ST. TERESA'S COLLEGE, ERNAKULAM

(AUTONOMOUS)

Affiliated to Mahatma Gandhi University, Kottayam

CURRICULUM FOR BACHELOR'S PROGRAMME IN COMPUTER APPLICATIONS – CLOUD TECHNOLOGY AND INFORMATION SECURITY MANAGEMENT

Under Choice Based Credit & Semester System
& Outcome Based Education

(2018 Admissions)

BCAC- BCA (CLOUD TECHNOLOGY AND INFORMATION SECURITY MANAGEMENT)

PROGRAM SPECIFIC OUTCOMES

PSO1: Describe the concepts and organization of computer, network and data management systems incorporating security practices.

PSO2 : Integrate critical thinking, mathematical, statistical and collaborative learning skills to solve abstract to complex problems using high-level programming languages.

PSO3 : Identify the cloud computing concepts and technologies and apply these in a cloud platform.

PSO4 : Apply cyber security policies and strategies to protect and investigate malpractices against digital assets.

PSO5 : Develop solutions to real world problems by coalescing computer technologies and risk management principles in a multidisciplinary environment and communicate it effectively.

SEMESTER I

Course Code	Course Title	Credits	Course Type
EN1A01B18	Fine-tune your english	4	Common Course
BCA1B01B18	Computer fundamentals & organization	4	Core Course
BCA1B02B18	Programming in c	3	Core Course
BCA1B03B18	Introduction to unix and shell scripting	3	Core Course
BCA1BP01B18	Software lab- I	2	Core Course
ST1C01B18	Descriptive statistics	3	Complementary Course

SEMESTER I

COMMON COURSE

EN1A01B18 – FINE-TUNE YOUR ENGLISH

Credits: 4

Total Lecture Hours: 90

Course Outcomes:

CO1: Recognize the basics of English grammar.

CO2: Choose the appropriate word classes

CO3: Identify common errors in the use of English language in various contexts

CO4: Apply the rules of grammar to comprehend, speak, and write grammatically correct English

CO5: Compose materials for business communication

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1	1	1	2
CO2	1	1	1	1	1
CO3	2	1	1	1	2
CO4	2	1	1	1	2
CO5	3	1	1	1	3

Syllabus Content

Module 1 **(18 Hours)**

The Sentence and its Structure : How to Write Effective Sentences – Phrases:What are They? – The Noun Clauses – The Adverb Clause – "If All the Trees Were Bread and Cheese" – The Relative Clause – How Clauses are Conjoined

Module II **(18 Hours)**

Word-Classes and Related Topics**:** Understanding the Verb – Understanding Auxiliary Verbs – Understanding Adverbs – Understanding Pronouns – The Reflexive Pronoun – The Articles I – The Articles II – The Adjective – Phrasal Verbs – Mind your Prepositions

Module III **(18 Hours)**

To Err is Human: Concord – Errors – Common and Uncommon

Spelling and Pronunciation : Pronunciation: Some Tips – More Tips on Pronunciation – An awesome Mess? – Spelling Part II

Module IV **(18 Hours)**

Tense and Related Topics: 'Presentness' and Present Tenses – The 'Presentness' of a Past Action – Futurity in English – Passivisation, Interrogatives and Negatives : Negatives – How to Frame Questions – What's What? – The Question Tag

Module V **(18 Hours)**

Conversational English : Some time expressions – Is John There Please?, Miscellaneous and General Topics -: Reading - Letter Writing . In addition there will be an essay question on a general topic.

SEMESTER I

CORE COURSE

BCA1B01B18 – COMPUTER FUNDAMENTALS & ORGANIZATION

Credits: 4

Total Lecture Hours: 72

Course Outcomes:

CO1: Explain the basic organization and evolution of computers.

CO2: Compare the types of computer memory.

CO3: Distinguish between computer hardware and software.

CO4: Recognize the different logic gates and number system conversions in digital computing.

CO5: Design documents and powerpoint presentations using Microsoft Office tools.

CO6:Identify the types of networks and discuss internet and related technologies**.**

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	3	1	2	2	2
CO2	3	2	2	2	2
CO3	2	2	2	2	2
CO4	2	1	1	1	2
CO5	1	1	1	1	3
CO6	3	1	2	2	2

Syllabus Content:

Module I **(15 hrs)**

General features of a computer: Generation of computers, Personal computer, workstation, mainframe computer and supercomputers. Computer applications – data processing, information processing, commercial, office automation, industry and engineering, healthcare, education, graphics and multimedia.

Module II **(16 hrs)**

Computer organization: central processing Module, computer memory – primary memory and secondary memory. Secondary storage devices – Magnetic and optical media. Input and output Modules. OMR, OCR, MICR, scanner, mouse, modem.

