon forms, vector equations

CO4 : obtain solution set of linear system

CO5 : find partitioned matrices, LU decomposition

CO6 : find linear independent vector, the matrix of linear transformation

CO7 :find dimension and rank

CO8: find the solutions of linear equations by sing cramer's rule ,volume and linear
transformations

MTC-112–Mathematics Paper-II-Discrete Mathematics

By the end of this course students will be able to

CO1 : Know the Propositional Logic, Logical Connectives, Propositional Equivalence.

CO2 : Predicate, *n*-Place and *n*-ary .

CO3 : Identify Universal Quantifier, Existential Quantifier.

CO4 : Know the Rules of Inference.

CO5 : Types of Relations, Representation of Relations

CO6 : Draw Hasse diagram.

CO7 : Distinguish between Complemented lattice, Bounded lattice and Distributive lattice.

CO8: Transitive Closure and Warshall's Algorithm

CO9: Understand Boolean function, Represent Boolean function.

CO10 : Understand the Inclusion-Exclusion Principle and Pigeonhole Principle.

CO11 : Use Permutation and combination.

CO12 : Use Recurrence Relations to find homogeneous solution, Solving Recurrence Relation, particular and total solution.

MTC-113–Mathematics Paper-III-Mathematics Practical

By the end of this course students will be able to

CO1 : Show equivalence by using maxima software

CO2 : Find adjacency and incidency matrix by using maxima software .

CO3 : Find Conjunctive Normal Form and Disjunctive Normal Form by using maxima software

CO4 : Simplify the boolean expressions by using maxima.

CO5: By using maxima software determine permutation and combination.

CO5 : Solve the recurrence relation by using maxima software.

CO6: Know the operation on matrices by using maxima software.

CO7 : Find Column space ,Null space ,Rank and Nullity of matrix by using maxima software .

C08 : Know the Propositional equivalence ,predicates and quantifiers ,Rules of inference

CO9 : Find transitive closure by Warshall's algorithm, know the properties of lattices ,and types of lattices, boolean variable and boolean function

CO10 : Know the Inclusion - Exclusion principle , Peigenhole principle , Permutation and combination

CO11 : Solve homogeneous and non homogeneous recurrence relation

CO12 : Characterization of invertible matrices ,method of solving linear system ,Row reduction and Echelon forms

CO13 : Introduction to Linear transformation , Matrix of linear transformation , properties of determinants, Cramers rule ,volume and linear transformation .

Course Outcome (SEM- I)
F.Y.B.Sc. (Computer Science)

CSST- 111-Statistics Paper I-Descriptive Statistics

By the end of this course students will be able to

CO1-Acquire basic concepts of Statistics

CO2-Compute various measures of central tendency

CO3-Identify the nature of data using moments, skewness and kurtosis measure

CO4-Analyze data pertaining to attributes and interpret the results.

CSST- 112-Statistics Paper II- Mathematical Statistics

By the end of this course students will be able to

CO1-Understand basic concepts of probability

CO2-Understand concept of conditional probability

CO3-Compute probabilities of various events

CO4-Understand concept of random variables , various discrete probability

distributions and its real life situations

CO5-Understand applications of standard discrete distributions.

CSST- 113-Statistics Paper III- Statistics Practical

By the end of this course students will be able to

CO1-Tabulate and make frequency distribution of the given data.

CO2-Use various graphical and diagrammatic techniques and interpret.

CO3-Compute various measures of central tendency, dispersion, Skewness and kurtosis.

CO4-Fitting of Binomial and Poisson distributions.

CO5-Compute the measures of attributes.

CO6-Understand the process of collection of data, its condensation and

representation for real life data.

CO7-Free statistical software's and use them for data analysis in project.

Course Outcome (SEM- II)
F.Y.B.Sc.(Computer Science)

CS-121- Computer Science Paper-I – Advanced C

By the end of this course students will be able to

CO1- Develop modular programs using control structures, pointers, strings and structures

CO2- Design and develop solutions to real world problems using advanced C.

CO3- Understand user defined data types including structures and union to solve problems.

CO4- Implement C Programs using pointers and to allocate memory using dynamic memory

  management functions.

CO5- Exercise files concepts to show input and output of files in C.

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

CS-122-Computer Science Paper-II–Relational Database Management System

By the end of this course students will be able to

CO1- Design E-R model for given requirements and convert the same into database tables.

CO2- Use database techniques such as SQL and PL/SQL.

CO3- Explain transaction management in relational database system.

CO4-Use advanced database programming concepts.

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

CS-113-Computer Science Paper-III–Practical based on CS-121 and CS-122

By the end of this course students will be able to

CO1-Develope program using strings.

CO2- Enabling effective usage of pointers and structures.

CO3- Develop a program using enumerated data type, functions, union and nested structures.

CO4- Implementing the files and command line arguments.

CO5- Designing the basic concept of database.

CO6-Implementing data integrity constraints in database.

CO7-Validating the various fundamental task to perform data modeling.

CO8-Implementing functions, packages, store procedures and user defined exceptions.

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

ELC-121– Electronic Science Paper-I -Instrumentation Systems

By the end of this course students will be able to

CO1- Working principle of resistive, inductive and capacitive transducers and their applications.

CO2- Understanding of thermo-couples piezoelectric and pyro-electric transducers and their applications.

CO3- Understanding of optical sensors and other sensors.

CO4-Understand Various physical parameters of sensors using industry and normal measurement applications.

CO5-Understand and analyze the IC741 operational amplifier and its characteristics.

CO6-Design the solution for linear and non-linear applications using IC741.

CO7-Desing the active filters and oscillators.

