



Department of Computer Science

Course Title: Computer Fundamentals

Course No: UCSMJT101

Duration of Exam: 3 hrs

Lectures: 4(Theory)+2(Practical)

Internal Assessment: 20

End-Semester Assessment: 80

Total Marks: 100

Learning Outcomes (LO):

- LO1. Learn about the beginning of computers starting from basics
- LO2. Develop problem solving skills coupled with top down design principles.
- LO3. Learn about the computer generation and its evolution.
- LO4. Develop the idea of architecture of a processor.
- LO5. Learn memories in a computer
- LO6. Learn conversions.
- LO7. Learn various tools of a windows operating system.
- LO8. Learn the editing, formatting and other techniques applied on a document.

Unit I

History of Computer, Generations and Types (Analog Digital and Hybrid), Characteristics, applications, Benefits and limitation of Computer: Introduction, Components: CPU, Memory: Primary (RAM, ROM, PROM, EPROM, EEPROM), Secondary (Hard Disk, Optical disk, blue ray disk, pen drives), Input Devices, Output Devices.

10HRS

Unit II

Operating system and its functions. Types of Operating System (single user, multi user, time sharing, multitasking, multiprocessing and distributed) Software and its types, Computer languages and its types, Compiler, Interpreter, Assembler, Linker Loader.

10 HRS

Unit III

Number System: Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number system. 1's Compliment and 2's Compliment. Conversion from one number system to another. Binary Arithmetic: Addition, subtraction, multiplication and division.

10 HRS

Unit IV

Word processing and its features, spell check, Grammar Check, Thesaurus, Auto complete, text formatting, borders & shading, inserting header, Footer and page numbers, Drop Cap, Bookmark, adding pictures, smart art, charts, Tables, find & replace feature, Page set up, printing, short cuts, Templates and Wizards, Mail Merge, Macros, exporting word documents

10 HRS

Unit V

Spreadsheet and its features, Entering information in worksheet, Editing cell entry, Moving and Copying data, deleting and insertion cells, rows, columns, custom numeric formats. Working with Formulas and Cell Referencing, Absolute and relative addressing. Functions, Creating Charts, Filters: Auto and Advanced, Creating and using Macros, import & export data Presentation software and its uses, Steps to create power point presentation, Power point views, Inserting pictures/images, Inserting Audio/ video clips, Animating slides etc.

10 HRS

Rajam
2/2/23



References:

1. P.K Sinha & Priti Sinha, Computer Fundamentals, BPB Publications.
2. Alexix Leon, Mathewes Leon, Fundamentals of Information Technology,
3. Suresh K. Basandra, Computer Systems Today, Galgotia Publications.
4. V. Rajaraman, Fundamentals of Computers,EEE.
5. Peter Nortan, Introduction to Computers, Tata Mcgraw Hill
6. Joyce Coax, Joan Preppernau, Steve Lambert and Curtis Frye,2007 Microsoft Office System step by step, Microsoft Press
7. R.K. Taxali, PC Software for Windows

B. Practicum(Credits:02)

Students should be given assignments on following :

1. To learn elementary techniques involving the use of various tools of MS-Word.
2. Learn how to use functions and other parameter in MS-Excel.
3. Learn how to operate a presentation using the tools of MS-Powerpoint.
4. Learns the Binary data conversions and its representation in the memory.
5. Learns the change from the manual to ICT enabled classrooms and how to be a part of it.

Department of Computer Science

Course Title: Fundamentals of computers

Course No: UCSMNT101

Duration of Exam: 3 hrs

Lectures: 4(Theory)+2(Practical)

Internal Assessment: 20

End-Semester Assessment: 80

Total Marks: 100

Programme: Undergraduate programme in Computer Science (FYUGP)

Semester: First

Course type: Minor Course

Course title: Fundamentals in Computers

Course code: UCSMNT101

Objectives of the Course: To make students enhance their computer skills.

Learning outcomes of the course:-

- LO1. Learn about the beginning of computers starting from basics
- LO2. Develop problem solving skills coupled with top down design principles.
- LO3. Learn about the computer generation and its evolution.
- LO4. Develop the idea of architecture of a processor.
- LO5. Learn memories in a computer
- LO6. Learn conversions.
- LO7. Learn various tools of a windows operating system.
- LO8. Learn the editing, formatting and other techniques applied on a document.

