## Bachelor of Computer Applications - Course Structure under CBCS.
(For the Candidates admitted from the Academic year 2016-2017 onwards)

Updated on 12.07.2018

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<th>Part</th>
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<th>Title</th>
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<td>Major Based Elective - III Mini Project ( Students to do it in their respective Colleges) / Linux Lab/ Dot Net Lab</td>
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**List of Allied Courses**

**Allied Course I**

**Mathematics**

**Allied Course II**

**Accounting and OB**
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<td>Value Education</td>
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<td>Soft Skill Development</td>
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<td>Gender Studies</td>
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<td>Extension Activities</td>
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* for those who studied Tamil upto 10<sup>th</sup> +2 (Regular Stream)
+ Syllabus for other Languages should be on par with Tamil at degree level
# those who studied Tamil upto 10<sup>th</sup> +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV
** Extension Activities shall be out side instruction hours
*** Examination hours : (Theory – 2 Hours and Practical – 2 Hours)

Non Major Elective I & II – for those who studied Tamil under Part I

a) Basic Tamil I & II for other language students
b) Special Tamil I & II for those who studied Tamil upto 10<sup>th</sup> or +2 but opt for other languages in degree programme

**Note:**

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<th>External Marks</th>
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<td>2. Practical</td>
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3. Separate passing minimum is prescribed for Internal and External marks

**FOR THEORY**

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]
The passing minimum for University Examinations shall be 40% out of 75 marks [i.e. 30 marks]

**FOR PRACTICAL**

The passing minimum for CIA shall be 40% out of 40 marks [i.e. 16 marks]
The passing minimum for University Examinations shall be 40% out of 60 marks [i.e. 24 marks]
CORE COURSE – I

PROGRAMMING IN C

**Objective:** To impart basic knowledge of Programming Skills in C language.

**Unit I**

Introduction to C – Constants, Variables, Data types – Operator and Expressions.

**Unit II**


**Unit III**

Arrays – Character Arrays and Strings – User defined Functions.

**Unit IV**

Structures and unions – Pointers – File management in C.

**Unit V**


**Text Book:**


**Reference Book:**


*****
CORE PRACTICAL I

PROGRAMMING IN C (P)

Objective: To Impart Practical Training in C Programming Language

1. Write a Program to convert temperature from degree Centigrade to Fahrenheit.
2. Write a Program to find whether given number is Even or Odd.
3. Write a Program to find greatest of Three numbers.
4. Write a Program to using switch statement to display Monday to Sunday.
5. Write a Program to display first Ten Natural Numbers and their sum.
6. Write a Program to find Multiplication of Two Matrices.
7. Write a Program to find the maximum number in Array using pointer.
8. Write a Program to reverse a number using pointer.
9. Write a Program to solve Quadratic Equation using functions.
10. Write a Program to find factorial of a number using Recursion.
11. Write a Program to show Call by Value and Call by Reference.
12. Write a Program to add two numbers using pointer.
13. Write a Program to create a file containing Student Details.
14. Write a Program to update the details of student’s information using various file modes.

*****
CORE COURSE II

PROGRAMMING IN C++

Objective: To impart basic knowledge of Programming Skills in C++ language.

Unit I

Principles of Object-Oriented Programming – Beginning with C++ – Tokens, Expressions and Control Structures – Functions in C++

Unit II

Classes and Objects – Constructors and Destructors – New Operator – Operator Overloading and Type Conversions

Unit III

Inheritance: Extending Classes – Pointers – Virtual Functions and Polymorphism

Unit IV

Managing Console I/O Operations – Working with Files – Templates – Exception Handling

Unit V

Standard Template Library – Manipulating Strings – Object Oriented Systems Development

Text Book


Reference Books


*****
CORE PRACTICAL II

PROGRAMMING IN C++ (P)

Objective : To Impart Practical Training in C++ Programming Language

1. Classes

Write a Program using a class to represent a Bank Account with Data Members – Name of depositor, Account Number, Type of Account and Balance and Member Functions – Deposit Amount – Withdrawal Amount. Show name and balance. Check the program with own data.

