Gujarat University

Bachelor of Computer Applications

Semester V

Syllabus

(effective from June 2019)

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BCA V SYLLABUS

COURSE TITLE	CC301 Web Application Development – I (Using C#)
COURSE CODE	CC-301
COURSE CREDIT	3
SESSION PER WEEK	4
TOTAL TEACHING HOURS	40 HOURS

AIM

To provide knowledge of advance concepts of dynamic and interactive web application using ASP.NET and C#.NET as language.

LEARNING OUTCOMES

On the completion of the course students will:
1. Understand server-side technology and use of webserver.
2. Understand different web server controls available in ASP.NET.
3. Mange security and personalization in ASP.NET website.
4. Validate different kind of data, and design master page.
5. Design GUI enabled interface using data controls to manage database.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	**INTRODUCTION TO ASP.NET**	**10**
	❖ Introduction to .NET Platform and Web ➢ Introduction to ASP (Server-side Technology) ➢ .NET Framework (FCL and CLR) ➢ Overview of IIS ➢ Processing of ASP.NET page (Execution model) ➢ Features of .NET IDE ➢ Features of ASP.NET ❖ Working with ASP.NET ➢ Coding Model (Inline and Code-behind) ➢ Introduction to Web-Forms and its Events ➢ ASP.NET Built-in directory structure ▪ App_data ▪ App_code ▪ Bin	

	❖ Application Configuration ➢ Global.asax file ➢ Web.config ❖ Common properties ➢ AccessKey ➢ BackColor ➢ BorderWidth ➢ BorderStyle ➢ CSSClass ➢ Enabled ➢ Font (Bold, Italic, Name, Overline, Size, Strikeout, Underline etc) ➢ ForeColor ➢ Height ➢ TabIndex ➢ Tooltip ➢ Width ➢ ID ➢ Runat ➢ Text ❖ Label ➢ EnableViewState ➢ AssociatedControlID ❖ TextBox ➢ AutoCompleteType ➢ AutoPostBack ➢ Columns ➢ MaxLength ➢ ReadOnly ➢ TextMode ❖ Literal ➢ Mode ❖ Panel ➢ Use of Panel ➢ Adding controls at runtime in panel	
2	**INFORMATION PASSING AND STANDARD CONTROLS**	**10**
	❖ Passing Information from one page to another ➢ Previouspage. FindControl Method ➢ QueryString ➢ Cookies ➢ Session variables ➢ Application variables ➢ HttpRequest and HttpResponse Objects ❖ Web server controls Button, Image Button, Link Button ➢ PostBackUrl ➢ ImageUrl (Image Button) ➢ AlternateText (Image Button) ➢ Events:OnClick, OnClientClick	

	❖ Hyperlink ➢ NavigateUrl ➢ Target ❖ ImageMap control (Creating Hotspots) ❖ CheckBox and RadioButton ➢ Properties ▪ AutoPostBack ▪ Text ▪ TextAlign ▪ Checked ▪ GroupName (RadioButton) ➢ Event ▪ OnCheckedChange ❖ CheckBoxList, RadioButtonList ➢ Properties ▪ AutoPostBack ▪ DataSource ▪ RepeateColumns ▪ RepeateDirection ▪ TextAlign ▪ Items ▪ SelectedIndex ▪ SelectedItem ▪ SelectedItems ➢ Event ▪ OnSelectedIndexChanged ❖ ListBox, DropdownList ➢ Properties ▪ AutoPostBack ▪ DataSource ▪ Items ▪ SelectionMode (ListBox) ➢ Event ▪ OnSelectedIndexChanged	**6**
	Rich Controls:	
	❖ Calendar ➢ Properties ▪ NextMonthText ▪ PrevMonthText ▪ SelectedDate ▪ SelectedDates ▪ SelectionMode ➢ Event ▪ DayRender ❖ Adrotator control (showing advertisement from XML file and Database) ❖ FileUpload control	**4**
3	**Master page, Navigation, Validation, Login controls**	**10**

	❖ Designing Master page ❖ Using Navigation Controls ➢ TreeView ➢ SiteMapPath ➢ Menu ➢ Creating sitemap file for navigation ❖ Validation controls ➢ Required Field Validator ➢ Range validator ➢ Regular Expression validator ➢ Compare validator ➢ Custom validator ➢ Validation summary	**5**
	❖ Login Controls ➢ Login ➢ LoginView ➢ PasswordRecovery ➢ LoginStatus ➢ LoginName ➢ CreateUserWizard ➢ ChangePassword ❖ Creating and Managing Roles ❖ Creating and Managing Access Rules ❖ Creating and Managing Profile	**5**
4	**Authentication, Authorization and Data controls**	**10**
	❖ Membership class ➢ Methods ▪ CreateUser ▪ DeleteUser ▪ FindUserByName and FindUserByEmail ▪ GeneratePassword ▪ GetAllUsers ▪ GetUser ❖ Role class ➢ Methods ▪ AddUsresToRole ▪ AddUserToRole ▪ CreateRole ▪ DeleteRole ▪ FindUserInRole ▪ GetUsersInRole ▪ IsUserInRole ▪ RemoveUserFromRole(s) ❖ ProfileManager class ➢ Methods ▪ DeleteInactiveProfiles ▪ DeleteProfile ▪ DeleteProfiles ▪ FindProfileByUserName	

