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DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer science

Academic Year 2019-20 Batch onwards

Paper	Semester	Course title	Hours/ per week	Hours/per week		Max. Marks	Credits
				Theory	Practical		
DSC – 3A	I	Programming in C	7	4	3	80T+50P +20I	5
DSC – 3B	II	Programming in C++	7	4	3	80T+50P +20I	5
DSC – 3C	III	Data Structures using C++	7	4	3	80T+50P +20I	5
DSC – 3D	IV	Data Base Management Systems (DBMS)	7	4	3	80T+50P +20I	5
DSC - 3E	V	Programming in Java	7	4	3	80T+50P +20I	5
DSC – 3F	VI	Web Technologies	7	4	3	80T+50P +20I	5
AECC	II	Fundamentals of Computers	2	2	-	40U+10I	2
SEC-I	III	Python –I	2	2	-	40U+10I	2
SEC-II	III	Operating system-I	2	2	-	40U+10I	2
SEC-III	IV	Python –II	2	2	-	40U+10I	2
SEC-IV	IV	Operating system-II	2	2	-	40U+10I	2
Generic Elective	V	Information Technologies	4	4	-	80U+20I	4
Project/ Optional	VI	PHP with MY SQL	4	3	3	60T+50P +15I	4

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Course Outcomes:

I Year Semester I	Course: Programming in C	Code: BS106
After the completion of the course, Students will be able to CO1: Read, understand and trace the execution of programs written in C language. CO2: Write the C code for a given algorithm. CO3: Write programs that perform operations using derived data types. CO4: Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor CO5: Understand Opening/Closing a file, reading from and writing to a file.		

Course Outcomes:

I Year Semester II	Course: Programming in C++	Code: BS206
After the completion of the course, Students will be able to CO1: Understand the features of C++ supporting object-oriented programming CO2: Understand the relative merits of C++ as an object-oriented programming language CO3: Understand how to produce object-oriented software using C++ CO4: Understand how to apply the major object-oriented concepts to implement object-oriented programs in C++, encapsulation, inheritance and polymorphism CO5: Understand advanced features of C++ specifically stream I/O, templates and operator overloading		

Course Outcomes:

II Year Semester III	Course: Data Structures using C++	Code: BS306
After the completion of the course, Students will be able to CO1: Student will be able to analyse algorithms and algorithm correctness. CO2: Student will be introduced to different searching and sorting techniques. CO3: Ability to describe stack, queue and linked list operation. CO4: Student will be able to use stacks for evaluating postfix expressions, convert expressions from infix to postfix. CO5: Student will have knowledge of tree and graphs concepts.		

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Course Outcomes:

II Year Semester IV	Course : Data Base Management Systems (DBMS)	Code: BS406
After the completion of the course, Students will be able to CO1: To describe data models and schemas in DBMS CO2: To understand the features of database management systems and Relational database. CO3: To use SQL- the standard language of relational databases. CO4: To understand the functional dependencies and design of the database. CO5: To understand the concept of Transaction and Query processing.		

Course Outcomes:

III Year Semester V	Course: Programming in Java	Code: BS505
After successful completion of the course, the students are able to CO1: Use the syntax and semantics of java programming language and basic concepts of OOP. CO2: Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages. CO3: Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes. CO4: Design event driven GUI and web related applications which mimic the real word scenarios.		

Course Outcomes:

III Year Semester VI	Course: Web Technologies	Code: BS605
After the completion of the course, Students will be able to CO1: Describe the basic concepts for network implementation CO2: Learn the basic working scheme of the Internet and World Wide Web CO3: Understand fundamental tools and technologies for web design. CO4: Specify design rules in constructing web pages and sites. CO5: Create a table, link, list (ordered and unordered), CSS within a web page. CO6: Create a web page having form tools.		

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Course Outcomes:

I Year Semester II	**Course:** Fundamentals of Computers	**Code: BS107**
After the completion of the course, Students will be able to CO1: Understand model, components of computer and how it works. CO2: Understand the concept of input and output devices of Computers in detail. CO3: Understand RAM, ROM and their types in detail. CO4: Understand the concepts, structure, types and design of operating Systems. CO5: Recognize when to use each of the Microsoft Office programs to create professional and academic documents. CO6: Students will have a working knowledge of paragraph formatting, macro and mail merge in MS-Word. CO7: Students will have a working knowledge of basic functions and formulas in MS Excel. CO8: Create presentation by adding slides, applying animations, set times to slides, linking to another file		

Course Outcomes:

II Year Semester III	**Course:** Python-1	**Code: BS301**
After the completion of the course, Students will be able to CO1: Devise Python programs into functions with conditional and loops statements. CO2: Develop python-based application using OOPs concepts and apply file I/O operations. CO3: Apply string manipulation in python programs. CO4: Analyse the data by aggregations and grouping operations. CO5: Develop python application with visualization effects.		

