BHARATI VIDYAPEETH

DEEMED TO BE UNIVERSITY

PUNE, INDIA

FACULTY OF MANAGEMENT STUDIES

Board of Studies in Computer Applications

Bachelor of Computer Applications Programme

(Under Choice Based Credit System)

To be effective from 2018-19

BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY), PUNE
FACULTY OF MANAGEMENT STUDIES
Board of Studies in Computer Applications and Systems Studies
Bachelor of Computer applications Programme
(Under Choice Based Credit System)
To be effective from 2018-19 at Part I

1. INTRODUCTION:

The BCA Programme is a full time 150 Credits program offered by Bharati Vidyapeeth (Deemed to be University), Pune and conducted at its management institutes in Delhi, Karad, Kolhapur, Pune, Sangli, and Solapur. All the six institutes have excellent faculty, Laboratories, Library, and other facilities to provide proper learning environment. The University is reaccredited by NAAC with an 'A+' grade. The expectations and requirements of the Software Industry, immediately and in the near future, are visualized while designing the BCA programme. This effort is reflected in the Vision and Mission statements of the BCA programme. Of course, the statements also embody the spirit of the vision of Late Dr. Patangraoji Kadam, the Founder of Bharati Vidyapeeth and Chancellor, Bharati Vidyapeeth University which is to usher in "Social Transformation through Dynamic Education."

2. VISION STATEMENT OF BCA PROGRAMME:

To create high caliber solution architects and innovators for software development.

3. MISSION STATEMENT OF BCA PROGRAMME:

To teach 'things, not just words', 'how to think', and 'how to self-learn'.

4. OBJECTIVES OF BCA PROGRAMME:

The main objectives of BCA Programme are to prepare the youth to take up positions as system analysts, system engineers, software engineers and programmers. Accordingly the course curriculum aims at developing 'systems thinking' 'abstract thinking', 'skills to analyze and synthesize', and 'skills to apply knowledge', through 'extensive problem solving sessions', 'hands on practice under various hardware/software environments' and' three projects'. In addition, 'social interaction skills', 'communication skills', 'life skills', 'entrepreneurial skills', and 'research skills' which are necessary for career growth and for leading quality life are also imparted.

5. LEARNING OUTCOMES FROM THE BCA PROGRAMME:

At the end of the course the student should be able to:

(a) Analyze problems and design effective and efficient software solutions.

(b) Develop software under latest Application Development Environments.

(c) Learn new technologies with ease and be productive at all times.

(d) Read, write, and contribute to technical literature.

(e) Work in teams.

(f) Be a good citizen in all respects.

6. ELIGIBILITY FOR ADMISSION TO THIS PROGRAMME:

Admission to the course is open to any candidate who has passed (10+2) or equivalent examination of any recognized board.

Subject to the above condition, the final admission is based solely on the merit at the All India entrance test (BU-MAT) conducted by Bharati Vidyapeeth (Deemed to be University, Pune).

7 DURATION OF THE PROGRAMME:

The duration of this course is three years divided in to six semesters or a minimum of 150 credits whichever is later. The medium of instruction and examination will be only English.

8 SCHEME OF EXAMINATION:

For some courses there is Internal Assessment (IA) conducted by the respective institutes as well as a University Examination (UE) at the End-of-the Term. UE will be conducted out of 60 marks and IA will be conducted for 40 marks then these are converted to grade points and grades as per the Table I. For courses having only Continuous Assessment (CA) the respective institutes will evaluate the students in varieties of ways, three or four times, during the term for a total of 100 marks. Then the marks will be converted to grade points and grades using the Table I.

9 STANDARD OF PASSING:

For all courses, both UE and IA constitute separate heads of passing (HoP). In order to pass in such courses and to earn the assigned credits, the learner must obtain a minimum grade point of 5.0 (40% marks) at UE and also a minimum grade point of 5.0 (40% marks) at IA.

A student who fails at UE in a course has to reappear only at UE as backlog candidate and clear the Head of Passing. Similarly, a student who fails in a course at IA has to reappear only at IA as backlog candidate and clear the Head of Passing to secure the GPA required for passing.

The 10 point Grades and Grade Points according to the following table:

Range of Marks (%)	**Grade**	**Grade Point**
80≤Marks≤100	O	10
70≤Marks<80	A+	9
60≤Marks<70	A	8
55≤Marks<60	B+	7
50≤Marks<55	B	6
40≤Marks<50	C	5
Marks < 40	D	0

The performance at UE and IA will be combined to obtain GPA (Grade Point Average) for the course. The weights for performance at UE and IA shall be 60% and 40% respectively. GPA is calculated by adding the UE marks out of 60 and IA marks out of 40.The total marks out of 100 are converted to grade point, which will be the GPA.

10 Award of Honours:

A student who has completed the minimum credits specified for the programme shall be declared to have passed in the programme. The final result will be in terms of letter grade only and is based on the CGPA of all courses studied and passed. The criteria for the award of honours are given below.

Range of CGPA	**Final Grade**	**Performance Descriptor**	**Equivalent Range of Marks (%)**
9.5≤CGPA ≤10	O	Outstanding	80≤Marks≤100
9.0≤CGPA ≤9.49	A+	Excellent	70≤Marks<80
8.0≤CGPA ≤8.99	A	Very Good	60≤Marks<70
7.0≤CGPA ≤7.99	B+	Good	55≤Marks<60
6.0≤CGPA ≤6.99	B	Average	50≤Marks<55
5.0≤CGPA ≤5.99	C	Satisfactory	40≤Marks<50
CGPA below 5.0	F	Fail	Marks below 40

RULES OF ATKT:

1.A student is allowed to carry backlog of any number of subjects upto Semester IV.

2.A student must pass Part I (Semester I and II) to appear for Semester V.

SEMESTER-WISE COURSE STRUCTURE FOR BCA

(To be effective from July 2018)
SEMESTER I

Course Number	Course Title	Credits	Hours / Week			IA Marks	EoTE Marks
			L	T	P		
101	Fundamentals of Information Technology	4	3	1	-	40	60
102	Algorithm and program Design	4	3	1	-	40	60
103	C Programming – I	4	3	1	-	40	60
104	Business organization system	4	3	1	-	40	60
105	Business Mathematics	4	3	1	-	40	60
106	Lab on MS-Office Suite	2	-	-	4	40	60
107	Lab on C Programming – I	2	-	-	4	40	60
108	**General course-I:** Community Work I / Career & Life Skills / Waste Management	1	2	-	-	50	0
Total		**25**	**17**	**5**	**8**	**330**	**420**

SEMESTER II

Course Number	Course Title	Credits	Hours / Week			IA Marks	EoTE Marks
			L	T	P		
201	Computer Organization and Architecture	4	3	1	-	40	60
202	DBMS I	4	3	1	-	40	60
203	C Programming - II	4	3	1	-	40	60
204	Financial Accounting	4	3	1	-	40	60
205	Principles of Management	4	3	1	-	40	60
206	Lab on C Programming - II	2	-	-	4	40	60
207	Environmental Studies	2	2	-	-	40	60
208	**General Course II :** Community Work II (Swacchh Bharat Abhiyan) / Sectoral Analysis / Smart Cities	1	2	-	-	50	0
Total		**25**	**19**	**5**	**4**	**330**	**420**

SEMESTER III

Course Number	Course Title	Credits	Hours / Week			IA Marks	EoTE Marks
			L	T	P		
301	Operating Systems	4	3	1		40	60
302	Software Engineering	4	3	1		40	60
303	DBMS II	4	3	1		40	60
304	Statistics	4	3	1		40	60
305	Multimedia Technology	4	3	1		40	60
306	Lab on Oracle and Multimedia	2	-	-	4	40	60
307	Lab on Linux Operating System	2	-	-	4	40	60
308	**General Course III :** Community Work III / Start up management / Agro Tourism	1	2	-	-	50	0
Total		**25**	**17**	**5**	**8**	**330**	**420**