- GetAllProfiles
- GetNumberofProfile

❖ Data controls
- ➢ GridView
- ➢ DataList
- ➢ FormView
- ➢ DetailsView
- ➢ Repeater

❖ ADO.NET
- ➢ Connection
  - Properties
    - ConnectionString
    - State
  - Methods
    - Open
    - Close
- ➢ Command
  - Properties
    - CommandText
    - Connection
  - Methods
    - ExecuteNonQuery
    - ExecuteReader
    - ExecuteScalar
- ➢ DataReader
  - Property
    - Items
  - Method
    - Read
- ➢ DataAdapter
  - Properties
    - SelectCommand
    - InsertCommand
    - UpdateCommand
    - DeleteCommand
  - Methods
    - Fill
    - Update
- ➢ DataSet
- ➢ CommandBuilder

TEXT BOOK/S:

1. **Professional ASP.NET 3.5 (Sp1) In C# and VB by Bill Evjen, Scot Hanselman and David Rader (Wrox)**

REFERENCE BOOKS:

1. **ASP.NET 4 UNLEASED by Stephen Walther (Pearson)**

WEB RESOURCES:
REQUIRED SOFTWARE/S

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COURSE TITLE	CC302 Python Programming
COURSE CODE	CC-302
COURSE CREDIT	3
SESSIONS PER WEEK	4
TOTAL TEACHING HOURS	40 HOURS

AIM

This course introduces students the fundamentals of core python programming language and to use it for different applications development.

LEARNING OUTCOMES

On the completion of the course students will:

1. To recognize why python is extensively used by developers in the industry.
2. To study and employ different datatypes, operators, I/O and control statements.
3. To define & implement class and different levels of inheritance.
4. To learn creating modules and data structures like List, Tuples and Dictionaries
5. To handle exceptions and work with the built in standard libraries.
6. To create a virtual environment.
7. To implement python database connectivity.

DETAIL SYLLABUS

UNIT	TOPIC/SUB TOPIC	TEACHING HOURS
1	❖ **Beginning with Python, Datatypes, Operators, I/O and Control statements**	**10**
	❖ **Introduction to Python** Python, Features of Python, Viewing of Byte Code, Flavours of Python, PVM, Memory Management in Python, Garbage collection in python, Comparisons between C-Java-Python, Writing first Python program, Execution of a Python program (using command line, IDLE window and system prompt).	3
	❖ **Datatypes in Python** Built-in datatypes, None types, Numeric types, Explicit conversion of datatypes, Sequences in Python, str, bytes, bytearray, List, Tuple, range, Sets, set datatype, frozenset, mapping types, Determining the datatype of a variable, Identifiers and reserved words, Naming conventions in Python.	4
	❖ **Operators, I/O and control statements** Membership operators, Identity operators, Output statements, Input statements, Command line arguments, A word on Indentation, The if-elif-else statement, Infinite loops, Nested Loops, The else Suite, break, continue, pass, assert and return statements.	3

2	❖ **Modules, Arrays, Functions, List, Tuples and Dictionaries**	**10**
	❖ **Modules, Arrays and Functions** Creating our own modules in python, Advantages of Array, Creating an Array, Importing the array module, Indexing-Slicing and Processing the arrays, Difference between a function and a method, Defining-calling and returning(single and multiple) results from a function, Pass by Object Reference, Positional arguments, Keyword arguments, Default arguments, Variable length arguments, Anonymous Functions, Function Decorators.	4
	❖ **List and Tuples** Exploring List, Creating lists using range() function, Updating the elements of the list, Concatenation of two lists, Repetition of lists, Membership in lists, Aliasing and Cloning lists, Methods to process List, Nested Lists, Tuples, Creating and accessing Tuple elements, Basic operations on Tuples, Functions to process tuples, Nested Tuples and its sorting.	4
	❖ **Dictionaries** Introduction to Dictionaries, Operations on Dictionaries, Dictionary methods, Converting List into Dictionary, Passing dictionaries to functions.	2
3	❖ **Classes, Inheritance and Polymorphism**	**10**
	❖ **Classes** Creating a class, The Self variable, Constructor, Types of variables, Types of methods, Passing members of one class to another.	3
	❖ **Inheritance** Implementing inheritance, Constructors in inheritance, Overriding Super class constructors and methods, The super() method, Types of Inheritance, Single and multiple, problems in multiple inheritance, Method resolution order(MRO).	4
	❖ **Polymorphism** Introduction to polymorphism, Duck Typing Philosophy of Python, Operator overloading, method overloading, method overriding.	3
4	❖ **Exception Handling, Standard Library, Creating Virtual Environment and Python Database connectivity**	**10**
	❖ **Exception Handling and Standard Library** Exceptions, Exception handling, Types of exceptions, Operating System Interface, File wildcards, Command line arguments, String pattern matching, mathematics , internet access, dates and times, data compression, performance measurement.	4
	❖ **Creating virtual environment** Introduction, generating virtual environments, managing packages with pip(Python Package Index).	1
	❖ **Python and MySQL** Installing MySQL Connector, Verifying the Connector Installation, Using MySQL from Python, Retrieving all rows from a table, Inserting rows into a table, Deleting rows from	5

	table, Updating rows in a table, Creating database tables through Python.	