Module III **(16 hrs)**

Computer hardware and software: Machine language and high level language. Application software, computer program, operating system. Computer virus, antivirus and computer security. Elements of MS DOS and Windows OS. Computer arithmetic, Binary, octal and hexadecimal number systems. Algorithm and flowcharts, illustrations, elements of a database and its applications. Basic Gates (Demorgan's theorems, duality theorem, NOR,NAND,XOR,XNOR gates), Boolean expressions and logic diagrams, Types of Boolean expressions

Module IV **(10 hrs)**

MS Office: Word processing and electronic spreadsheet. An overview of MS WORD, MS EXCEL and MS POWERPOINT

Module V **(15 hrs)**

Introduction to networking: Network of computers. Types of networks, LAN, Intranet and Internet. Internet applications. World wide web, E-mail, browsing and searching, search engines, multimedia applications.

SEMESTER I

CORE COURSE

BCA1B02B18– PROGRAMMING IN C

Credits: 3

Total Lecture Hours: 72

Course Outcomes:

CO1: Discuss computer based problem solving methods and explain programming environment.

CO2: Create programs using basic, advanced and file concepts in C.

CO3:Test and debug the programs.

CO4: Develop software applications using dynamic data structures**.**

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	2	2	1	1	2
CO2	2	3	2	2	3
CO3	2	2	2	2	3
CO4	2	3	2	2	3

Syllabus Content:

Module I **(10 hrs)**

Overview of Programming: Introduction to computer based problem solving, Program design and implementation issues- Flowcharts & Algorithms, Top down design & stepwise refinement, Programming environment – Machine language, assembly language, high level languages, Assemblers, Compilers, Interpreters.

Module II **(16 hrs)**

Fundamentals of C programming: Overview of C, Data Types, Constants & Variables, Operators & Expressions, Control constructs-if then, for, while, Arrays- single & multidimensional arrays, Functions-fundamentals – general form, function arguments, return value, Basic I/O-formatted and Unformatted I/O, Advanced features- Type modifiers and storage class specifiers for data types, Bit operators, ? operator, & operator, * operator, Type casting, type conversion.

Module III **(16 hrs)**

Advanced programming techniques: Control constructs- Do while, Switch statement, break and continue, exit() function, go to and label, Scope rules- Local & global variables, scope rules of functions, Functions-parameter passing, call by value and call by reference, calling functions with arrays, argc and argv, recursion- basic concepts, ex-towers of Hanoi.

Module IV (15 hrs)

Dynamic data structures in C: Pointers- The & and * operator, pointer expression, assignments, arithmetic, comparison, malloc vs calloc, arrays of pointers, pointers to pointers, initializing pointers, pointers to functions, function returning pointers, Structures- Basics, declaring, referencing structure elements, array of structures, passing structures to functions, structure pointers, arrays and structures within structures, Unions – Declaration, uses, enumerated data-types, typedef.

Module V **(15 hrs)**

Additional features: File Handling – The file pointer, file accessing functions, fopen, fclose, puc, getc, fprintf, C Preprocessor- #define, #include, #undef, Conditional compilation directives, C standard library and header files: Header files, string functions, mathematical functions, Date and Time functions.

SEMESTER I

CORE COURSE

BCA1B03B18– INTRODUCTION TO UNIX AND SHELL SCRIPTING

Credits: 3

Total Lecture Hours: 72

Course Outcomes:

CO1: Explain the history and features of UNIX OS, the common Unix Commands, & management of user accounts.

CO2: Associate Unix File management, file commands, file and directory permissions.

CO3: Collaborate Process Management in UNIX, Text Processing using VI Editor and communication with other users.

CO4:Operate shell scripting concepts, its parameters, functions and expression patterns**.**

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	2	2	2
CO2	2	2	2	2	2
CO3	2	2	2	2	3
CO4	2	2	2	2	2

Syllabus Content:

Module I **(15 hrs)**

Introduction to UNIX: History of UNIX - Unix Components/Architecture - Features of Unix – UNIX Environment and UNIX Structure - Posix and Single Unix specification - The login prompt - UNIX commands – Basic commands - echo, printf, ls, who, date,passwd, cal - Combining commands - Internal and external commands – type, man , more and other commands - theuser terminal, displaying its characteristics and setting characteristics - The root login - super user: sucommand - /etc/passwd and /etc/shadow files - Commands to add, modify and delete users.