SEMESTER IV

Course Number	Course Title	Credits	Hours / Week			IA Marks	EoTE Marks
			L	T	P		
401	Computer Networks	4	3	1	-	40	60
402	Software Testing	4	3	1	-	40	60
403	Java Programming	4	3	1	-	40	60
404	Operations Research	4	3	1	-	40	60
405	Entrepreneurship Development	4	3	1	-	40	60
406	Lab on Java	2	-	-	4	40	60
407	Minor Project - I	2	2	-	-	0	100
408	**General Course IV:** Community work IV / Basics of Taxation / Meditation & Yoga	1	2	-	-	50	0
Total		**25**	**19**	**5**	**4**	**290**	**460**

SEMESTER V

Course Number	Course Title	Credits	Hours / Week			IA Marks	EoTE Marks
			L	T	P		
501	Introduction to the Internet Technologies	4	3	1	-	40	60
502	Object Oriented Analysis and Design	4	3	1	-	40	60
503	C# Programming	4	3	1	-	40	60
504	Graph Theory	4	3	1	-	40	60
505	Elective I	4	3	1	-	40	60
506	Lab on Internet Technology and C# Programming	2	-	-	4	40	60
507	Minor Project II	2	2	-	-	0	100
508	**General Course V:** Social Media Management / Road Safety and Management / Event Management	1	2	-	-	50	0
Total		**25**	**19**	**5**	**4**	**290**	**460**

SEMESTER VI

Course Number	Course Title	Credits	Hours / Week			IA Marks	EoTE Marks
			L	T	P		
601	Data warehousing and Data Mining	4	3	1		40	60
602	Web Programming	4	3	1		40	60
603	Software project Management	4	3	1		40	60
604	Business Analytics	4	3	1		40	60
605	Elective II	4	3	1		40	60
606	Lab on Web programming	2	-	-	4	40	60
607	Major Project	2	2	-	-	0	100
608	**General Course VI:** Business Ethics / Basics of Hospitality Management / Aptitude	1	2	-	-	50	0
Total		**25**	**19**	**5**	**4**	**290**	**460**

Electives:

Elective No.	Elective Group	Course No	Course Name
01	**Information Security**	505-1-A	Information Security Concepts
		605-1-B	Information Security Administration
02	**Big Data**	505-2-A	Introduction to Big Data
		605-2-B	HADOOP
03	**Information Systems**	505-3-A	E-Commerce
		605-3-B	Knowledge Management

Practical Examinations:

For courses Nos. 106,107, 206, 306, 307,406, 506 and 606 there will be practical examination.

SEMESTER V

Course Number	Course Name	L-T-P- Credits	Year of Introduction
501	**Introduction to the Internet Technologies**	**3L-1T-0P = 4C**	**2018**

Course Objective :

- To teach the basic internet concepts and train them to develop internet applications.
- An overview of the HTML5 specification
- Practical knowledge to implement new HTML5 elements and attributes.
- Overview of Javascript

Pre-requisites:

Preliminary knowledge of computer, their operations and applications.

Expected Outcome :

- Describe and use client-side technologies of the World Wide Web: HTML5, CSS3, Javascript.
- To implement different constructs and programming techniques provided by Java Script.

References (Books, Websites etc) :

Text Books:

1. The Complete Reference HTML -Thomas A.Powell
2. The ABC's of JavaScript –Lee Purcell & May Jane Mara
3. Internet Technology at work - Hofstetterfred
4. Beginning HTML5 & CSS3 - Christopher Murphy, Richard Clark &oliStudholme

Reference Books :

1. Web Enabled Commercial Application Development using HTML, DHTML, JavaScript, Perl CGL –Bayross Ivan
2. Internet Technology at work Hofstetterfred
3. Web Design Technology-D.P. Nagpal- S. Chand Technical
4. JavaScript Bible

Reference Sites:

1. www.w3schools.com
2. www.devguru.com

Suggested MOOC :

Please refer these websites for MOOCS:
NPTEL / Swayam
www. edx.com
www.coursera.com

Course Plan

Unit	Contents
1	**Overview Of Internet And Intranet:** Understanding internet and its need, concept of intranet, difference between internet and intranet, a brief history, internet applications, Internet Service Providers (ISP) concept of client and server, concept of a web browser and web server, communicating on the internet, concept of domain- Physical domain, virtual

	domain, registering a domain, need of IP addressing, process to assign IP addresses, World Wide Web
2	**Introduction To HTML:** **Introduction:** Overview of HTML, need of HTML, Use of HTML **HTML Tags:** concept of Tag, types of HTML tags, structure of HTML program**Text formatting through HTML:** Paragraph breaks, horizontal rules, heading style, line breaks, background and BGcolor attributes **Emphasizing material in a web page:** Heading styles, drawing lines, text styles.**Text styles and other text effects-**centering, spacing, controlling font size & color**Lists:** Using unordered, ordered, definition lists**Adding Graphics To HTML Documents:** Using Image tag, attributes of Image tag, changing width & height of image
3	**Tables, Frames And Linking Documents:** **Handling Tables:** To define header rows & data rows, use of caption tag, changing height & width of table, cellpadding, cellspacing, bgcolor, colspan, rowspan**Linking Documents:** Concept of hyperlink, types of hyperlinks, linking to the beginning of document, linking to a particular location in a document, Images as hyperlinks**Frames:** Introduction To frames, using frames & frameset tags, named frames.**Forms :** INPUT tag, TYPE Attribute : text, password, button, checkbox, radio button, image
4	**Introduction to CSS:** Introducing CSS, Types of style sheets: inline, embedded and external Style.Working with CSS properties: text properties, color and background properties, border and shading, box and block properties, positioning with CSS, Various types of CSS selectors: universal, class, ID, child, descendent, adjacent sibling, attribute and query.
5	**Introduction To HTML5 and CSS3:** Features of HTML5 and CSS3 with few elements.
6	**Introduction To JavaScript:** **Introduction to scripting:** overview of Java Script, Advantages, Features of JavaScript, Client side java Script, writing JavaScript into HTML, First Hello World Program **Basic JavaScript Techniques**: Data types, literals, variables and operators, Java Script arrays, dense array, operators, expressions **Java Script Programming Construct**: Assignment, data declaration, if, switch, while, for, do while, label, break, Continue **Functions and Objects**-Built-In Function and User defined function. User defined functions, function declaration, passing parameters, variable scope, return values, recursive functions, String, Date, Math Objects **Dialog boxes** -Alert dialog box, prompt dialog box, confirm dialog box, **Working with form**- Forms and Form elements and the associated events. Form validation.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
502	Object Oriented Analysis and Design	3L-1T-0P – 4C	2018

Course Objective :

- To Understand concept of system design using UML.
- 2. To understand system development through object oriented techniques.

Expected Outcome :

At the end of course students will know –

- Advantages of using OOP platforms for development.
- Process carried out while designing Object Oriented Systems.