Total marks: - 75, Total credits: - 3, Total teaching hours: - 40 hrs.

Course Contents:

Unit I

Introduction to a Computer, Characteristics, applications, Benefits and limitation of Computer, Components: of computer, Getting familiar with Windows, making files, folder, saving and searching file, History of Computer, Generations and Types (Analog, Digital and Hybrid).

10HRS

Unit II

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Concept of Bit and Byte, size of memory Memory: Primary (RAM, ROM, PROM, EPROM, EEPROM), Secondary (Hard Disk, Optical disk, blue ray disk, pen drives), Input and Output Devices.

10 HRS

Unit III

Operating system and its functions. Types of Operating System (single user, multi user, time sharing, multitasking, multiprocessing and distributed) Software and its types

10 HRS

Unit IV

Word processing and its features, spell check, Grammar Check, Thesaurus, Auto complete, text formatting, borders & shading, inserting header, Footer and page numbers, Drop Cap, Bookmark, adding pictures, smart art, charts, Tables, find & replace feature, Page set up, printing, short cuts, Templates and Wizards, Mail Merge, Macros, exporting word documents

10 HRS

Unit V

Spreadsheet and its features, Entering information in worksheet, Editing cell entry, Moving and Copying data, deleting and insertion cells, rows, columns, custom numeric formats. Working with Formulas and Cell Referencing, Absolute and relative addressing. Functions, Creating Charts, Filters: Auto and Advanced, Creating and using Macros, import & export data Presentation software and its uses, Steps to create power point presentation, Power point views, Inserting pictures/images, Inserting Audio/ video clips, Animating slides etc.

10 HRS

References:

1. P.K Sinha & Priti Sinha, Computer Fundamentals, BPB Publications.
2. Alexix Leon, Mathewes Leon, Fundamentals of Information Technology,
3. Suresh K. Basandra, Computer Systems Today, Galgotia Publications.
4. V. Rajaraman, Fundamentals of Computers, EEE.
5. Peter Norton, Introduction to Computers, Tata McGraw Hill
6. Joyce Coax, Joan Preppernau, Steve Lambert and Curtis Frye, 2007 Microsoft Office System step by step, Microsoft Press
7. R.K. Taxali, PC Software for Windows

B. Practicum

Students should be given assignments on following :

1. To learn elementary techniques involving the use of various tools of MS-Word.
2. Learn how to use functions and other parameter in MS-Excel.
3. Learn how to operate a presentation using the tools of MS-Powerpoint.
4. Learns the Binary data conversions and its representation in the memory.
5. Learns the change from the manual to ICT enabled classrooms and how to be a part of it.

Department of Computer Science

Course Title: Computer Fundamentals-

Course No: UCSMDT101

Duration of Exam: 3 hrs

Lectures: 3(Theory)

Internal Assessment: 20

End-Semester Assessment: 80

Total Marks: 100

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Programme: Undergraduate programme in Computer Science (FYUGP)

Semester: First

Course type: Multidisciplinary Course

Course title: Fundamentals in Computers-1

Course code: UCSMDT101

Objectives of the Course: To enhance the computer skill among students.

Learning outcomes of the course:-

LO1. Learn about the beginning of computers starting from basics
LO2. Develop problem solving skills coupled with top down design principles.

LO3. Learn about the computer generation and its evolution.

LO4. Develop the idea of architecture of a processor.

LO5. Learn memories in a computer

LO6. Learn conversions.

LO7. Learn various tools of a windows operating system.

LO8. Learn the editing, formatting and other techniques applied on a document.

Total marks: - 75, Total credits: - 3, Total teaching hours: - 40 hrs.

Course Contents:

Unit I

Introduction to a Computer, Characteristics, applications, Benefits and limitation of Computer, Components: of computer, Getting familiar with Windows, making files, folder, saving and searching file, History of Computer, Generations and Types (Analog, Digital and Hybrid).

10HRS

Unit II

Concept of Bit and Byte, size of memory Memory: Primary (RAM, ROM, PROM, EPROM, EEPROM), Secondary (Hard Disk, Optical disk, blue ray disk, pen drives), Input and Output Devices.