TEXT BOOK:

1) Core Python Programming
By, Dr. R. Nageswara Rao, 2017 edition
2) Python Tutorial (Release 3.6.4)
By, Guido van Rossum and the Python development team

REFERENCE BOOK:

1) A Byte of Python,
By Swaroop C H
2) Python Cookbook, Recipes of Mastering Python 3,
By David Beazely & Brian K. Jones

WEB RESOURCES:

https://www.python.org/about/apps/
https://www.w3schools.com/python/default.asp
https://www.tutorialspoint.com/python3/index.htm
https://www.programiz.com/python-programming/tutorial

REQUIRED SOFTWARES:

Python 3.4.1 or higher
IDE: IDLE
Database: MySQL

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COURSE TITLE	CC303 Computer Networks
COURSE CODE	CC-303
COURSE CREDIT	3
Session Per Week	4
Total Teaching Hours	40 HOURS

AIM

To provide knowledge of Software Project Management.

LEARNING OUTCOMES

On the completion of the course students will be able to :

- To become familiar with the fundamentals of data communication and networking.
- To understand different network technologies.
- To get insights into different advanced network technologies that can be used to connect different networks.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	❖ **Introduction to Data communications and Networking**	**10**
	❖ **Introduction** ➢ Fundamental concepts ➢ Data communications ➢ Protocols ➢ Standards ➢ Signal propagation ➢ Analog and digital signals ➢ Bandwidth of a signal and a medium	**3**
	❖ **Analog and Digital transmission** ➢ Introduction ➢ Analog signal, Analog transmission ➢ Digital signal, Digital transmission ➢ Digital signal, Analog transmission ➢ Baud rate and bits per second ➢ Analog signal, Digital transmission (excluding: Adaptive and Delta modulation)	**4**
	❖ **Modes of data transmission** ➢ Introduction ➢ Parallel and Serial communication	**3**

	➢ Asynchronous, Synchronous communication ➢ Simplex, half duplex and full-duplex communication	
2	❖ **Multiplexing and Demultiplexing**	**10**
	➢ Multiplexing and Demultiplexing ➢ Types of multiplexing ➢ FDM versus TDM ➢ WDM ❖ **Transmission errors: Detection and correction** ➢ Introduction ➢ Error classification ➢ Types of Error ➢ Error Detection (Checksum, VRC, LRC, CRC) ➢ Recovery from errors	**5** **5**
3	❖ **Transmission Media**	**10**
	➢ Introduction ➢ Guided media ▪ Twisted pair ▪ Coaxial cable ▪ Optical fiber ➢ Unguided media ▪ Microwave ▪ Satellite communication ▪ Cellular telephones ❖ **Network topologies and Switching** ➢ Introduction ➢ Topologies ▪ Mesh ▪ Star ▪ Tree ▪ Ring ▪ Bus ▪ Hybrid ➢ Basics of switching ➢ Types of switching ▪ Circuit ▪ Packet ▪ Message	**5** **5**
4	❖ **Network protocols, OSI, TCP/IP model**	**10**

	❖ Introduction ➢ Protocols in computer communications ➢ OSI model and layer functions ➢ TCP/IP ▪ Introduction ▪ TCP/IP basics	**4**
	❖ **LAN and WAN** ➢ Introduction ➢ LAN ➢ Ethernet ▪ Introduction ▪ Properties of Ethernet ▪ CSMA/CD ➢ Introduction to VLAN, Fast and Gigabit Ethernet ➢ Token ring ▪ Basics of Token ring ➢ FDDI ▪ Introduction ▪ Properties ▪ Operation ▪ Self healing mechanism ➢ Introduction to WAN	**4**
	❖ **Introduction (Note: Overview of this topics should be covered)** ➢ ISDN, Architecture, Channel types, interfaces ➢ Bluetooth ➢ Infrared communication ➢ Wireless LAN ➢ Internetworking devices ▪ Repeaters ▪ Bridges ▪ Routers ▪ Gateway	**2**

Textbook

Data Communications and Networks, 2nd Edition
Publisher: McGraw Hill
By Achyut S Godbole, Atul Kahate

REFERENCE BOOKS:

1. Business data communication
   Publisher: Cengage publications
   By Selly Cashman
2. Data communications and networking
   Publisher: McGraw Hill
   By Behrouz Forouzan
3. Computer networks
   Publisher: Pearson
   By Andrew S. Tanenbaum

GUJARAT UNIVERSITY
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COURSE TITLE	CC304 Web Application Development – I (Practical)
COURSE CODE	CC-304
COURSE CREDIT	3
Session Per Week	4
Total Teaching Hours	40 HOURS

AIM

To provide knowledge of advance concepts of dynamic and interactive web application using ASP.NET and C#.NET as language.

LEARNING OUTCOMES

On the completion of the course students will:
1. Be able to develop dynamic and interactive web pages using C# language.
2. Understand use of different .NET web controls.
3. Know How to manage security and personalization in ASP.NET website.
4. Validate different kind of data, and design master page.
5. Design GUI enabled interface using data controls to manage database.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	**INTRODUCTION TO ASP.NET**	**10**
	1. Design .aspx page, having 4 Textboxes (First name, Last name, Email and Mobile). Place a button on the page. On the click even of the button user will be redirected on another page, having same 4 Textboxes having AutoComplete capability. On another page user do not have type First name, Last name, Email, and Mobile number but it will be AutoComplete by pressing one or two keys in each textbox. (Demo of AutoCompleteType property).	