CO8-Identify the need of voltage regulators and timers.

ELC-122– Electronic Science Paper-II -Basics of Computer Organisation

By the end of this course students will be able to

CO1- Understand the theory and architecture with functionality of central processing unit.

CO2- Analyze sum of the design issues in terms of speed, technology, cost and performance.

CO3- Analyze the performance of various classes of memories, build large memories using small memories for better performance.

CO4- Implement and verify the truth tables of various flip-flops.

CO5- Design and implement the counters

CO6-Design and implement the sequential circuits such as registers and sequence generators.

CO7-Design and analyze Synchronous and Asynchronous sequential circuits using flip-flop.

CO8-Identify the basic forms of data movement in shift registers.

CO9-Explain how serial in / serial out (SISO), serial in/ Parallel out(SIPO) , parallel in/ serial out(PISO) and parallel in / parallel out(PIPO) shift registers are operate

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

ELC-123–Electronic Science Paper-III-Electronics Practical

By the end of this course students will be able to

CO1-Design and Construct flip-flops, counters and shift registers.

CO2- Simulate synchronous and asynchronous up down counters.

CO3- Use of OPAMP as comparator and its use in DC motor driving.

CO4-Use of OPAMP as comparator and its use in DC motor driving.

CO5- Build and test Inverting and non-inverting amplifier using OPAMP.

CO6-Build and test adder and subtractor circuits using OPAMP.

CO7-Study of read and write action of RAM (using IC 2112/4 or equivalent).

CO8-To study temperature sensor LM 35 2.

CO9-How to Use of LDR to control light intensity

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

MTC-121–Mathematics Paper-I-Linear Algebra

By the end of this course students will be able to

CO1 : understand vector spaces and subspaces.

CO2 : Find Null spaces ,column spaces.

CO3 : Find Linearly independent sets and basis for vector spaces.

CO4: Obtain eigenvalues and eigenvectors, characteristic equation.

CO5: perform diagonalizations of matrices, linear transformations.

CO6: find inner product, length and orthogonality, orthogonal sets,

       Orthogonal projections, Quadratic forms.

CO7 : Find affine Combinations, Affine independence convex combinations.

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

MTC-122–Mathematics Paper-II-Graph Theory

By the end of this course students will be able to

CO1: Understand basic terminologies and results of Graphs, Graphs models.

CO2 : Know the types of Graphs ,Types of the Diagraphs, Isomorphism of the Graphs

CO3 : Calculate Adjacency and Incidence Matrix of a Graph.

CO4 : Find Subgraphs, induced subgraphs of graph.

CO5 : Know the Elementary properties of the Connectedness.

CO6 : Perform vertex deletion and edge deletion operation on graph. Counting paths between vertices.

CO7 : Find the shortest path by Dijkstra's Algorithm.

CO8 : Understand various properties of connected graph, tree and Eulerian and Hamiltonian Graphs.

CO9 : Know the Konigsberg bridge problem , Fleury's Algorithm

CO10 : Find the shortest path by travelling salesman problem, Chinese Postman Problem .

CO11: Understand the concept of union, intersection, product and complement of graph.

CO12 : Understand basic terminologies, Properties and applications of trees

CO13 : Find the shortest path using Kruskal's Algorithm and Prim's Algorithm

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

MTC-122–Mathematics Paper-III-Mathematics Practical

By the end of this course students will be able to

CO1 : Find the Matrix representation and elementary result , isomorphism of graphs ,application of special types of graphs.

C02 : Shortest path problems ,Dijkstra's algorithm

CO3 : Find Eulerian path , Hamiltonian path , Travelling salesman problem ,Chinese Postman Problem .

CO4 : Examples based on the linearly independence and dependence ,Find basis and dimension of null space , Find the bases for the subspace spanned by the vectors

CO5 : Find the eigen values and eigen vectors of the matrix, Know the diagonalization process .

CO6 : Know the Gram Schmidt process , Orthogonality and symmetric matrices

CO7 : Know the Affine combination , Affine independence and convex combination.

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

CSST- 121-Statistics Paper I- Methods of applied Statistics

By the end of this course students will be able to

CO1-Understand the concept of bivariate data

CO2-Compute and interpret Correlation coefficient

CO3-Understand the concept of Regression analysis

CO4-Understand the concept of multiple regression, multiple and partial correlation.

CO5-Understand the components of time series and analyze time series data

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

CSST- 122-Statistics Paper II-Continuous probability distributions and testing of hypothesis

By the end of this course students will be able to

CO1 -Understand the concept of standard continuous probability distribution

CO2-Identify the situations where Uniform, Exponential and Parato and Normal distribution can be used

CO3-Compute probabilities corresponding to Uniform, Exponential and Parato and Normal distribution

CO4-Understand the concept of population and Sample, and various terms in testing of hypothesis.

CO5-Test the hypothesis related to means and proportions, Paired t- test, Chi-square test for goodness of fit and test for independence of attributes.

CO6-Understand the concept of simulation and random number generation.

CO7-Generate a random sample from Uniform, Exponential and Normal distribution.

Course Outcome (SEM- II)
F.Y.B.Sc. (Computer Science)

CSST- 123-Statistics Paper III- Statistics Practical

By the end of this course students will be able to

CO1- Understand the relationship between two variables using scatter plot.

CO2-Compute coefficient of correlation, coefficient of regression.

CO3- fitting of various regression models and to find best fit.

CO4- fitting of Normal distribution.

CO5-Understand the trend in time series and how to remove it.

CO6-Apply inferential methods for real data sets.

CO7-Generate model sample from given distributions.

CO8-Understand the importance and functions of different statistical organizations in the

development of nation.