10 HRS

Unit III

Operating system and its functions. Types of Operating System (single user, multi user, time sharing, multitasking, multiprocessing and distributed) Software and its types

10 HRS

Unit IV

Word processing and its features, spell check, Grammar Check, Thesaurus, Auto complete, text formatting, borders & shading, inserting header, Footer and page numbers, Drop Cap, Bookmark, adding pictures, smart art, charts, Tables, find & replace feature, Page set up, printing, short cuts, Templates and Wizards, Mail Merge, Macros, exporting word documents

10 HRS

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Department of Computer Science

Course Title: Fundamentals in Data analysis-1

Duration of Exam: 3 hrs

Internal Assessment: 20

End-Semester Assessment: 80

Course No: UCSMDT102

Lectures: 3(Theory)

Total Marks: 100

Programme: Undergraduate programme in Computer Science (FYUGP)

Semester: First

Course type: Multidisciplinary Course

Course title: Fundamentals in Data analysis-1

Course code: UCSMDT102

Objectives of the Course: To prepares students to gather, describe, and analyze data, and use advanced statistical tools to support decision making.

Learning outcomes of the course:-

1. This course prepares students to gather, describe, and analyze data, and use advanced statistical tools to support decision making.
2. To gather sufficient relevant data, conduct data analytics using scientific methods, and understand appropriate connections between quantitative analysis and real - world problems.
3. Understand the exact scopes and possible limitations of each method to provide constructive guidance in decision making.
4. To Use advanced techniques to conduct thorough and insightful analysis, and interpret the results correctly with detailed and useful information.
5. To make better decisions by using advanced techniques in data analytics.

UNIT I

Introduction of Data Science: Definition, benefits and uses of data science, Types of data-structured data, unstructured data, natural data, machine generated data, network data, audio, images and video streaming data

UNIT II

Data Definitions and Analysis Techniques: Elements, Variables, and Data Categorization, Levels of Measurement,

UNIT III

Descriptive Statistics: Measures of Central Tendency, Measures of Location of Dispersions, Error Estimation and Presentation (Standard Deviation, Variance), Introduction to Probability

UNIT IV

Practice and Analysis using MS-excel.

Department of Computer Science

Course Title: Programming in C

Duration of Exam: 3 hrs

Internal Assessment: 20

End-Semester Assessment: 80

Course No: UCSMJT201

Lectures: 4(Theory)+2(Practical)

Total Marks: 100

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Learning Outcomes (LO):

LO1. Learn to develop simple algorithms and flow charts to solve a problem.

LO2. Develop problem solving skills coupled with top down design principles.

LO3. Learn about the strategies of writing efficient and well-structured computer algorithms/programs.

LO4. Develop the skills for formulating iterative solutions to a problem.

LO5. Learn array processing algorithms coupled with iterative methods.

LO6. Learn text and string processing efficient algorithms.

LO7. Learn searching techniques and use of pointers.

LO8. Understand recursive techniques in programming.

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A.Theory(Credits:04)

UNIT-I

Problem solving, Algorithm, flow chart, coding, compilation and debugging History of C language, Structure of C program, compiling, and running a C program, Errors: syntax, linker and logical errors. Character set of C language, identifiers, keywords, data types, variables, constants, expressions. Operators: Mathematical, Unary, Binary, Relational and Logical operators, Operator precedence and associativity.

10 HRS

UNIT-II

Conditional Control statements: if statement, if else statement, nested if statement, if else if ladder and Ternary operator, Switch case statement, GOTO statement. Looping control Statements: While loop, Do while Loop, For loop, Nested loops etc.

10 HRS

UNIT-III

Functions: Definition, Prototypes, Types of Function, Scope, Call by Value. Storage classes in C, Preprocessor Directives, Macros.

10 HRS

UNIT-IV

Arrays (Single and double dimensional): Definition, Declaration, Accessing, Bound Checking, Passing to function. Strings: Definition, Declaration, Accessing, Passing to function, Standard Library functions.

10 HRS

UNIT-V

Arrays and Pointers: Accessing single dimensional array using Pointers, Accessing 2D array using Pointers, Passing arrays to functions with pointers. Structures & Unions: Declaring, Initializing and Accessing structures, Passing structures to functions, Array of Structures, Nested Structures, Unions initialization and accessing the members of a union.