References (Books, Websites etc) :

- The Unified Modeling Language User Guide by Grady Booch, James Raumbaugh, Ivar Jacobson.
- Object Oriented Software Engineering by Ivar Jacobson
- 3. Software Engineering by Pressman

Suggested MOOC : Refer **NPTEL**

Course Plan

Unit	Contents
1	**Object Oriented Concepts, Modeling and UML:** What is Object Orientation : (Introduction to class, object,inheritance, polymorphism), Model : Introduction of Modeling, Object Oriented Modeling , Object oriented system development: Function/data methods, Object oriented analysis,Object oriented construction, Object oriented testing
2	**Iterative Development and UML:** Understanding requirements, Rational Unified process &RUP Phases – Inception, Elaboration, Construction, Transition UML : Designing Tool for OOAD : Introduction to UML, Overview of UML, Conceptual Model of UML, Diagrams in UML, Advantages of UML **Behavioral Modeling** Use Case Diagram : Realization of Use Cases, Finding Actors, Defining Relations among Use case, Writing Use Cases, Activity Diagram
3	**Basic and Advanced Structural Modeling** Class Diagram : Identifying the elements of an object model, Identifying classes and objects, Specifying the attributes, Defining operations, Finalizing the object definition, Advanced class Modelling, Interface, Types and Roles **Diagrams Based on Classes :** State Chart Diagram, Package Diagram, Object Diagram

4	**Interaction Modelling :** Introduction to Interaction Diagrams, Need of Interaction Diagrams, Interaction Diagrams, Collaboration Diagram, Sequence Diagram
5	**Architectural Modeling** Component Diagram: Need of Component Diagram, Realization of Components, Relating Components. Deployment Diagram : Purpose of deployment diagram, Architecture of System, Different Architectures used for System, Representing Architecture using Deployment Diagram
6	**Object Oriented Programming Styles** Object Oriented Style with reference to Reusability and Extensibility, Robustness, 3 Programming in the Large, Discussion on case Studies e.g. Library Management System, Hospital Management System, . Online Shopping, Nukari.com website, Matrimonial website

Course Number	Course Name	L-T-P- Credits	Year of Introduction
503	C# Programming	3L-1T-0P-=4C	2018

Course Objectives

- Learn the fundamentals of C# programming in Visual Studio.
- To Use .Net Framework
- To Handle Exceptions in C#
- To implement Object oriented technology in C#
- To operate with Arrays
- To use Class Designer and Object Test Bench tools.

Expected Outcome :

This COURSE focuses on building applications with a graphical user interface (GUI) for the Microsoft Windows operating system although GUI interfaces on other operating systems, and on the Web Topics include: event-driven programming, Win32 API, dialog boxes and standard GUI controls, dynamic link libraries, .NET Framework. The C# programming languages will be used to build applications.

Reference Books:

- The Complete Visual C# Programmer's Guide
- A Programmer's Introduction to C# 2.0, Third Edition
- 3. C# and the .NET Platform, Second Edition

Course Plan

UNIT	Contents
1	**The .net Framework:** Introduction, common language runtime, common type system, common language specification, the base class library, the .net class library, Intermediate language, Just in time compilation, garbage collection, assemblies, web services, COM, localization
2	**Introduction to C # :** Evaluation of C#, characteristics of C#, application of C#,difference between C++ and C#, difference between Java and C#.Introduction to C# environment : The .NET strategy, the origins of the .NET technology, the .NET framework, the common language runtime, framework base classes, user and programs interface, visual studio .NET, .NET languages, benefits of the .NET approach, C# and .NET. Data types, identifiers, variables, constants, C# statements, OOPs concept,array and strings, operators, control statements, type conversions, Mathematical functions.
3	**Classes and Objects :** Basic principles of OOP's, class, objects, constructors, static members, static constructors, private constructors, copy constructors, destructors, member initialization, the this reference, nesting of classes, constant members, read only members, properties, indexers.Inheritance and polymorphism : overloading, inheritance, overriding, interfaces
4	**Visual studio IDE features, introduction to Window forms, components, control:** textbox, label, linklabel, status bar, checkedlistbox, combobox, listbox, listview, radiobutton, button, panel, groupbox, dialog box, menu control, properties, methods, events of controls.

5	**ADO.net:** the component model, creating database connection, database command, data repeater, connecting to data sources, choosing a .net data provider, manage a connection, building command objects, executing commands, building datasets and datatables, data adapter
6	**Managing Console I/O operations :** Console class, console input, console output, formatted output, numeric formatting, standard numeric format, custom numeric format. Managing Errors and Exceptions : Types of errors, exceptions, syntax of exception handling code, multiple catch statement, the exception hierarchy, general catch handler, using final statement, nested try blocks, throwing our own exceptions, checked and unchecked operators, using exceptions for debugging.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
504	Graph Theory	3L-1T-0P =4C	2018-19

Course Objective :

The aims of this Graph theory is a delightful playground for the exploration of proof techniques in discrete mathematics and its results have applications in many areas of the computing ,social and natural science

Expected Outcome :

At the end of the course student should be able to:

- Use graphs as models in a variety of areas.
- Formulate several real world problems in mathematical terms

References (Books, Websites etc) :

Introduction to Graph theory - PHI by Douglas B.West

Discrete Mathematics and its Applications Edition 6th - Tata McGraw Hill by Kenneth H. Rosen

Suggested MOOC :

NPTEL

Course Plan

Unit	Contents
1	**Fundamental Concepts** : Definition, Graph Models, Sub Graph, Decomposition and special Graphs, Connection in Graphs, Bipartite Graph, Degree, Directed Graph, Undirected Graph, weighted graph, Regular Graph, dual graph, Representing Graph in computer memory, **Examples**
2	**Connectivity**: Walk, paths, trail, circuits, Connected Graph, Bridge, Isomorphism, Eulerian Circuits, Euler's path, Euler graph, Hamiltonian Graph and Graph Algorithm, Konigsberge Bridge problem, shortest path problems, city route,puzzle problem, Seating arrangement problem, Travelling salesman problem, **Examples**
3	**Algorithms** : Fleury's algorithm, Warshall's algorithm, Floyde's algorithm, Dijkstra's algorithm, Depth-First Search/ Breadth First search in Directed Graph, **Examples**
4	**Coloring of Graphs and planarity**: Vertex Coloring and upper bonds, Graph with Large Chromatic Number, 4 color theorem,Applications of graph coloring, Planar Graph, Euler's Formula, Homomorphism, Theorems, **Examples**
5	**Trees and Distance**: Concept of Trees, Definition and properties of Trees, Application of Trees, Trees as Models, Game Trees, Tree Traversal, Infix and Postfix notation of arithmetic expression, Binary Trees and its Properties, Binary Search Trees, Spanning Tree, Minimum spanning Tree, Depth First search, Breadth –First search, Back tracking applications, Kruskal algorithm, Prims algorithm, Huffman's algorithm **Excercises**
6	**Matchings** : Matching, Hall's Condition, MinMax Theorem, covers, Maximum Bipartite Matching, Weighted Bipartite Matching, Maximum Networks Flow, Examples

Course Number	Course Name	L-T-P- Credits	Year of Introduction
506	Lab on Internet Technology and C# Programming	3L-1T-0P=4C	2018-19

Course Objective :

- To teach the basic internet concepts and train them to develop internet applications.
- An overview of the HTML5 specification
- Practical knowledge to implement new HTML5 elements and attributes.
- Overview of Javascript
- Learn the fundamentals of C# programming in Visual Studio.
- To Use .Net Framework
- To Handle Exceptions in C#
- To implement Object oriented technology in C#
- To operate with Arrays
- To use Class Designer and Object Test Bench tools.

Expected Outcome :

- Describe and use client-side technologies of the World Wide Web: HTML5, CSS3, Javascript.
- To implement different constructs and programming techniques provided by Java Script.
- This COURSE focuses on building applications with a graphical user interface (GUI) for the Microsoft Windows operating system although GUI interfaces on other operating systems, and on the Web Topics include: event-driven programming, Win32 API, dialog boxes and standard GUI controls, dynamic link libraries, .NET Framework. The C# programming languages will be used to build applications.

References :

- Web Enabled Commercial Application Development using HTML, DHTML, JavaScript, Perl CGL –Bayross Ivan
- Internet Technology at work Hofstetterfred
- Web Design Technology-D.P. Nagpal- S. Chand Technical, JavaScript Bible
- The Complete Visual C# Programmer's Guide
- A Programmer's Introduction to C# 2.0, Third Edition
- 3. C# and the .NET Platform, Second Edition

Suggested MOOC :

Swayam

Course Plan

Unit	Contents
Internet Technology:	
Design A webpage which have student’s biodata with proper formatting and having student name as title.	
Design a form using HTML that accepts information about your qualification, extra curricular activities, achievements, skill sets, hobbies, and expectation for a particular job.	
Design a website for a class which shows student’s list linked with their biodata pages	
Design a website for PNG jewelers, having images of different types of jewelries which are linked with the pages giving details about the items.	
Design a Style sheet to give following effects The first leter of the paragraph should have 150% font size The first line of the paragraph should have purple as background color and white as the fore color.	