2. Constructor & Destructor

Write a program to read an integer and find the sum of all the digits until it reduces to a single digit using constructor, destructor and default constructor.

3. Default & Reference Argument

Write a program using function overloading to read two matrices of different data types such as integers and floating point numbers. Find out the sum of the above matrices separately and display the total sum of these arrays individually.

4. Operator Overloading

a. Addition of Two Complex Numbers.
b. Matrix Multiplication

5. Inheritance

Prepare Pay Roll of an employee using Inheritance.

6. Pointers

a. Write a Program to find the number of vowels in a given text
b. Write a Program to check for Palindrome

7. Files

Prepare Students Mark List in a file with Student Number, Mark in four subjects and Mark Total. Write a program to arrange these records in the ascending order of Mark Total and write them in the same file overwriting the earlier records.

8. Exception Handling

Prepare Electricity Bill for customers generating and handling any two Exceptions.

*****
CORE COURSE III
PROGRAMMING IN JAVA

Objective: To understand the basic concepts of Object Oriented Programming with Java language

Unit I

Unit II

Unit III
Java as an OOP Language : Defining Classes – Modifiers – Packages - Interfaces

Unit IV

Unit V

Text Book :

Reference Book:

*****
CORE PRACTICAL III

PROGRAMMING IN JAVA (P)

Objective: To Impart Practical Training in Java Programming Language

1. Write a program to sort the given numbers using arrays.
2. Write a program to implement the FIND and REPLACE operations in the given multiple text.
3. Write a program to implement a calculator to perform basic arithmetic Operations.
4. Write a program to find the area of a rectangle using constructor.
5. Write a program to find the student’s percentage and grade using command line arguments.
6. Write a program to draw circle or triangle or square using polymorphism and inheritance.
7. Implement multiple inheritance concepts in java using interface, you can choose your own example of a company or education institution or a general concept which requires the use of interface to solve a particular problems.
8. Write a program to create threads and assign priorities to them.
9. Write a program to develop an applet to play multiple audio clips using multithreading.
10. Write a program to create a window with three check boxes called red, green and blue. The applet should change the colors according to the selection.

*****
NON MAJOR ELECTIVE I

WORKING PRINCIPLES OF INTERNET

Objective: To understand the working principles of Internet

Unit I
What is Internet? The Internet’s underlying Architecture

Unit II
Connecting to the Internet – Communicating on the Internet

Unit III
How the World Wide Web works. Common Internet tools

Unit IV
Multimedia on the Internet – Intranet and shopping on the Internet

Unit V
Safeguarding the Internet

Text Book:

Reference Book:
1. Internet for Everyone, Alexis Leon, S. Chand (G/L) & Company Ltd; Second Edition 2012.

*****
Objective: To provide the basic concepts of the Database Systems including Data Models, Storage Structure, Normalization and SQL

Unit I
Introduction: Database-System Applications- Purpose of Database Systems - View of Data --Database Languages - Relational Databases - Database Design -Object-Based and Semi structured Databases - Data Storage and Querying Transaction Management -Data Mining and Analysis - Database Architecture - Database Users and Administrators - History of Database Systems.

Unit II

Unit III
SQL: Data Definition - Basic Structure of SQL Queries - Set Operations - Aggregate Functions - Null Values - Nested Subqueries - Complex Queries - Views - Modification of the Database - Joined Relations - SQL Data Types and Schemas - Integrity Constraints - Authorization - Embedded SQL

Unit IV

Unit V

Text Book:

Reference Books:

*****
Objective: To Impart Practical Training in MySQL

1. Create a table and perform the following basic MySQL operations
   
a) Set the primary key  
b) Alter the structure of the table  
c) Insert values  
d) Delete values based on constraints  
e) Display values using various forms of select clause  
f) Drop the table