10 HRS

References:

1. Gottfried. B, Theory and problems of Programming with C Language, Tata Me Graw Hill.
2. Kenneth. A, C Problem Solving and Programming, PHI.
3. Dan Gookin, C Programming, Wiley Dreamtech.
4. Y. P. Kanetkar, Understanding Pointers In C, BPB Publications.
5. Shubhnandan S. Jamwal; Programming in C; Pearson Publications; le, 2014

B. Practicum(Credits:02)

Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code, execute and test it. Students should be given assignments on following :

- a. To learn elementary techniques involving arithmetic operators and mathematical expressions, appropriate use of selection (if, switch, conditional operators) and control structures
- b. Learn how to use functions and parameter passing in functions, writing recursive programs.
2. Write Programs to learn the use of strings and string handling operations.
 - a. Problems which can effectively demonstrate use of Arrays. Structures and Union.
 - b. Write programs using pointers.
 - c. Write programs to use files for data input and output.

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d. Write programs to implement various algorithms

Department of Computer Science

Course Title: Programming in C

Course No: UCSMNT201

Duration of Exam: 3 hrs

Lectures: 4(Theory)+2(Practical)

Internal Assessment: 20

End-Semester Assessment: 80

Total Marks: 100

Learning Outcomes (LO):

- LO1. Learn to develop simple algorithms and flow charts to solve a problem.
- LO2. Develop problem solving skills coupled with top down design principles.
- LO3. Learn about the strategies of writing efficient and well-structured computer algorithms/programs.
- LO4. Develop the skills for formulating iterative solutions to a problem.
- LO5. Learn array processing algorithms coupled with iterative methods.
- LO6. Learn text and string processing efficient algorithms.
- LO7. Learn searching techniques and use of pointers.
- LO8. Understand recursive techniques in programming.

A.Theory(Credits:04)

UNIT-I

Problem solving, Algorithm, flow chart, coding, compilation and debugging History of C language, Structure of C program, compiling, and running a C program, Errors: syntax, linker and logical errors. Character set of C language, identifiers, keywords, data types, variables, constants, expressions. Operators: Mathematical, Unary, Binary, Relational and Logical operators, Operator precedence and associativity.

10 HRS

UNIT-II

Conditional Control statements: if statement, if else statement, nested if statement, if else if ladder and Ternary operator, Switch case statement, GOTO statement. Looping control Statements: While loop, Do while Loop, For loop, Nested loops etc.

10 HRS

UNIT-III

Functions: Definition, Prototypes, Types of Function, Scope, Call by Value. Storage classes in C, Preprocessor Directives, Macros.

10 HRS

UNIT-IV

Arrays (Single and double dimensional): Definition, Declaration, Accessing, Bound Checking, Passing to function. Strings: Definition, Declaration, Accessing, Passing to function, Standard Library functions.

10 HRS

UNIT-V

Arrays and Pointers: Accessing single dimensional array using Pointers, Accessing 2D array using Pointers, Passing arrays to functions with pointers. Structures & Unions: Declaring, Initializing and Accessing structures, Passing structures to functions, Array of Structures, Nested Structures, Unions initialization and accessing the members of a union.

10 HRS

References:

1. Gottfried. B, Theory and problems of Programming with C Language, Tata Me Graw Hill.

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2. Kenneth. A, C Problem Solving and Programming, PHI.
3. Dan Gookin, C Programming, Wiley Dreamtech.
4. Y. P. Kanetkar, Understanding Pointers In C, BPB Publications.
5. Shubhnandan S. Jamwal; Programming in C; Pearson Publications; 1e, 2014
6. H.M. Deitel and P.J. Deitel, C How to Program, PHI.

Practicum(Credits:02)

Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code, execute and test it. Students should be given assignments on following :

- a. To learn elementary techniques involving arithmetic operators and mathematical expressions, appropriate use of selection (if, switch, conditional operators) and control structures
- b. Learn how to use functions and parameter passing in functions, writing recursive programs.
2. Write Programs to learn the use of strings and string handling operations.
 - a. Problems which can effectively demonstrate use of Arrays. Structures and Union.
 - b. Write programs using pointers.
 - c. Write programs to use files for data input and output.
 - d. Write programs to implement various algorithms

Department of Computer Science

Course Title: Computer Fundamentals-2

Course No: UCSMDT202

Duration of Exam: 3 hrs

Lectures: 3(Theory)

Internal Assessment: 20

End-Semester Assessment: 80

Total Marks: 100

Programme: Undergraduate programme in Computer Science (FYUGP)

Semester: First

Course type: Multidisciplinary Course

Course title: Computer Fundamentals-2

Course code: UCSMDT202

Objectives of the Course: To prepares students to gather, describe, and analyze data, and use advanced statistical tools to support decisionmaking.