Design a website for the college which lists all the faculties(ordered lists), courses (definition lists) every course explains details (fees, duration, intake capacity) as unordered list.

Design a website for Samsung products using frames having design as-

<logo>	<title>	
<Links to various products>	<images of products>	<form to purchase the product>

Design a website for a college showing features of the university, college and list of different courses running in the institute. Course names have links with the pages having details of the courses having similar design using stylesheets.

Design a CSS(inline) that displays the regular text at the center with green as background color and white as fore color and should be bold, using class

Design a web page to display the following output

- List of subjects
  - Semester III
    - C++
    - Dot.Net
  - Semester IV
    - Java
    - Industrial Projects

  Internet Programming

    a. HTML
    b. VBScript
    c. Java Script
    d. DHTML

Design a webpage which accepts users information with validations(name, std code(should not exceed 4 digits),landline number(no. of digits should be between 5 to 7), mobile number(exactly 10 digits),email(should have @ and .))

Write a HTML code to display timetable of your class.

Write a HTML code to display the mark sheet of entered seat number

Write an HTML code to accept the students's

Design a website which accepts a number from user and performs the selected operation(even/odd, prime/not prime, positive/negative)

Design a webpage which provides calculator facilities.

Design webpage which accepts no of lines and prints it in the form of triangular shaped pyramid.

Write JavaScript to display table of numbers 2-10 (use form and form elements)

Write a JavaScript code which contains "show" button. When user clicks on show button, first 10 terms of Fibonacci series will be displayed in text box on another HTML page. This page contains button "back". With this button user can come back to original page.

Create a from having textboxes, radio button and check boxes and reset button. On clicking the reset button the entire form should be reset.

Design a webpage for a restaurant which accepts online order from user and shows the calculated total amount.

Accept login name and password from user and display biodata of the corresponding user.

Design a page for a user to create his login by accepting desired login name, password and confirm the password.

Accept data of a student wants to appear for entrance(name, marks at matriculation, higher secondary and graduation). Ask student to select the course he want to take admission. If the student scores above 55 at matriculation, above 60 at higher secondary and graduation then he is eligible for any course. If he has science degree or maths at 11th and 12th then only he is eligible for MCA.Design the form accordingly. Give the according message.
Design a webpage to conduct aptitude for maths. The test is objective, each question having 4 options. Let the students select the option. For every correct option he scores 2 marks and for every wrong answer he loose 1 mark. Calculate & show score of a student.
Design the registration form for a Web site and when the user clicks on Submit button the login form should be appeared on screen.
Create a purchase order form using Javascript.
Create a Java script code with show button. User click on show button, all string functions should be implemented.
Write JAVA script that finds occurrence of letter “m” in the string entered by user in textbox and replace it with “a” and write string to page.
Develop HTML form to accept mathematical expression in one textbox and display its result in another textbox after clicking on button showing mathematical operations.

C#	
SET-I	Basic Console Applications
	• Write a C# Program to design simple calculator • Write a C# Program to Check whether the Entered Number is Even or Odd. • Write a C# Program to Swap 2 Numbers • Write a C# Program to Get a Number and Display the Sum of the Digits • Write a C# Program to Get a Number and Display the Number with its Reverse • Write a Program in C# to demonstrate Command line arguments processing • Write a Program in C# to demonstrate boxing and Unboxing.
SET-II	Date and Time
	• Write a C# Program to Display the Date in Various Formats • Write a C# Program to Check Whether the Entered Year is a Leap Year or Not • Write a C# Program to find difference between Two Dates
SET-III	Classes
	• Write a program to demonstrate abstract class and abstract methods in C#. • Find the sum of all the elements present in a jagged array of 3 inner arrays. • Write a program to demonstrate Operator overloading. • Demonstrate arrays of interface types (for runtime polymorphism) with a C# program.
SET-IV	• Consider the Database STUDENT consisting of following tables: Course (C_ID: int, C_Name: string) • Student (RollNo:int, S_ Name: string, Address: string, C_ID: int, Admissiyear: int) Develop suitable windows application using C#.NET having following options: 1. Entering new course details. 2. Entering new student details. 3. Display the details of students (in a Grid) who belong to a particular course. 4. Display the details of the students who have taken admission in a particular year • write a program in C# to demonstrate error handling.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
507	**Minor Project II**	**2 Credits**	**2018-19**

Course Objective :

Student has to complete a Minor project work under the guidance of the faculty member in the institute. Students has to develop any software using Java in a group of 2 to 3. Each team has to give 4 minimum PPT presentation to the Project Guide during the semester. Final project viva will be conducted as per University Time Table.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
508	Social Media Management	2L-0T-0P=2C	2018

Course Objective:

This Course Teaches student to use social media strategically to create value for a client or organization.

Expected Outcome :

- Students will learn by doing assignments focusing on social media, post writing and publishing, management and measurement tools, a social media audit, editorial calendar and crises management.
- Students will master the skills necessary to become successful social media managers.

Reference Books :

- Guy Kawasaki & Peg Fitzpatrick, "The art of social media: power tips for power users
- Social media marketing all in one for dummies, Jan Zimmerman & Deborah N
- Social media explained by Mark W. Schaefer

Online resources

http://www.gov.pe.ca/photos/original/IPEI_ebiz_smmkt.pdf

https://www.coursehero.com/file/10513028/Media-Management-Notes/

MOOCs:
Swayam

Course Plan

Unit	Contents
1	**Introduction To Social Media:** Introduction to Social Media, importance of social Media, History and evolution of Social Media, Managing Information, Aggregators. Facebook, Twitter, Instagram, LinkedIn, Youtube, Blogs.
2	**Using Social Media:** Strategy Plan for Social Media Management, Touchpoint, Analysis Scheduling, Creating Content, Managing Content programmes, Planning Worksheet, Social media campaign.
3	**Evaluating Social Media:** • Evaluation of Social Media Platforms • Tools to manage and measure performance of social media content and campaigns Handling critical issues in social media management and legal aspects of social media.
4	**Setting-up own professional site** Content management, design, connectivity with social media
	Assignments: 1. Explain atleast one social media management tool in detail. 2. Describe social media analytics tool in bried with example. 3. Detailed social media campmaign: The campaign can be any example presented in social media for Lead Generation. Describe the objectives for campaign, outline the tools, preapare

	budget for campaign. 4. Budget for social media plan: Based on the understanding of your client, prepare a budget for social media management. Include the individual cost of your tactis, your proposed social media campaign and social media tools. Include the total cost as a bottom line of your budget. Include the ROI of your plan and why that budget should be allocated to social media. List different types of content to be used in creating brand by using social media campaigns. Describe merits and demerits of each type of content used in social media.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
508	Road Safety Management	2L-0T-0P=2C	2018

Course Objective:

The vehicle population in India is growing at an exponential rate. This phenomenon is bringing in its wake a host of health related, environmental, safety and behavioral problems in the society. The problem is compounded due to absence of effective means of mass transportation system in most big cities in India.