	2. Design two different css class in the web page having different formatting features like border size, border style, border color, font color, background color etc. Place two buttons and a label on the .aspx page. On the click event of the first button one css class will be applied to the label and on the click event of the second button apply second css class to the label. (Changing appearance of the label at run time using CSSClass property). 3. Design a class file having two methods to do sum and multiplication, which takes two arguments. Design a web page having two textboxes to take integer number from the user. Place two buttons to invoke sum and multiplication method. Print the resultant value in the label control placed on the web page. (Use of App_code directory). 4. Create .dll class library file having 2 classes and each class has at least two methods. Add the .dll file into the ASP.NET website. Design a web page to invoke the methods of .dll files. Use appropriate textboxes, label and button controls. (Use of Bin directory). 5. Create a page which will show number of visitors of a page in label (using global.asax). 6. Design a webpage which has textbox and a button. User will enter his/her name in the textbox. On the click event of the button name of the user and current date time will be displayed on the titlebar of the web page. (Using Literal control). 7. Create an application Hit counter, which count the total number of users visited the page. (Using global.asax). 8. Take to linkbuttons showing 'New Member' and 'Existing Member'. When user clicks on the 'New Member' link button panel1 becomes visible, having user name, password, confirm password and email as inputs. When user clicks on 'Existing Member' link button then only panel2 becomes visible having user name and password as inputs). Set proper property of the textbox to mask the password. 9. Design .aspx web page which prints "Gujarat University" for 5 times, each in a new row with increasing font size by 1 each time. (Use loop in c# using code render block). 10. Create web page which will ask the employee personal detail, education detail, work experience	

	detail with use of different panel for each part. Allow user to click on submit button and display a message "Data is successfully submitted" in a new label by adding it at runtime in a panel. 11. Create web page which will ask payment detail of customer purchase, this detail either in Cash or Credit/Debit card or by Cheque. According to the payment mode panel control will display and accept payment detail and display all that detail in next page using label control. 12. Write a program to set the following properties of Label control using internal css class. • Background-color as green, • Border style as solid • Border color as blue • Border width as 2px • Text as "Hello!" When user moves mouse over the label, its background color should change it to yellow. Add one more web form which contains button. When user clicks on it change its fore color as pink using external css.	
2	**INFORMATION PASSING AND STANDARD CONTROLS**	**10**
	1. Write a program containing the following controls: • A DropDownList • A Button • A Label The DropDownList is used to list items available in a store. When the user clicks on an item in the DropDownList, the cost of the selected item is displayed in the label control. The Form title must be ASP.NET. A button must be in the center of a form. Add the following more controls: • Two labels • A TextBox • A Button One of the labels is displayed adjacent to the textbox, displaying the message "Enter the quantity:" When the user enters the quantity in the textbox and clicks the button, the total cost is evaluated and displayed in another label.	

2. Create a RadioButtonList that displays the names of some colors in two columns. Add a button to the Web Form which when clicked changes the color of the Form to the color selected from the list.
3. Create a web page having checkboxlist control shows different products. Web page should have a button and a label. On the click event of the button shows the message "Thank You for placing the order of following items" and then list of all products selected by the user in the checkboxlist server control. Each selected product should be displayed in the new line.
4. Write a simple Web application which keeps track of the number of times a user has visited the page from the same machine. The application keeps track of this information by storing this counter value in a persistent cookie at the client's machine.
5. Display name of country in dropdown list when page is loaded. Allow the user to select the country and display the name of states of that country selected by user in another dropdown list. (Also perform through datareader)
6. Write code to upload only image files (.bmp, .jpg, .gif) and less than 1 kb in folder "Image-Folder". Also display uploaded image files on the same web page using datalist control.
7. Accept Item No, Item Name, Item Price, Item Quantity. Store information in cookie. Display stored information in next page.
8. Take single image having 3 rectangle shapes horizontally having text "Home", "Product" and "Services" written in the boxes. When user clicks on the first rectangle Home.aspx page should be opened. Similarly, when user clicks on the Product rectangle the product.aspx and Service rectangle then service.aspx should be opened. Use ImageMap control.
9. Using AdRotator control, display 3 images of car and when user click on it, open website of it. Load the advertisement details from the XML file as well as database.
10. Using calendar control, allow user to select date from that. Display students whose birthday falls on that date (use database).

3	1. Design a site for "Gujarat University". Design master page having header, sidebar, footer and content section. Put copywrite warning in the footer and university name in the header. In the sidebar put Treeview control, filled from sitemap. Create following hierarchy in the sitemap and provide links to various pages. 2. Design a web site which allows user to register, login, changer password and forgot password features. Create a page which can be opened only by authenticated users, also create a page which can be opened on by the that user who belongs to 'Admin' role. On the home page display Welcome message base on the type of user. For example, for anonymous user show "Welcome Visitor", for User show "Welcome <UserName>" and for any user belongs to admin role, show "Welcome Administrator". 3. Design a web form and perform the following validations: • Null value is not allowed. • The birth date should appear between "1/1/1980" and "1/1/2000". • Email should be valid id. • Contact number exactly of 10 digits 4. Create one registration page and perform the following validations. • To validate email_id • To compare new password and retype password • The rollno should contain first 3 characters BCA. Example BCA01, BCA02 • Restrict the user to enter only date in textbox and it must not accept date greater than current date. • Age should be between 18 to 35 • Name field is compulsory • Mobile number must be of 10 digits only • Give demo of validation summary 5. Design a website having login and registration page. In the registration form modify "CreateUserWizard" control to take personal details of the user live FirstName, LastName, Favourite color and photo (Using FileUpload Control) etc. Divide CreateUserWizard having 3 steps (LoginDetails, Personal Info and Complete). Store the personal details in the profile. Design a profile.aspx page which can be accessible by only authenticated user. After login when user opens profile page then, user can see his/her photo, and first name and last name in the label with his/her favourite color as background color. 6. Design a website having master page. Create sitemap file with suitable assumption and use it in TreeView and Menu control for navigation purpose. Also show demo of SiteMapPath Control.	**10**