2. Develop MySQL queries to implement the following set operations
   
a) Union  
b) Union all  
c) Intersect  
d) Intersect all

3. Develop MySQL queries to implement the following aggregate functions
   
a) Sum  
b) Count  
c) Average  
d) Maximum  
e) Minimum  
f) Group by clause & having clause

4. Develop MySQL queries to implement following join operations
   
a) Natural join  
b) Inner join  
c) Outer join-left outer, right outer, full outer  
d) Using join conditions

5. Develop MySQL queries to implement nested subqueries
   
a) Set membership (int, not int)  
b) Set comparison (some, all)  
c) Empty relation (exists, not exists)  
d) Check for existence of Duplicate tuples(unique, not unique)

6. Develop MySQL queries to create a views and expand it.
7. Develop MySQL queries to implement
   
a) String operations using %
   b) String operations using '_'
   c) Sort the element using asc, desc
      [*create necessary relations with requires attribute]

8. Consider the following database for a banking enterprise

   BRANCH(branch-name:string, branch-city:string, assets:real)
   ACCOUNT(accno:int, branch-name:string, balance:real)
   DEPOSITOR(customer-name:string, accno:int)
   CUSTOMER(customer-name:string, customer-street:string, customer-city:string)
   LOAN(loan-number:int, branch-name:string, amount:real)
   BORROWER(customer-name:string, loan-number:int)

   i. Create the above tables by properly specifying the primary keys and the foreign keys
   ii. Enter at least five tuples for each relation
   iii. Find all the customers who have at least two accounts at the Main branch.
   iv. Find all the customers who have an account at all the branches located in a specific city.
   v. Demonstrate how you delete all account tuples at every branch located in a specific city.
   vi. Generate suitable reports.
   vii. Create suitable front end for querying and displaying the results.

   *****
NON MAJOR ELECTIVE II

FUNDAMENTALS OF INFORMATION TECHNOLOGY

Objective: To Provide the Basic Concepts in Information Technology

Unit I


Unit II

CPU and Memory - Secondary Story Devices - Input Devices - Output Devices.

Unit III

Introduction to Computer Software - Programming Language - Operating Systems - Introduction to Database Management System.

Unit IV

Computer Networks - WWW and Internet - Email - Web Design

Unit V


Text Book:


Reference Book:

1. Fundamentals of Computers and Information Technology, M.N Doja, 2005

*****
CORE COURSE V
DATA STRUCTURES AND ALGORITHMS

Objective: To understand the concepts of Data Structures and Algorithms.

Unit I

Unit II

Unit III

Unit IV

Unit V
Back tracking: The General Method – The 8-Queens Problem – Sum of Subsets – Graph Coloring.

Text Books:

Reference Book:
1. Data Structures – Seymour Lipschutz, Tata Mcgraw Hill, Schaum’s Outline Series, 2014
CORE COURSE VI
OPERATING SYSTEMS

Objective: To provide the Fundamental Concepts in an Operating System.

Unit I Introducing Operating Systems


Unit II Memory Management


Unit III Processor Management


Unit IV Device Management


Unit V File Management

The File Manager - Interacting with the File Manager - File Organization - Physical Storage Allocation - Access Methods - Levels in a File Management System - Access Control Verification Module

Text Book:

Reference Book:

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CORE COURSE VII
DIGITAL COMPUTER FUNDAMENTALS

Objective: To understand the concepts in Digital Computer System

Unit I

Number Systems and Codes: Binary Number System – Binary to Decimal Conversion – Decimal to Binary Conversion – Binary Addition – Binary Subtraction – Binary Multiplication and Division – Octal Numbers – Hexadecimal Numbers – Binary Codes – Error Detecting Codes – Error Correcting Codes.