Reference Books :

- Pratibha Shastri Ranade , Road Safety Management, ICFAI University
- Vijay Vinayak Revankar, Road Safety – Vimleshwar Automobile Industry and Road Safety Community Forum

MOOCs:

Alison

Course Plan

Unit	Contents
1	**Introduction to Road Safety Management:** Importance and need of road safety management.
2	**Management of Traffic and Traffic Rules:** Use of traffic signals, signs by hand, knowledge/applications of automatic signals, parking rules, driving around, Traffic islands ,traffic joints, subways and flyovers. Signs of roads: meaning of yellow, green and red lights, zebra crossings, bus stops, use of road by physically disadvantaged persons, elderly persons, women and children, special right of way for ambulance, firefighting vehicles, school bus and V.I.P vehicles.
3	**Management of Road Mishaps and Accidents:** First aid to accident victims- First aid techniques, co-ordination with hospitals and other health centres for emergency treatment of accident victims, role of Insurance companies in providing relief to accidents victims, Management of Ambulance Services, Importance of voluntary blood donation in saving accident victims,Rehabilitation of persons affected by accidents. Qualities of a good Driver: Good health, tolerance, responsibility, knowledge of rules and laws, self confidence, politeness, familiarity with the vehicle and its maintenance requirements, self discipline.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
508	Event Management	2L-0T-0P=2C	2018

Course Objective:

The basic purpose and spirit of this course is to expose the students to hands- on experience of event management.

Expected Outcome :

The students are oriented to event management in order to strengthen their skills of planning, organizing and other such management functional skills.

Reference Books :

- S. R. Singh, Event Management, HPH.
- Alex Genadelik, Event Planning: Management & Marketing For Successful Events: Become an event planning pro & create a successful event series

Online Resources:

https://blog.komodoplatform.com/notes-on-social-media-and-community-management-for-blockchain-cryptocurrency-and-ico-projects-4d0f328bdfb3

MOOCs:

Alison

Course Plan

Unit	Contents
1	**Introduction to Event Management:** The concept of event. need and importance of events.
2	**Types of Events :** Different types of event in Corporates, Social Programmes and Private Programmes. Following units are entirely based on practice part of the event management
3	**Assessment of Events :** Post event assessment of any 05 programmes A student or a group of 03 students shall be assigned the event which has taken place in near past at any place and they shall make an inquiry into its success and effectiveness by rating them on the basis of appropriate parameters and shall submit the assignment to the respective teacher . Preparation of Learning Value report : A student shall prepare a report on what he learnt from the events and submit it to the concerned teacher. The report shall include mainly the description of occasion, the person involved and what guiding principles they have received from them.

SEMESTER VI

Course Number	Course Name	L-T-P- Credits	Year of Introduction
601	Data Warehousing And Data Mining	3L-1T-0P= 4C	2018

Course Objective :

- To introduce the basic concepts of Data Warehouse and Data Mining techniques.
- Examine the types of the data to be mined and apply preprocessing methods on raw data.
- Discover interesting patterns, analyse and estimate the accuracy of the algorithms.

Expected Outcome : At the end of this course, student should be able to understand

- Process raw data to make it suitable for various data mining algorithms.
- Discover and measure interesting patterns from different kinds of databases.
- Apply the techniques of clustering, classification, association finding, feature selection and visualization to real world data.

References (Books, Websites etc) :

- Jiawei Han and Micheline Kamber , "Data Mining Concepts and Techniques" ELSEVIER
- M.Humphires, M.Hawkins, M.Dy,"Data Warehousing: Architecture and Implementation", Pearson Education
- Kargupta, Joshi., "Data Mining: Next Generation Challenges and Future Directions", Prentice Hall of India

Suggested MOOC: Please refer these websites for MOOCS:
NPTEL / Swayam ,www. edx.com ,www.coursera.com

Course Plan

Unit	Contents
1	**Introduction to Data warehousing:** Data Warehousing, Difference between operational database system and data warehouse, Data Warehouse Users, Benefits of Data Warehousing, Metadata, Classification of Metadata, and Importance of Metadata. Data Marts, Reasons for creating Data Marts, Building Data Marts: Top down Approach & Bottom up Approach, Data Warehouse Architecture, Two Tier Architecture, Three Tier Architecture. Data Warehouse Schema, Star, Snow Flake & Fact Constellation Schema. OLAP, Need for OLAP, OLAP Operations, OLAP Models.
2	**Data Preprocessing:** Need, Objectives and Techniques, Descriptive data summarization, Data Cleaning, Data Integration, Data Transformation, Data Reduction.
3	**Introduction to Data Mining:** Introduction, Need for Data Mining, KDD Process, Data Mining Architecture, Data Mining Functionalities, Data Mining Task Primitives, Integration of a Data Mining System with a Database or Data Warehouse System
4	**Mining Frequent Items and Associations:** Frequent Item Set, Closed Item Set, Association Rule Mining, Market Basket Analysis, Classification of Association Rules, Apriori Algorithm
5	**Classification and Prediction:** Classification & Prediction, Issues regarding classification & Prediction, Comparing Classification Methods, Classification by Decision Tree Induction
6	**Clustering:** Introduction, Cluster Analysis, Need, Categorization of Major clustering methods. Types of Data in Cluster Analysis, Partitioning Methods: K-Means Method, K-Mediods Method, Applications of data mining in various sectors

Course Number	Course Name	L-T-P- Credits	Year of Introduction
602	**Web Programming**	**3L-1T- 0P= 4C**	**2018-19**

Course Objective :

To make students able to design, develop the various types of web based applications.

Expected Outcome :

By using JavaScript, PHP and My SQL, at the end of the course student should be able to :

- Design web pages
- Knowledge about different types of web sites
- Navigation amongst web pages
- Knowledge about presenting information on web interfaces

References (Books, Websites etc) :

- PHP and MySQL Web Development by Welling Thomson Fourth Edition, Pearson publication
- Teach Yourself PHP, MySQL and Apache by Julie C. Meloni Pearson publication

Suggested MOOC : Please refer these websites for MOOCS:
NPTEL / Swayam , www. edx.com ,www.coursera.com

Course Plan

Unit	Contents
1	**Introduction To PHP:** Installing and configuring PHP, Building blocks of PHP:PHP tags, variables, data types, operators, expressions, constants, Control Structures: conditional statements, loops, switch statement
2	**Working With Functions And Arrays:** Working with functions: What is a function? Function declaration and definition, Calling function, user defined functions, variable scope, working with arrays: Creating, sorting and reordering arrays, PHP classes.
3	**String Manipulation:** Working with strings, dates and time: Formatting, investigating and manipulating strings with PHP, using date and time functions in PHP, working with forms: Creating a simple input form. File Handling: Saving data, storing and retrieving Bob's order, processing files, opening file, writing to a file, closing a file, reading from a file, uses other useful file functions.
4	**Working With Cookies And Sessions :** Working with cookies: Introducing cookies, setting and deleting cookies with PHP Working with session: starting a session, working with session variables, passing session IDs in the query string, destroying sessions and unsetting variables, using sessions
5	**MYSQL :** Creating web database: Using MySQL monitor, logging into MySQL, creating databases and users, setting users and privileges, column data types Working with MySQL database: Inserting data into database, retrieving data from the database, retrieving data with specific criteria, retrieving data from multiple tables, retrieving data in particular order, grouping and aggregate data, using sub queries, updating records, deleting records from databases, dropping table and database.
6	**Accessing MYSQL Database From Web With PHP :** Web database architecture, Querying database from the web: checking and filtering input data, setting up connection, Choosing database to use, querying database, retrieving the query result, disconnecting from the database.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
603	Software Project Management	3L-1T-0P= 4C	2018-19

Course Objective :

To provide basic project management skills with a strong emphasis on issues and problems associated with delivering successful IT projects. The course is designed to provide an understanding of the particular issues encountered in handling IT projects and to offer students methods, techniques and 'hands-on' experience in dealing with them.

Expected Outcome :

At the end of this course, student should be able to understand

- Understand and practice the process of project management and its application in delivering successful IT projects;
- Evaluate a project to develop the scope of work, provide accurate cost estimates and to plan the various activities;
- Identify the resources required for a project and to produce a work plan and resource schedule.

References (Books, Websites etc) :

- Information Technology Project Management: Kathy schwalbe, International student edition, THOMSON course Technology, 2003.
- B)Software project management : Bob Hughes and Mike Cottrell, Third edition, Tata McGraw-Hill
- Microsoft office Project 2003 Bible: Elaine Marmel, Wiley publishing Inc.
- **Software Requirement:** Microsoft project Tool.