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Course Outcomes:

II Year Semester III	**Course:** Operating System - I	**Code: BS302**

After the completion of the course, Students will be able to

CO1: Gain in depth knowledge about the structures of the operating system, different types of operating system and functions performed by modern operating system.
CO2: Identify and apply knowledge of various software and hardware synchronization tools for solving critical section problem in concurrent processes.
CO3: Understand and apply process management and memory management concepts to solve various hardware and software problems.
CO4: Identify various system protection and security mechanisms in order to design efficient software system by using various access control techniques.
CO5: Understand the concepts of deadlock in operating systems and employ the deadlock avoidance techniques in multiprogramming system.
CO6: Understand the various operating systems like UNIX and LINUX and also analyze and design various real time operating systems to automate real time problems in multidisciplinary environments.

Course Outcomes:

II Year Semester IV	**Course:** Python - 2	**Code: BS401**

After the completion of the course, Students will be able to
CO1: Devise Python programs into functions with conditional and loops statements.
CO2: Develop python-based application using OOPs concepts and apply file I/O operations.
CO3: Apply string manipulation in python programs.
CO4: Analyse the data by aggregations and grouping operations.
CO5: Develop python application with visualization effects.

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Course Outcomes:

II Year Semester IV	Course: Operating system - 2	Code: BS402

After the completion of the course, Students will be able to

CO1: Gain in depth knowledge about the structures of the operating system, different types of operating system and functions performed by modern operating system.

CO2: Identify and apply knowledge of various software and hardware synchronization tools for solving critical section problem in concurrent processes.

CO3: Understand and apply process management and memory management concepts to solve various hardware and software problems.

CO4: Identify various system protection and security mechanisms in order to design efficient software system by using various access control techniques.

CO5: Understand the concepts of deadlock in operating systems and employ the deadlock avoidance techniques in multiprogramming system.

CO6: Understand the various operating systems like UNIX and LINUX and also analyze and design various real time operating systems to automate real time problems in multidisciplinary environments.

Course Outcomes:

III Year Semester V	Course: Information Technologies	Code: BS501

After the completion of the course, Students will be able to

CO1: Understand model, components of computer and how it works.

CO2: Understand the concept of input and output devices of Computers in detail.

CO3: Understand RAM, ROM and their types in detail.

CO4: Understand the concepts, structure, types and design of operating Systems.

CO5: Recognize when to use each of the Microsoft Office programs to create professional and academic documents.

CO6: Students will have a working knowledge of paragraph formatting, macro and mail merge in MS-Word.

CO7: Students will have a working knowledge of basic functions and formulas in MS Excel.

CO8: Create presentation by adding slides, applying animations, set times to slides, linking to another file

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III Year Semester VI	Course: PHP with MY SQL	Code: BS601

After the completion of the course, Students will be able to

CO1:PHP is a widely used programming language which works on the principal of server-side scripting to produce dynamic Web pages.

CO2: To introduce how PHP can be combined with MySQL to integrate database functions into Websites.

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Academic Year 2019-20 Batch onwards

<u>COURSE OBJECTIVES</u>

COURSE: Programming in C

Course Objective:

COB1: To develop programming skills using the fundamentals and basics of C language.

COB2: To learn problem solving techniques.

COB3: To study the advantages of user defined data type which provides flexibility for application development

COB4: To study the basics of pre-processors available with C compiler.

COB5: To enable effective usage of arrays, structures, functions and pointers.

COURSE: Programming in C++

Course Objective:

COB1: To understand how C++ improves C with object-oriented features.

COB2: To learn how to write inline functions for efficiency and performance.

COB3: To learn the syntax and semantics of the C++ programming language.

COB4: To learn how to design C++ classes for code reuse

COB5: To learn how to implement copy constructors and class member functions.

COB6: To understand the concept of data abstraction and encapsulation.

COB7: To learn how to overload functions and operators in C++.

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COURSE: Data Structures through C++

Course Objective:

COB1: To impart the basic concepts of data structures and algorithms.

COB2: To understand concepts about searching and sorting techniques.

COB3: To understand the abstract data types stacks, queues, lists, trees and graphs.