7. Design a website in which use all login controls. Also create Role and apply role-based access rule, anonymous user-based access rules. Also demonstrate profile implementation.
8. Design a website which based on user role, user will be redirected to specific page. Create at least 2 roles, and web pages for each role. Both pages must use different master pages. (For example, user belongs 'Admin' role will automatically redirected to 'Admin.aspx' which uses 'Admin.master' master page, and user belongs to 'Customer' role, automatically gets redirected (after login) to customer.aspx page which uses master page customer.master).

	Authentication, Authorization and Data controls	10
4	1. Create a database with two tables as StudentInfo, which contain rollno, name and year of a student and StudentScore which contain marks of three subjects for each student. Display name of all the students in a DropDownList and according to user's choice, particular student's score record should display in a FormView/DetailView control. 2. Develop a web application to reserve online in a hotel. The user should enter date of arrival, number of days, room type, number of persons etc. He would be able to confirm booking and allowed to pay advance on confirmation. 3. Create an application to display all records from an Employee table with proper formatting. (Use Repeater Control). 4. Create a product table having field (ProductCode, Name, Price, Description, CategoryName, ProductURL etc.). Design a web page which shows hyperlink for each unique category. When user click on specific hyperlink pass that category to another page called ProductList.aspx. This page list all the product which belongs to the category selected by the user on the previous page. The page has small image of the product and price only. When user clicks on small product image then user will be redirected to ProductDetails.aspx page. Which shows all the details of the product with larger image. 5. Create a product table having field (ProductCode, Name, Price, Description, CategoryName, ProductURL etc.). Design a webpage so the Admin can enter the new product details. Use file upload control for the ProductURL field which also upload the product picture to some specific folder called 'ProductImages'. After successful insertion redirect user to the 'ProductList' page where all product details displayed in the GridView with small product image. 6. Create two tables Doctor and Patient. Display details of doctor in first grid view. When user selects doctor from the first grid view, display the details of all patients of that doctor in second grid view. 7. Write C#.NET code for following using membership and role and other ACL classes: • Registration page • Login Form • Page to add user in the specific role • List all user details in the GridView 8. Design a webpage which allow user to perform Select, Insert, Update and Delete record operation to the database table using ADO.NET code. 9. Design a webform to enter new Employee details includes EmpCode, Name, Address, DeptCode, StateCode and	

	CityCode. EmpCode should be automatically generated like E001, E002, … E010 and so on. When user press insert button. Use DropDownList for to View State, City and Department from the respective tables, and fetch codes based on user selection. On the click of the insert button store these details in the Employee table. 10. Create four tables as given: • Customer (**CustomerCode**, Name, Address) • Product (**ProductCode**, ProductName, Price, Qty) • SalesMaster (**InvoiceNumber**, CustomerCode, DateofInvoice) • SalesDetails (**InvoiceNumber, ProductCode**, Qty, UnitPrice) Design a webpage to generate Invoice details in which Customer name, Product name, and Line total (Unit price * Quantity) is shown using FormView and GridView.	

TEXT BOOK:

1. **Professional ASP.NET 3.5 (Sp1) In C# and VB by Bill Evjen, Scot Hanselman and David Rader (Wrox)**

REFERENCE BOOKS:

2. **ASP.NET 4 unleased by Stephen Walter (PEARSON)**

GUJARAT UNIVERSITY

BCA V SYLLABUS

COURSE TITLE	**CC305 Python Programming Practicals**
COURSE CODE	CC-305
COURSE CREDIT	3
Sessions Per Week	3
Total Teaching Hours	40 Hours

AIM

To train the students from the basics of coding and executing Python scripts to the more advanced features of using libraries, handling errors and connecting to databases.

LEARNING OUTCOMES

On the completion of the course students will:

1. To learn how to design and implement efficient programming using python.
2. To learn working with the new datatypes in python.
3. To understand and use object based software concepts.
4. To work with the built in libraries and also prepare your own customised libraries.
5. Learning the importance of using different versions of python in a single system.
6. To connect python applications with database.

Note

The list in each unit is indicative only and **may or may not be asked in the examination**. The programs given below are only sample example for practice in lab.