Suggested MOOC:

Please refer these websites for MOOCS:
NPTEL / Swayam
www. edx.com
www.coursera.com

Course Plan

Unit	Contents
1	**Introduction to project management:** Project, project management, Importance, characteristics of project how software projects are diff. than other projects, Problems with software projects, Phases: Initiation phase, planning phase, execution phase, monitoring and controlling phase, and closing phase. All parties involved in project, Role of Project Manager, Project management framework, Software tool for project management
2	**Project planning:** Integration management: What is integration management, plan development and execution, What is scope management, methods for selecting project, scope statement, Work Breakdown Structure, main steps in Project planning: identify project scope and objective, identify project infrastructure, analyze project characteristics, identify project products and activities, estimate effort for each

	activity, identify risk activity, allocate resources, review plan, execute plan. Use of software (Microsoft Project) to assist in project planning activities.
3	**Project scheduling:** Time management: importance of Project schedules, schedules and activities, sequencing and scheduling activities, Network Planning models, duration estimation and schedule development, Critical path analysis, PERT, Use of software(Microsoft project) to assist in project scheduling.
4	**Project cost management:** Importance and principles of project cost management, Resource planning, Attributes to be considered in cost estimation, factors affecting the cost, various costs involved in it. Traditional method: Estimation by analogy, Expert judgment, Parkinson, price to win, top down, bottom up. COCOMO Model, Function point analysis, Function point analysis, Cost control, Use of software(Microsoft project) to assist in cost management.
5	**Project quality management:** Quality of information technology project, Stages of software quality management, PMBOK, Quality standards, Tools and techniques for quality control.
6	**Project risk management:** The importance, Top risk in projects, Common sources of risk in IT projects, elements in risk mgt., Risk identification, Risk quantification, Risk response development and control, using software to assist in project risk management.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
604	Business Analytics	3L-1T-0P=4C	2018-19

Course Objective :

- To gain an understanding of how decision makers use business analytics to formulate and solve business problems and to support Information System based decision making.
- To become familiar with the processes needed to develop, report, and analyze business data

Expected Outcome :

At the end of this course, student should be able to understand

- Identify and prioritize information & data modelling.
- Identify and prioritize threats to information assets.
- Define an Geographical information system.
- Understand various types of Analytics and its significance.
- Understand text & web mining
- Applications of business analytics

References (Books, Websites etc) :

1. Efraim Turban, Ramesh Sharda : Decision Support and Business Intelligence systems : PHI 8th Edition

Suggested MOOC :

NPTEL, SWYAM

Course Plan

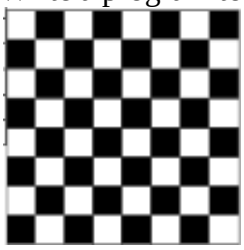
Unit	Contents
1	**Business Analytics & Data Visualization:** Business Analytics (BA), Overview of Areas where Business Analytics is applied, OLAP, Reports & Queries, Multidimensionality, Advanced Business Analytics, Data Visualization, Geographical Information system, Real time Business Intelligence Automated Decision support, and Competitive Intelligence, BA & Web, Usage benefits & success
2	**Visualization and Data Issues:** Organization of Source of Data, Importance of Data Quality, Dealing with Missing or incomplete data, data classification, Introduction to Data Mining, Data mining process, data mining tools XL MINER.
3	**Data, Text & Web Mining :** Data Mining concepts & applications, Data Mining Techniques & Tools, Data Mining Project Processes, Text Mining, Web Mining
4	**Applications of Business Analytics :** Risk - Fraud Detection and Prediction, Recovery Management, Loss Risk Forecasting, Risk Profiling, Portfolio Stress Testing, Market share estimation and Sensitivity Analysis
5	Loyalty Analytics, Customer Life Time Value, Propensity Analytics, Churn Analytics, Customer Analytics Customer Segmentation, Cross- Sell or Up sell Models
6	Recruitment Analytics, Compensation Analytics, Talent Analytics, Training Analytics, Human Resource Retention Analytics, Workforce Analytics Project Work

Course Number	Course Name	L-T-P- Credits	Year of Introduction
606	Lab on Web Programming	0L-0T-4P=2C	2018-19

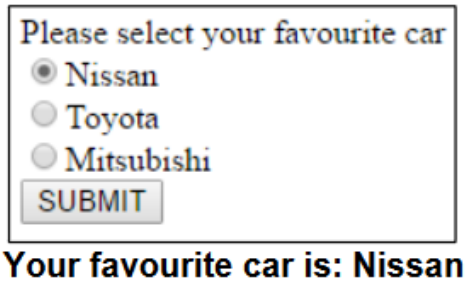
1. Write a Program for finding the biggest number in an array without using any array functions.
2. Write a program to square of a number.
3. Write a program to print Factorial of any number.
4. Write a program in PHP to print Fibonacci series.
5. Write a program to find whether a number is Armstrong or not.
6. Write a program to find HCF of two numbers
7. Write a program to demonstrate four built in functions.
8. Program to print the below format

```
* * * * * * * * * * * * * * * *
* * * * * * * * * * * * * *
* * * * * * * * * * * *
* * * * * * * * * *
* * * * * * *
* * * * *
* * *
*
```

9. Write a program to make a chess:



10. Create the following form and based on the user selection print a message in the format given below:



11. Write a PHP script to accept personal details of student (rno, name, class) on first page. On second page accept marks of six subjects (out of100). On third page print marklist (rno, name, class, marks, total, percentage)
12. Write a PHP file that will output a form containing 2 fields: username and password. Upon submission of the form, the code should check against the database to see whether the username-password pair was correct. If so, display a welcome message. If not, display the message “Invalid username or password” followed by the same login form.
13. Write a PHP file that can be added to other PHP files using the include or require functions. This file should:
    a. Make a connection to a MySQL database, and log in with valid credentials. The connection resource should be stored in a variable with an appropriate name.
    b. Create a database TEST if it does not exist.

c. Select the TEST database.
d. Create a table USER exerciseusers if it does not exist with the following fields:
    i. USERNAME VARCHAR(100) , PASSWORD_HASH CHAR(40), PHONE VARCHAR(10)
e. The USERNAME field should be designated as UNIQUE.
f. If any of these operations cause an error, stopexecution and print the error message

14. Design a web page that accepts inputs(username and password) and authenticate the username and password from a given database using PHP.

Note : Similar experiments can be designed.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
607	Major Project	2 Credits	2018-19

Course Objective :

Student has to complete a Major project work under the guidance of the faculty member in the institute. Students has to develop any software using Web Development / Dot Net Framework in a group of 2 to 3. Each team has to give 4 minimum PPT presentation to the Project Guide during the semester. Final project viva will be conducted as per University Time Table.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
608	Business Ethics	2L-0T-0P=2C	2018

Course Objective:

The objective of this paper is to make the students more clear about the importance of ethics in business and practices of good corporate governance. It also talks about the corporate social responsibility

Expected Outcome :

This course exposes the student to the issues of values and ethics in management so that decision making and decision execution are undertaken in a human manner, as this will add to the flexibility and dynamism of the corporate culture.

The course will take the student from managerial ethics to organizational ethics and business sustainability.

Reference Books :

- Management by Values; Chakraborty S.K.; OxfordUniversity Press, Kolkata 2005.
- Professional Ethics by R. Subramanian, Second Edition, OXFORD
- Theory and Practice of Managerial Ethics; Jayashree S. Sadri S. and Dastoor D.S.; Jaico , Mumbai.
- New Mantras in Corporate Corridors, Sharma Subash New age International Publishers, New Delhi 2007.
- Business Ethics and Corporate Governance (towards excellence and sustainability); Sadri S., Jayashree. Himalaya Publishing Co. Mumbai 2011.
- Managing from the Heart: Unfolding spirit in people and organization; Wakalu, Arun: Response Books, New Delhi
- Manuel G Velasquez : Business ethics- concepts and cases Pearson.
- Bhanumurthy K V: Ethics and Social Responsibility of Business, Pearson Education India.