Unit II


Unit III


Unit IV


Unit V


Text Book:

Reference Book:

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CORE PRACTICAL V

COMPUTER GRAPHICS AND ANIMATION (P)

Objective: To Impart Practical Training in Computer Graphics and Animation related problems

Photoshop:

1. (i) Handling different file formats and interchanging them, changing the resolution, color, grayscales and size of the images
   (ii) Using brushes and creating multicolor real life images

2. Cropping, rotating, overlapping, superimposing, pasting photos on a page

3. Creation of a single image from selected portions of many

4. Developing a commercial brochure with background tints

5. Creating an image with multi-layers of images and texts.

6. Applying masks and filtering on images

Flash:

Develop an image(s) and do the following.

1. Basic Drawing and Painting

2. Working with Strokes and Fills

3. Creating Custom Colors, Gradients, and Line Styles Transforming and Grouping Objects

4. Creating and Managing Multiple Layers

5. Converting Text into Shapes

6. Animate using motion, shape, Tweening, and actions

*****
MAJOR BASED ELECTIVE I (A)

COMPUTER GRAPHICS

Objective: To understand the concepts on basic Graphical Techniques, Raster Graphics, Two Dimensional and Three Dimensional Graphics

Unit I


Unit II


Unit III


Unit IV


Unit V


Text Book:


Reference Book:


*****
MAJOR BASED ELECTIVE I (B)
SOFTWARE ENGINEERING

Objective: To provide knowledge of the various phases of Software Engineering Process

Unit I


Unit II


Unit III


Unit IV

Software Coding - Introduction to Software Measurement and Metrics - Software Configuration - Project Management Introduction - Introduction to Software Testing - Software Maintenance

Unit V


Textbook:

Reference Books:

*****
MAJOR BASED ELECTIVE I (C)

SOFTWARE TESTING

Objective: To understand the basics of Software Testing

Unit I


Unit II


Unit III


Unit IV


Unit V


Text Book


Reference Book


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CORE COURSE VIII
COMPUTER NETWORKS

Objective: To understand the Design and Organization of Computer Networks

Unit I

Unit II
DataLinkLayer:Error Deduction and Correction : Introduction- Cyclic codes- Forward error correction, Data link Control: Datalink layer protocols- Media Access Control: Random Access- Controlled Access, Wireless Networks: IEEE 802.11- Bluetooth-Cellular Telephone- Satellite network- Connection devices,

Unit III

Unit IV

Unit V
Application Layers : Client Server Programming - Word Wide Web & HTTP - FTP - Email - DNS

Text Book:

Reference Book:

*****
CORE COURSE IX

PROGRAMMING IN PHP

Objective: To understand the Concepts of PHP and Ajax.

Unit I

Essentials of PHP - Operators and Flow Control - Strings and Arrays.

Unit II

Creating Functions - Reading Data in Web Pages - PHP Browser - Handling Power.

Unit III

Object-Oriented Programming – Advanced Object-Oriented Programming.

Unit IV

File Handling – Working with Databases – Sessions, Cookies, and FTP

Unit V


Text Book:


Reference Books:


*****
CORE PRACTICAL VI

PROGRAMMING IN PHP (P)

Objective : To Impart Practical Training in PHP Programming Language

1. Write a program to find the factorial of a number.
2. Write a program using Conditional Statements.
3. Write a program to find the maximum value in a given multi dimensional array.
4. Write a program to find the GCD of two numbers using user-defined functions.
5. Design a simple web page to generate multiplication table for a given number.
6. Design a web page that should compute one’s age on a given date.
7. Write a program to download a file from the server.
8. Write a program to store the current date and time in a COOKIE and display the ‘Last Visited’ date and time on the web page.
9. Write a program to store page views count in SESSION, to increment the count on each refresh and to show the count on web page.
10. Write a program to draw the human face.
11. Write a program to design a simple calculator.
12. Design an authentication web page in PHP with MySQL to check username and password.