COB4: To understanding about writing algorithms and step by step approach in solving problems with the help of fundamental data structures.

COB5: To understand prefix, infix, and postfix expression formats.

COB6: To use stacks to evaluate postfix expressions, convert expressions from infix to postfix.

COURSE: Database Management System

Course Objective:

COB1: Learn and practice data modelling using the entity-relationship and developing database designs.

COB2: Understand the use of Structured Query Language (SQL) and learn SQL syntax.

COB3: Apply normalization techniques to normalize the database

COB4: Understand the needs of database processing and learn techniques for controlling the consequences of concurrent data access.

COB5: Understand the needs of Database Design

COURSE: JAVA Programming

Course Objectives:

COB1: To understand the basic concepts and fundamentals of platform independent object-oriented language.

COB2: To demonstrate skills in writing programs using exception handling techniques and multithreading.

COB3: To understand streams and efficient user interface design techniques.

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COURSE: Web Technologies

Course Objective:

COB1: Navigate information on the Internet and search for, identify, download, decompress and view useful information using web browsers, search engines, FTP, gopher, telnet and other software.

COB2: Communicate with others asynchronously using electronic mail, attachments, newsgroups and list servers, and in real time using chat, talk, video conferencing and other software.

COB3: Insert a graphic within a web page.

COB4: Create a table, link within a web page.

COB5: Insert heading levels within a web page.

COB6: Insert ordered and unordered lists within a web page.

COB7: Use cascading style sheets. 8. Create a web page.

COURSE: Fundamentals of Computers

Course Objective:

COB1: Understand the meaning and basic components of a computer system.

COB2: To learn generation, classification and application of computers.

COB3: Knowledge of computer equipment, including both hardware and software.

COB4: To learn input devices and output devices in detail.

COB5: To learn memory and its types in detail.

COB6: Knowledge of number system, number arithmetic, ASCII & EBCDEC character set

COB7: Knowledge of Software, its types and application package.

COB8: Use word-processing software (MS-Word), spreadsheet software (MS-Excel) and presentation software (MS-PowerPoint) to solve basic information systems problems.

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COURSE: Python -1

Course Objective:

COB1: Represent compound data in Python data structures – lists, tuples, and dictionaries.

COB2: Write Python programs with conditionals, loops and functions.

COB3: Handle input/output operations in files.

COB4: Use the aggregations and group operations for data analysis in python.

COB5: Describe visualization methods in python

COURSE: Operating System -1

Course Objective:

COB1: To Classify Linux kernel mode with user mode and differentiate Kernel structuring methods.

COB2: To Describe Process management and Thread management strategies.

COB3: To Demonstrate internal file system structure with device drivers and file operations using system calls.

COB4: To Summarize the principles of Virtual memory as applied to paging & caching techniques.

COB5: To construct shell scripts with different programming syntax

COB6: To prepare for various OS case studies.

COURSE: Python -2

Course Objective:

COB1: Represent compound data in Python data structures – lists, tuples, and dictionaries.

COB2: Write Python programs with conditionals, loops and functions.

COB3: Handle input/output operations in files.

COB4: Use the aggregations and group operations for data analysis in python.

COB5: Describe visualization methods in python

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COURSE: Operating System -2

Course Objective:

COB1: To Classify Linux kernel mode with user mode and differentiate Kernel structuring methods.

COB2: To Describe Process management and Thread management strategies.

COB3: To Demonstrate internal file system structure with device drivers and file operations using system calls.

COB4: To Summarize the principles of Virtual memory as applied to paging & caching techniques.

COB5: To construct shell scripts with different programming syntax

COB6: To prepare for various OS case studies.

COURSE: Information Technologies

Course Objective:

COB1: Understand the meaning and basic components of a computer system.

COB2: To learn generation, classification and application of computers.

COB3: Knowledge of computer equipment, including both hardware and software.

COB4: To learn input devices and output devices in detail.

COB5: To learn memory and its types in detail.

COB6: Knowledge of number system, number arithmetic, ASCII & EBCDEC character set

COB7: Knowledge of Software, its types and application package.

COB8: Use word-processing software (MS-Word), spreadsheet software (MS-Excel) and presentation software (MS-PowerPoint) to solve basic information systems problems.

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COURSE: PHP with MY SQL

Course Objective:

COB1: To implement PHP script using Decisions and Loops

COB2: To develop PHP applications using Strings, Arrays and Functions

COB3: To design object-oriented programming (OOP) principles for PHP and use HTML form elements that work with any server-side language.

COB4: To display and insert data using PHP and MY SQL.