DETAIL SYLLABUS

UNIT	**TOPIC/SUB TOPIC**		**TEACHING HOURS**
1	**Beginning with Python, Datatypes, Operators, I/O and Control statements**		**10**
	1.	Write a program to swap two numbers without taking a temporary variable.	
	2.	Write a program to display sum of two complex numbers.	
	3.	Write a program to create a byte type array, read, modify, and display the elements of the array	
	4.	Create a sequence of numbers using range datatype to display 1 to 30, with an increment of 2.	
	5.	Write a program to find out and display the common and the non common elements in the list using membership operators	
	6.	Create a program to display memory locations of two variables using id() function, and then use identity operators two compare whether two objects are same or not.	
	7.	Write a program that evaluates an expression given by the user at run time using eval() function. Example:	

		*Enter and expression: 10+8-9*2-(10*2)* *Result: -20*	
	8.	Write a python program to find the sum of even numbers using command line arguments.	
	9.	Write a menu driven python program which perform the following: Find area of circle Find area of triangle Find area of square and rectangle Find Simple Interest Exit.(Hint: Use infinite while loop for Menu)	
	10	Write a program to assert the user enters a number greater than zero.	
	11.	Write a program to search an element in the list using for loop and also demonstrate the use of "*else*" with for loop.	
	12.	Write a python program that asks the user to enter a length in centimeters. If the user enters a negative length, the program should tell the user that the entry is invalid. Otherwise, the program should convert the length to inches and print out the result. (2.54 = 1 inch).	
2	**Modules, Arrays, Functions, List, Tuples and Dictionaries**		**10**
	1.	Write a program to create one array from another array.	
	2.	Create a program to retrieve, display and update only a range of elements from an array using indexing and slicing in arrays.	
	3.	Write a program to understand various methods of array class mentioned: append, insert, remove, pop, index, tolist and count.	
	4.	Write a program to sort the array elements using bubble sort technique.	
	5.	Create a program to search the position of an element in an array using index() method of array class.	
	6.	Write a program to generate prime numbers with the help of a function to test prime or not.	
	7.	Write a python program that removes any repeated items from a list so that each item appears at most once. For instance, the list [1,1,2,3,4,3,0,0] would become [1,2,3,4,0].	
	8.	Write a program to pass a list to a function and display it.	
	9.	Write a program to demonstrate the use of Positional argument, keyword argument and default arguments.	
	10.	Write a program to show variable length argument and its use.	
	11.	Write a lambda/Anonymous function to find bigger number in two given numbers.	
	12.	Create a decorator function to increase the value of a function by 3.	
	13.	Create a program name "employee.py" and implement the functions DA, HRA, PF, and ITAX. Create another program that uses the function of employee module and calculates gross and net salaries of an employee.	

	14.	Write a program to create a list using range functions and perform append, update and delete elements operations in it.	
	15.	Write a program to combine two List, perform repetition of lists and create cloning of lists.	
	16.	Create a sample list of 7 elements and implement the *List methods* mentioned: append, insert, copy, extend, count, remove, pop, sort, reverse and clear.	
	17.	Write a program to create nested list and display its elements.	
	18.	Write a program to accept elements in the form of a tuple and display its minimum, maximum, sum and average.	
	19.	Create a program to sort tuple with nested tuples.	
	20.	Write a program to create a dictionary from the user and display the elements.	
	21.	Create a dictionary that will accept cricket players name and scores in a match. Also we are retrieving runs by entering the player's name.	
	22.	Write a program to convert the elements of two lists into key-value pairs of a dictionary.	
	23.	Create a python function to accept python function as a dictionary and display its elements.	
3	**Classes, Inheritance and Polymorphism**		**10**
	1.	Write a program to create a Student class with name, age and marks as data members. Also create a method named display() to view the student details. Create an object to Student class and call the method using the object.	
	2.	Write a program to create Student class with a constructor having more than one parameter.	
	3.	Write a program to demonstrate the use of instance and class/static variables.	
	4.	Write a program to store data into instances using mutator methods and to retrieve data from the instances using accessor methods.	
	5.	Write a program to use class method to handle the common features of all the instance of Student class.	
	6.	Write a program to create a static method that counts the number of instances created for a class.	
	7.	Create a Bank class with two variables name and balance. Implement a constructor to initialize the variables. Also implement deposit and withdrawals using instance methods.	
	8.	Write a program to create a Emp class and make all the members of the Emp class available to another class (Myclass). *[By passing members of one class to another]*	
	9.	Create a Student class to with the methods set_id, get_id, set_name, get_name, set_marks and get_marks where the method name starting with set are used to assign the values and method name starting with get are returning the values. Save the program by *student.py*. Create another program to use the Student class which is already available in *student.py*.	

	10.	Write a program to access the base class constructor from a sub class by using *super()* method and also without using *super()* method.	
	11.	Write a program to override super class constructor and method in sub class.	
	12.	Write a program to implement single inheritance in which two sub classes are derived from a single base class.	
	13.	Write a program to implement multiple inheritance using two base classes.	
	14.	Write a program to understand the order of execution of methods in several base classes according to method resolution order (MRO).	
	15.	Write a program to check the object type to know whether the method exists in the object or not.	
	16	Write a program to overload the addition operator (+) to make it act on the class objects.	
	17.	Write a program to show method overloading to find sum of two or three numbers.	
	18.	Write a program to override the super class method in subclass.	
4	**Exception Handling, Standard Library, Creating Virtual Environment and Python Database connectivity**		**10**
	1.	Write a program to handle some built in exceptions like *ZeroDivisionError*.	
	2.	Write a program to handle multiple exceptions like *SyntaxError* and *TypeError*	
	3.	Write a program to import "*os*" module and to print the current working directory and returns a list of all module functions	
	4.	Write a program to provide a function for making file lists from directory wildcard searches.	
	5.	Write a program to import *datetime* module and format the date as required. Also use the same module to calculate the difference between your birthday and today in days.	
	6.	Write a program to create a database named "Sample_DB" in MySQL(). [First ensure connection is made or not and then check if the database *Sample_DB* already exists or not, if yes then print appropriate message]	
	7.	Write a program to retrieve and display all the rows in the employee table. [First create an *employee* table in the Sample_DB with the fields as eid, name, sal . Also enter some valid records]	
	8.	Write a program to insert several rows into *employee* table from the keyboard.	
	9.	Write a program to delete a row from an *employee* table by accepting the employee identity number (eid) from the user.	
	10.	Write a program to increase the salary (sal) of an employee in the *employee* table by accepting the employee identity number (eid) from the user.	