*****
MAJOR BASED ELECTIVE II (A)

CLOUD COMPUTING

Objective: To understand the concepts in Cloud Computing and its Security

Unit I


Unit II


Unit III

Data Storage and Cloud Computing: Data Storage – Cloud Storage – Cloud Storage from LANs to WANs – Cloud Computing Services: Cloud Services – Cloud Computing at Work

Unit IV


Unit V

Cloud Applications – Moving Applications to the Cloud – Microsoft Cloud Services – Google Cloud Applications – Amazon Cloud Services – Cloud Applications

Text Book


Reference Book


*****
MAJOR BASED ELECTIVE II (B)

BUSINESS PROCESS OUTSOURCING

Objective : To provide the Knowledge about the working environment of Business Process Outsourcing Industry

UNIT I

Search For Competitiveness - Need For Outsourcing - BPOs: Beyond Call Centres

UNIT II

Transition Management - BPO Business Models - BPO Governance

UNIT III

Legal Issues in BPO Contracts - BPO—Regulatory Issues - Service Supplier Selection

UNIT IV

Service Level Agreement - BPO Legal Contract - BPO to KPO: Up In The Value Chain

UNIT V

HR Challenges in BPO Industry - Performance Evaluation In BPO – BPO — Prerequisites And Precautions - Service Quality Issues in BPO

Text Book


Reference Book:


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MAJOR BASED ELECTIVE II (C)

MOBILE COMPUTING

Objective: To understand the Architectures, Synchronization Process and Operating Systems in Mobile Computing

Unit I


Unit II


Unit III


Unit IV


Unit V

Mobile Operating Systems : Operating System - Palm OS - Windows CE - Symbian OS - Linux for Mobile Devices

Text Book:


Reference Book:


*****
MAJOR BASED ELECTIVE III (A)

MINI PROJECT

Students to do Mini Project in their respective Colleges. The **objective** of the Mini Project is to enable the students to work in convenient groups of not more than Four members on a project with a Latest Software.

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MAJOR BASED ELECTIVE III (B)

LINUX (P)

Objective: To Impart Practical Training in Linux Operating System

Write Shell Programs for the following using the Linux Operating System

1. Check whether the given number is prime or not.
2. Find the biggest of given two numbers
3. Write a program to check the given number is odd or even
4. Write a program to generate Fibonacci Series
5. Write a program to prepare electric bill for domestic consumers.

   For first 100 units - Rs.0.75/ unit
   For next 100 units - Rs.1.50/unit
   Above 200 units - Rs.3.00/unit.

Prepare the bill for the following format:
Customer No.  ---------
Customer Name ---------
Pre.Reading ---------
Cur.Reading ---------
Units Consumed ---------
Charge ---------

Signature

6. Write a program to display the result PASS or FAIL using the information given below:
   Student Name, Student Reg. No., Mark1, Mark2, Mark3, Mark4. The minimum pass for each subject is 50.
7. Write a program to prepare a Payroll with Basic Pay, DA, Allowances, PF and Gross Pay.
8. Using Case Statement, write a program to check the files ending with vowels.
9. Write a single program to sort the names and numbers in alphabetical, ascending and descending order.
10. Write a menu driven program to print Bio-data for five persons.

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MAJOR BASED ELECTIVE III (C)

DOT NET (P)

Objective: To Impart Practical Training in Dot Net Programming Language

1. Design ASP.Net web form using Html Server Controls to enter job seeker’s details.
2. Create an ASP.Net web form using Web control to enter E-Mail registration form.
3. Apply appropriate validation techniques in E-Mail registration form using validation controls.
4. Write an ASP.Net application to retrieve form data and display it the client browser in a table format.
5. Create a web application using ADO.Net that uses which performs basic data manipulations:
   (i). Insertion (ii) Updating (iii) Deletion (iv) Selection
   Hint: Do operations using Ms-Access and SQL-Server

6. Create an application using Data grid control to access information’s from table in SQL server.
7. Create an application using Data list control to access information’s from table in SQL server and display the result in neat format.

Case Studies (Must include basic database operations such as Insertion, Deletion, Modification, Selection and Searching)


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