Module II **(16 hrs)**

UNIX file system: UNIX File basics - File types and Categories – File Organization – Directories - home directory and the HOME variable - Reaching required files- the PATH variable - Relative and absolute pathnames. Directory commands – pwd, cd, mkdir, rmdircommands. The dot (.) and double dots (..) notations to represent parent directories - File related commands – cat, mv, rm, cp, wc - File inodes and the inode structure. File links – hard and soft links – Head and tail commands - Cut and paste commands - The sort command - Special files /dev/null and /dev/tty - File attributes and permissions - The umask and default file permissions - ls command - Changing file permissions: the relative and absolute permissions changing methods. Recursively changing file permissions. Directory permissions

Module III **(16 hrs)**

UNIX Process Management: The Structure of Processes: Process States and Transitions - Layout of system memory - Context of a process. Process Control: Process Creation – Signals – Process Termination – Invoking other programs – PID & PPID – Shell on a Shell.

Module IV **(10 hrs)**

Vi Editor: Introduction to Text Processing, Command & edit Mode, Invoking vi, deleting & inserting Line, Deleting & Replacing Character, Searching for Strings, Yanking, Running Shell Command Macros, Set Window, Set Auto Indent, Set No. Communicating with Other Users: who, mail, wall, send, mesg.

SEMESTER I

CORE COURSE

BCA1BP01B18– SOFTWARE LAB- I

Credits: 2

Total Lecture Hours: 4 hrs. per week

Course Outcomes:

CO1:Develop diverse programs for a single problem using basic and advanced programming techniques in C and Linux.

CO2:Validate programs by testing and debugging processes.

CO3:Employ Linux commands for basic and file processing operations.

CO4: Experiment shell scripts for simple applications.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	3	3	2	2	3
CO2	2	3	2	2	3
CO3	2	2	2	2	2
CO4	2	2	2	2	2

Syllabus Content:

I. Introduction to Linux (2 hrs. per week)

1. Execute 25 basic commands of UNIX.

2. Basics of functionality and modes of VI Editor.

3. Program that accepts user name and reports if user is logged in.

4. WAP which displays the following menu and executes the option selected by user: 1. ls 2. Pwd 3. ls –l 4. ps –fe

5. Program to print series.

6. Program to replaces all "*.txt" file names with "*.txt.old" in the current.

7. Program that echoes itself to stdout, but backwards.

8. WAP that takes a filename as input and checks if it is executable, if not make it executable.

9. WAP to take the string as command line argument and reverse it.

10. Program to create a data file in the given format and to perform some operations on the file, such as displaying, sorting, storing etc.

II. Programming in C (2 hrs. per week)

1. Programs to print different series

2. Programs using Arrays

3. Programs using Functions

4. Programs using String

5. Programs using Structures

6. Programs using Union

7. Programs using Pointers

8. Programs using Files

SEMESTER I

CORE COURSE

ST1C01B18– DESCRIPTIVE STATISTICS

Credits: 3

Total Lecture Hours: 72

Course Outcomes:

CO1: Describe the basic concepts of Statistics

CO2: Manage raw data by constructing tables and express them by diagrams and graphs.

CO3: Illustrate the fundamental characteristics of data

CO4: Evaluate the different types of Index numbers

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	1	2	1	1	2
CO2	1	2	1	1	2
CO3	1	2	1	1	1
CO4	1	2	1	1	1

Syllabus content :

Module I **(20 hours)**

Introduction to Statistics, Population and Sample, Collection of Data, Various methods of data collection, Census and Sampling. Methods of Sampling – Simple Random Sampling– stratified sampling – systematic sampling (Method only), Types of data – quantitative, qualitative, Classification and Tabulation, Frequency Table, Diagrammatic representation – Bar diagram, pie diagram; pictogram and cartogram.

Module II **(20 hours)**

Measures of Central Tendency – Mean; Median; Mode; Geometric Mean; Harmonic Mean and Properties, Partition values- Quartiles, Deciles, Percentiles, Absolute and Relative measures of Dispersion – Range, Quartile Deviation, Box Plot, Mean Deviation, Standard Deviation, Coefficient of Variation. Graphical representation – histogram, frequency polygon, frequency curve, ogives and stem and leaf chart.

Module III **(16 hours)**

Raw Moments, Central Moments, Inter Relationships (First Four Moments), Skewness – Measures – Pearson's, Bowley's and Moment Measure; Kurtosis- Measures of Kurtosis – Moment Measure, Measure based on partition values.

Module IV **(16 hours)**

Index Numbers – definition, limitations, uses, Simple Index Numbers; Weighted Index Numbers – Laspeyer's, Paasche's and Fisher's Index Numbers, Test of Index Numbers, Construction of Index Numbers, Cost of Living Index Numbers – Family Budget Method, Aggregate Expenditure Method.