Online Resources:

https://managementhelp.org/businessethics/index.htm\

MOOCs:

https://www.edx.org/learn/business-ethics

Course Plan

Unit	Contents
1	Ethics – Meaning, and Nature of Ethics. Types of Ethics, Importance of Ethics. Business Ethics : Meaning, Nature and Importance of ethics in business, meaning of corporate social responsibility, Relation between corporate responsibility & Business Ethics.
2	Concept of Morals, Values, Beliefs; Moral issues in business, Spirituality and Ethics; Influence of Major religions on ethics: Hinduism, Islam, Christianity, Buddhism, Sikhism, and Zoroastrianism. Influence of spirituality on ethics.
3	Relationship between Business, Business Ethics & Business Development, Role of Business ethics in building a good society. Case Studies on Business Ethics

Course Number	Course Name	L-T-P- Credits	Year of Introduction
608	Basics of Hospitality Management	2L-0T-0P=2C	2018

Course Objective:

- Recognize scope and career in the hospitality industry.
- 2. Identify the major segments and specialization of the industry and their operations.

Reference Books :

- Introduction to Hospitality Management, John R. Walker ,Pearson
- Food and Beverage Service, D.R. Lillicrap,John A. Cousins & Suzanne Weekes, Book Power.
- Food and Beverage Management, Bernard Davis , Sally Stone, Butterworth Heineman Ltd.
- Hotel House Keeping and Management, Raghubalan, Oxford University Press.
- Managing Front Office Operations, Michael Kasavanna, Richard Brooks , Charles Steadmon, AH&LA.

Online Resources:

www/youtube.com

MOOCs:

https://www.ifitt.org/hospitality-and-tourismmoocs/

Course Plan

Unit	Contents
1	**Introduction to the Hospitality Industry:** a. History and scope of the hospitality industry. b. Economic impact of the hospitality and tourism industries. c. Careers in the industry. d. Link between hospitality and travel and tourism. e. Major segments and specialization of the industry. f. medical tourism
2	**Recreation/Travel and Tourism:** a. Operation of recreational facilities such as resorts, spas, theme parks, and clubs. b. Meetings, conventions, exhibitions, banquets, and other events. c. Travel agencies and concierge desks. d. Gaming entertainment industry.
3	**Operations:** a. Leadership and management in the industry. b. Hospitality marketing. c. Human resources and risk management and safety procedures.

Course Number	Course Name	L-T-P- Credits	Year of Introduction
608	Aptitude	2L-0T-0P=2C	2018

The objective of this paper is to increase the capabilities of the student required by the industry. As per the need of the industry, the students will be trained in the latest Mathematical, Statistical,Logical, Vebal Ability, Current Trends in IT etc by the industry experts.

ELECTIVES:

Elective Group: (I) Information Security

Course Number	Course Name	L-T-P- Credits	Year of Introduction
505-1-A	**Information Security Concepts**	**3L+1T+0P=4C**	**2018**
Course Objective: Introduce the learner to concepts involved in Information Security domain			
Expected Outcome : Theoretical understanding of Information Security Concepts			
References (Books, Websites etc) : CEH Study Guide - Sybex			
Suggested MOOC : SWAYAM			
Syllabus			
Unit	Contents		
1	**Information Security Concepts:** Confidentiality, Integrity and Availability of Information, Identification, Authentication and Authorization, Security Principles and Models		
2	**Physical Security:** Facility Requirement, Perimeter Security, Fire Protection, Fire Suppression, Power Protection, General Environmental Protection, Equipment Failure Protection		
3	**Network Security:** Secure Network design, Firewalls, WLAN Security, VPNs, Types and Sources of Network Threats		
4	**Operating System Security:** Windows, Linux/UNIX		
5	**Database Security:** MS SQL		
6	**Web Application Security:** Web Application Vulnerabilities, Secure Coding Techniques, Continuous Security Testing and Assessments		
7	**Compliance Standards :** IT Act, ISO 27001, ITIL Framework		

Elective Group (I) Information Security

Course Number	Course Name	L-T-P- Credits	Year of Introduction
605-1-B	**Information Security Administration**	**3L+1T+0P=4C**	**2018**

Course Objective:
Introduce the learner to concepts involving security administration

Expected Outcome :
Practical understanding of setting, managing and securing Information Systems

References (Books, Websites etc) :
Red Hat Linux Bible: Fedora and Enterprise Edition - by Christopher Negus

Suggested MOOC :
SWAYAM

Syllabus

Unit	Contents
1	**Setup a Client:** Introduction to client-side devices, Setup, Manage and Secure a Desktop PC Setup, Manage and Secure a Mobile Device
2	**Setup a LAN:** Introduction to LAN devices, Simulate a LAN, Setup, Manage and Secure a Local Area Network
3	**Connect a LAN to the Internet:** Introduction to WAN devices, Setup, Manage and Secure a Connection to the Internet
4	**Share an Internet Connection across a LAN:** Introduction to Internet Connection sharing, Introduction to NAT and PAT Setup, Manage and Secure a Proxy Server
5	**Share resources over a LAN:** Setup, Manage and Secure a Print Server, Setup, Manage and Secure a File server
6	**Host a Website:** Introduction to website hosting, Setup, Manage and Secure a Web Server
7	**Setup support servers:** Setup, Manage and Secure a Mail Server, Setup, Manage and Secure a FTP Server, Setup, Manage and Secure a Boot Server, Setup, Manage and Secure a DNS Server

Elective Group II- Big Data

Course Number	Course Name	L-T-P- Credits	Year of Introduction
505-2-A	Introduction to Big Data	3L-1T-0P= 4C	2018

Course Objective :

To introduce learner with Big Data Concept, decision making by doing analysis on the data and managing the data using Big Data Tools like Apache Hadoop, Pig and Hive. What are the problems of Big Data and how it can be solved by different tools.

Pre-requisites: Preliminary knowledge of computer, Data Mining, Data Warehousing Concepts.

Expected Outcome :

- Good knowledge of Big Data Concepts
- Knowledge of Decision making using analysis on the Big Data
- Introduction to Big data Tools like Hadoop and Weka.

Reference Books :

1. Big Data- Understanding How Big Data Power Big Business –By Bill Schmarzo
2. Edureka lectures **Link:-** https://www.youtube.com/watch?v=A02SRdyoshM

Course Plan

Unit	Contents
1	**Introduction:** Big Data History, The Big Data Business Opportunity- Business Transformation Imperative, Big Data Business Model, Business Impact of Big Data
2	**Big Data In Organization:** Data Analytics Lifecycle, **Data Scientist Roles and Responsibilities** – Discovery, Data Preparation, Model Planning, Model Building, Communicate Results, Operationalize, New Organizational Roles, Liberating Organizational Creativity.
3	**Decision Theory And Strategy:** Business Intelligence Challenge, Big Data User Interface Ramifications, Human Challenge of Decision Making, **Strategy for Decision Making**- Big Data Strategy Document, Case Study.
4	**Value Creation Process:** Understanding Big Data Value Creation, Value Creation Drivers, **Michael Porter's Value Creation Models**- Michael Porter's Five Forces Analysis, Michael Porter's Value Chain Analysis, Case Study.
5	**Big Data User Experience:** The Unintelligent User Experience, Understanding the Key Decisions to Build a Relevant User Experience, Using Big Data Analytics to Improve Customer Engagement, Uncovering and Leveraging Customer Insights, Big Data can Power a New Customer Experience.
6	**Big Data Use Cases:** **The Big Data Envisioning Process** –1. Research Business Intiatives, 2. Acquire and Analyze your Data, 3. Brainstorm New Ideas , 4. Prioritize Big Data Use Cases, 5. Document Next Steps, The Prioritization Process.
7	**Big Data Architecture:** New Big Data Architecture, **Introducing Big Data Technologies** – Apache Hadoop, MapReduce, R, WEKA etc.