Learning outcomes of the course:-

1. This course prepares students to gather, describe, and analyze data, and use advanced statistical tools to support decisionmaking.
2. To gather sufficient relevant data, conduct data analytics using scientific methods, and understand appropriate connections between quantitative analysis and real - world problems.
3. Understand the exact scopes and possible limitations of each method to provide constructive guidance in decisionmaking.
4. To Use advanced techniques to conduct thorough and insightful analysis, and interpret the results correctly with detailed and useful information.
5. To make better decisions by using advanced techniques in data analytics.

Unit-I

Number System: Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number system. 1 's Compliment and 2's Compliment. Conversion from one number system to another. Binary Arithmetic: Addition, subtraction, multiplication and division.

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Unit-II

Network, Introduction, Types of network, topologies, Internet and intranet, LAN, MAN, WAN, WWW, browser, search engine, ISP, URL, Domain name, IP address

Unit-III

Communication: Basics of e-mail, getting an e-mail account, Sending and Receiving mails, document collaboration in email, Netiquettes

Unit-IV

Presentation software and its uses, Steps to create power point presentation, Power point views, Inserting pictures/images, Inserting Audio/ video clips, Animating slides etc. 10 HRS

References:

1. P.K Sinha & Priti Sinha, Computer Fundamentals, BPB Publications.
2. Alexix Leon, Mathewes Leon, Fundamentals of Information Technology,
3. Suresh K. Basandra, Computer Systems Today, Galgotia Publications.
4. V. Rajaraman, Fundamentals of Computers, EEE.
5. Peter Norton, Introduction to Computers, Tata Mcgraw Hill
6. Joyce Coax, Joan Preppernau, Steve Lambert and Curtis Frye, 2007 Microsoft Office System step by step, Microsoft Press
7. R.K. Taxali, PC Software for Windows

Department of Computer Science

Course Title: Fundamentals in Data analysis-2

Duration of Exam: 3 hrs

Internal Assessment: 20

End-Semester Assessment: 80

Course No: UCSMDT202

Lectures: 3(Theory)

Total Marks: 100

Programme: Undergraduate programme in Computer Science (FYUGP)

Semester: First

Course type: Multidisciplinary Course

Course title: Fundamentals in Data analysis-2

Course code: UCSMDT202

Objectives of the Course: To prepares students to gather, describe, and analyze data, and use advanced statistical tools to support decision making.

Learning outcomes of the course:-

1. This course prepares students to gather, describe, and analyze data, and use advanced statistical tools to support decision making.
2. To gather sufficient relevant data, conduct data analytics using scientific methods, and understand appropriate connections between quantitative analysis and real - world problems.
3. Understand the exact scopes and possible limitations of each method to provide constructive guidance in decision making.
4. To Use advanced techniques to conduct thorough and insightful analysis, and interpret the results correctly with detailed and useful information.
5. To make better decisions by using advanced techniques in data analytics.

UNIT I.

Basic Analysis Techniques: Statistical Hypothesis Generation and Testing, Chi-Square Test, T-Test, Analysis of Variance, Correlation Analysis.

UNIT II.

Data Analysis Techniques-I: Regression Analysis, Classification Techniques,

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Clustering Techniques (K-Means, K-Nearest Neighborhood)

UNIT III.

Data Analysis Techniques-II: Association Rules Analysis, Decision Tree.

UNIT IV.

Practice and Analysis using R.

Suggested Readings:

1. Statistical Methods:S.P.Gupta
2. Fundamentals of Mathematical Statistics:S.C Gupa,V.K.Kapoor
3. An introduction to Data Science:Jefrey S.Salty,Jeffrey M.Stanton
4. Microsoft Excel 2019:Data analysis and business modeling:Wayne Lwinston,PHI learning Pvt.Ltd

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