	11.	Write a program to create a table named *new_employee_tbl* with the fields eno , ename , gender and salary in Sample_DB database. The datatypes of the fields are eno-int, ename-char(30), gender-char(1) and salary-float.	

TEXT BOOK:

1) Core Python Programming
By, Dr. R. Nageswara Rao, 2017 edition
2) Python Tutorial (Release 3.6.4)
By, Guido van Rossum and the Python development team

REFERENCE BOOK:

1) A Byte of Python,
By Swaroop C H
2) Python Cookbook, Recipes of Mastering Python 3,
By David Beazely & Brian K. Jones

WEB RESOURCES:

https://www.python.org/about/apps/
https://www.w3schools.com/python/default.asp
https://www.tutorialspoint.com/python3/index.htm
https://www.programiz.com/python-programming/tutorial

REQUIRED SOFTWARES:

Python 3.4.1 or higher
IDE: IDLE
Database: MySQL

GUJARAT UNIVERSITY
BCA V SYLLABUS

COURSE TITLE	CC306 Software Development Project- 1
COURSE CODE	CC-306
COURSE CREDIT	5
Session Per Week	3
Total Teaching Hours	40 HOURS

AIM

This course provides an opportunity for students to apply the knowledge and skills acquired in the core courses to larger and more complex problems and to gain experience in working in teams.

LEARNING OUTCOMES

The student would be able to..

1. Students will be exposed to software development process by choosing a typical business/scientific/administrative/system application.
2. Define project scope, assess feasibility, and establish a project schedule.
3. Get some experience in working with a client organization.
4. Gain experience in working in a group for successfully developing the deliverables.

Mode of study: Half / One day off to work on the project in a week. (Atleast three hours must be allotted in weekly timetable for discussion/preparation of deliverables)

COURSE CONTENT

- Students are expected to work on the following during the semester.
  1. Doing System Analysis
  2. Preparing System Flow Diagram
  3. Developing Entity Relationship Diagram
  4. Developing Data Flow Diagram / UML Diagram
  5. Building Data Dictionary
- **Guidelines:**
  - Group size: 2 or 3 students

- **Where to look for Project?**
  - Government Organizations
  - Local Self Government (Municipalities, Panchayats, Urban Development Authorities etc.) or public / private bodies or NGOs.
  - Public Sector Organizations
  - Educational institutes

	➢ Trading/Business houses ➢ Private Organizations ➢ Software Consultancy companies (only if the project work seem to be original and beneficial) ➢ A challenging in-house software project. ➢ The location of the organization is immaterial. It can be ▪ Local in the city ▪ In the vicinity of the city ➢ Mostly the work will have to be done at home or the institute.	
	❖ **Which Project to Avoid?** ➢ The project of system study ➢ Involves only modification in existing software, such as porting of software or few updates ➢ Involves only data storage and retrieval without any processing. ➢ Conventional small applications such as ▪ Library Management ▪ Examination (conduct or Results) ▪ Educational Institute Management ▪ Payroll ▪ Accounting system or inventory ▪ Human Resource **Note:** Students can take up any of the above only if the application would handle real volume and will have substantial complexities.	
	❖ **Preferred Projects:** ➢ Will be such as that caters to Innovative areas/ideas ➢ Use of emerging technology – ▪ RFID ▪ GPS ▪ Biometrics ▪ Bioinformatics, GIS etc. ➢ Challenging uses of Communication and Internet ➢ Scientific applications ➢ Graphics applications ➢ Systems software and utilities ➢ Embedded software ➢ o ERP modules	
	❖ **Preferred Tools:** ➢ Students should feel free to use the tools of their choice subject to permission of the organization. ➢ Working on any acceptable project would give good exposure to use of analytical tools, programming skills and development tools. Hence, any programming or development environment should be acceptable. ❖ **Deliverables by the students:** ➢ At the end of the semester, the student should be able	

	to work on the identified the project and submit the documentation (hard copy) and the presentation.	
	❖ **Documentation:** ➢ A hard copy of the documentation should consist of the following: ➢ Cover Page ➢ Company Certificate ➢ College Certificate ➢ Acknowledgement ➢ Index (with page nos.) ➢ Organization / Company Profile ➢ Project Profile ▪ Existing System ▪ Proposed System ▪ Development Tools and Technology used ➢ System Flow Diagram (if applicable) ➢ UML Diagram/Data Flow Diagram * ➢ Entity Relationship Diagram * ➢ Data Dictionary/Table Design * In applications which uses database. ❖ **Presentation:** ➢ Presentations can be prepared through slides using any Open Source / PowerPoint /Flash or any other multimedia tool, covering the work shown in the documentation. ➢ During viva examination, students will be expected to satisfactorily answer questions pertaining to the project profile, diagrams and tables/data dictionary prepared by them.	