Elective Group II- Big Data

Course Number	Course Name	L-T-P- Credits	Year of Introduction
605-2-B	HADOOP	3L-1T-0P= 4C	2018

Course Objective :

To introduce learner with HADOOP Tool for Business Intelligence, decision making by doing analysis on the data using HADOOP Tool and also managing the Big Data using HADOOP.

Pre-requisites: Preliminary knowledge of computer, Big Data Analysis and Business Intelligence. Also students must know Core Java, C Programming and Data Structure Languages.

Expected Outcome :

- Good knowledge of HADOOP Tool.
- Knowledge of Decision making using HADOOP analysis on the Big Data
- Hands-on Big Data tools- Hadoop, Pig, Hive, HBase

Reference Books :

1. Big Data- Understanding How Big Data Power Big Business –By Bill Schmarzo
2. www.tutorialspoint.com

Course Plan

Unit	Contents
1	**BIG DATA Overview** : What is Big Data?, What Comes Under Big Data?, Benefits of Big Data, Big Data Technologies Operational vs. Analytical Systems, Big Data Challenges.
2	**Introduction To HADOOP**: Hadoop Architecture, MapReduce, Hadoop Distributed File System, How Does Hadoop Work?, Advantages of Hadoop.
3	**HDFS Overview:** Features of HDFS, HDFS Architecture, Starting HDFS, Listing Files in HDFS, Inserting Data into HDFS, Retrieving Data from HDFS, Shutting Down the HDFS.
4	**MAPREDUCE:** What is MapReduce?, The Algorithm for MapReduce, Inputs and Outputs (Java a Perspective), Analyze different use-cases where MapReduce is used, Differentiate between traditional way and MapReduce way.
5	**Introduction To Hadoop Features:** New Big Data Architecture, Introducing HADOOP Features – Apache Hive, Apache HBase, Pig.
6	**Multi Node Cluster:** Multi Node Cluster, Install Java, Creating User Account, Mapping the Nodes, Installing Hadoop, Configuring Hadoop, Start Hadoop Services, Adding New Data Node in the Hadoop Cluster, Removing New Data Node from the Hadoop Cluster.
7	**Environment Setup:** Pre-installation Setup, Installing Java Downloading Hadoop Hadoop Operation Modes Installing Hadoop in Standalone Mode Installing Hadoop in Pseudo Distributed Mode Verifying Hadoop Installation, Implement basic Hadoop commands on terminal.

Elective Group: (III) - Information Systems

Course Number	Course Name	L-T-P- Credits	Year of Introduction
505-3-1	E-Commerce	3L-1T-0P-4C	2018-19

Course Objective :

- To thoroughly understand the information technology for supporting E-commerce;
- To understand the necessary infrastructure and functional components to develop Ecommerce systems;
- To understand the design and application of E-commerce systems.

Expected Outcome :

Upon successful completion of the course students will be able to:

• Recognize the impact of Information and Communication technologies, especially of the Internet in business operations

• Recognize the fundamental principles of e-Business and e-Commerce

• Use tools and services of the internet in the development of a virtual e-commerce site

References :

E-commerce - C.S.V. Murthy, Himalaya Publishing House

E-commerce A Managerial Perspective - P.T. Joseph, Prentice Hall Of India

Frontiers of Electronics Commerce - Kalakota and Whinston, Pearson Education

Suggested MOOC :

Swayam

Course Plan

Unit	Contents
1	**Introduction to E-Commerce:** Definition, E-commerce fundamentals, different types of E-commerce E-Commerce Infrastructure - The Internet and World Wide Web, Web system, Internet basics, Characteristics of Internet, Components of Internet – Uniform Resource Locators, Internet Protocol, Hypertext Transfer Protocol (HTTP), Internet Service Provider (ISP), Types of ISP, domain name, domain name types E-commerce vs Traditional Commerce, Networking Categories, Mobile Commerce
2	**Business Models for e-commerce:** Business-to-Consumer (B2C), Consumer-to-Consumer (C2C), Business-to-Business(B2B) **Electronic Data Interchange** Requirement of EDI, types of EDI, Advantages and Disadvantages of EDI
3	**E-commerce Payment System:** Limitations of traditional payment system, requirement of e-payment system, Internet payment systems - Credit card payment (e.g., SET protocol), E-cash, E-check, smart card, Electronic Funds Transfer, Digital Token Based E-Payment Systems, Modern Payment Systems, Steps for Electronic Payment, Payment Security, Net Banking

4	**Applications of E-Commerce:** E-commerce in banking, retailing, online publishing, online marketing, e-advertising, e-branding.
5	**E-commerce Security:** Security issues, Privacy issues, Computer Security, security threats, security tools, Denial-of-Service attacks, Viruses, Unauthorized access to a computer network, Vulnerability of Internet Sites requirements, malicious code, intruders, attacking methods, Cryptography- encryption and decryption, public key encryption, private key cryptography, message digest, digital signature, digital certificate, firewalls, SSL. Firewall – Packet filtering, Application gateways.
6	**Implementation of E-Commerce:** WWW.EBAY.COM - B2C Website – Registration, Growth of eBay, PayPal – New Trend in Making Payments Online, National Electronic Funds Transfer.

Elective Group: (III) -Information Systems

Course Number	Course Name	L-T-P- Credits	Year of Introduction
605-3-B	Knowledge Management	3L+1T+0P=4C	2018

Course Objective:

The objective of the course is to provide the basic skills of managing knowledge in organizations. Knowledge is an asset for retaining the competitive advantage of the organization. This course develops the capabilities of towards managing students to manage knowledge in organizations.

Pre-requisites:

Knowledge about Information System and MIS with Implementation of MIS

Expected Outcome :

After going through this course a student should be able to understand :

- Will be able to understand the concepts of Knowledge and knowledge management .
- Can be able to design and develop Knowledge management systems for Business applications .
- Implementation of KM to various areas of Interest in Business Organizations .

References (Books, Websites etc.):

1. Madhukar Shukla:Competing Through Knowledge-Building a learning Organisation(Responsce Books, New Delhi.
2. Tiwana, The Knowledge Management Toolkit: Practical Techniques for building a Knowledge Management Systmes, 2/e, Pearson Edu.
3. Honey Cutt : "Knowledge Management Strategies", PHI, New Delhi.
4. A wad, KM, Pearson Edn, 2007.
5. Barnes, Knowledge Management Systems, 1/e, Thomson 2006.
6. Ikudiro Nonka & Hirotaka Takeuchi, " The Knowledge – Creating Company", Oxford University Press, London.

Suggested MOOC: Please refer these websites for MOOC's:

NPTEL / Swayam ,www.edx.com,www.coursera.com

Syllabus

Unit	Contents
1	**Introduction:** Definition, Scope and Significance of Knowledge Management , Difficulties of Knowledge Management, Techniques of KM – Implementation of KM, Organizational knowledge, Characteristics and Components of Organizational Knowledge
2	**Drivers of knowledge Management:** Pillars of knowledge Management, KM framework , Supply Chain of KM , Formulation of KM strategy.
3	**Technology and KM:** Technology components of KM – IT & KM , Ecommerce and KM
4	**Total Quality Management and KM:** TQM and KM , Bench marking and KM.
5	**Implementation of KM:** Discussion on Roadblocks to success, Implementing a KM programme , Critical Success Factors in KM , Implementation of KM
6	**KM and Organizational Restructuring:** The Mystique of Learning, Organization:- Outcomes of learning, Learning and Change – Innovation, continuous Improvements, Corporate Transformation.
7	**Case studies in Knowledge Management** Knowledge management in Health Care, Knowledge Management in Human Resource Management