GUJARAT UNIVERSITY
BCA V SYLLABUS

COURSE TITLE	SEC301 Software Project Management
COURSE CODE	SEC-301
COURSE CREDIT	3
Session Per Week	3
Total Teaching Hours	40 HOURS

AIM

To provide knowledge of Software Project Management.

LEARNING OUTCOMES

On the completion of the course students will:

1. To get familiar with the characteristics of a project, project management overview, risk in environment and the management of challenges for effective project management.
2. To understand and use the project planning principles across all phases of a project.
3. To demonstrate competency in the management of a project plan, especially in monitor and controlling a project schedule and budget, tracking project progress.
4. To understand how to manage the quality of project.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	**Introduction to Software Project Management, Project Evaluation and Programme Management, An Overview of Project Planning**	**10**
	❖ **Introduction to Software Project Management** ➢ Introduction ➢ Why is Software Project Management? ➢ What is Project? ➢ Software Projects versus Other Types of Project ➢ Activities Covered by Software Project Management ➢ Stakeholders ➢ What is Management? (Only definition) ❖ **Project Evaluation and Programme Management** ➢ Introduction ➢ Evaluation of Individual Projects ➢ Programme Management ❖ **An Overview of Project Planning**	

	➢ Introduction ➢ Select Project ➢ Identify Project Scope and Objectives ➢ Identify Project Infrastructure ➢ Analyze Project Characteristics ➢ Identify Project Product and Activities ➢ Estimate Effort for Each Activity ➢ Identify Activity Risks ➢ Allocate Resources ➢ Review/ Publicize Plan ➢ Execute Plan, Lower level of Planning	
2	**Selection of an Appropriate Project Approach, Software Effort Estimation**	**10**
	❖ **Selection of an Appropriate Project Approach** ➢ Introduction ➢ The Waterfall Model ➢ The Spiral Model ➢ Software Prototyping ➢ Incremental Delivery ➢ Atern/Dynamic Systems Development Method ❖ **Software Effort Estimation** ➢ Introduction ➢ Where are Estimates Done? ➢ Problems with Over-and-Under-Estimates ➢ The Basis for Software Estimating ➢ Software Effort Estimation Techniques ➢ Bottom-Up Estimating ➢ The Top-down Approach and Parametric Models ➢ Expert Judgment ➢ Estimating by Analogy ➢ Albrecht Function Point Analysis	
3	**Activity Planning, Risk Management**	**10**
	❖ **Activity Planning** ➢ Introduction ➢ Projects and Activities (Defining Activities) ➢ Network Planning Models ➢ Formulating a Network Model ➢ Adding the Time Dimension ➢ The Forward Pass ➢ The Backward Pass ➢ Identifying the Critical Path ➢ Activity Float ➢ Shortening the Project Duration ➢ o Identifying Critical Activities	**7**

	❖ **Risk Management** ➢ Introduction ➢ Risk ➢ Categories of Risk ➢ A Framework for Dealing with Risk ➢ Risk Identification ➢ Risk Assessment ➢ Risk Planning	**3**
4	**Resource Allocation, Monitoring and Control, Managing Contracts, Software Quality**	**10**
	❖ **Resource Allocation** ➢ Introduction ➢ The Nature of Resources Cost Schedules ❖ **Monitoring and Control** ➢ Introduction ➢ Visualizing Progress ➢ Earned Value Analysis ❖ **Managing Contracts** ➢ Introduction ➢ Types of Contracts ➢ Stages in Contract Placement ❖ **Software Quality** ➢ Introduction ➢ Defining Software Quality	

Textbook
Software Project Management (5th Edition) Publisher: Mc Graw Hill By Bob Hughes, Mike Cotterell, Rajib Mall
REFERENCE BOOKS:

GUJARAT UNIVERSITY
BCA V SYLLABUS

COURSE TITLE	SEC301 Information Security
COURSE CODE	SEC-301
COURSE CREDIT	3
Session Per Week	3
Total Teaching Hours	40 HOURS

AIM

This course familiarizes the students with the security issues and technologies involved in modern information systems, including computer systems and networks. Students will gain an understanding of the various ways in which information systems can be attacked and trade-offs in protecting networks..

LEARNING OUTCOMES

The student would be able

- To identify the information assets.
- To identify threats to information assets.
- To define an information security strategy and architecture.
- To plan for and respond to intruders in an information system.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	**Introduction ,Principles of Success, Law and Ethics**	**10**
	❖ **Information Security** ➢ Introduction ➢ Opportunities ➢ Contextualizing Information Security	**2**
	❖ **Information Security Principles of Success**	**3**
	❖ **The Information Security Common Body of Knowledge**	**2**
	❖ **Law, Investigations and Ethics** ➢ Introduction ➢ Types of Computer Crime ➢ How Cyber Criminals Commit Crimes ➢ The Computer and the Law ➢ Intellectual Property Law ➢ Privacy and the Law	**3**

	➢ Computer Forensics ➢ The Information Security Professional's Code of Ethics ➢ Other Ethics Standards	
2	**Physical Security Control and Operations Security**	**10**
	❖ **Physical Security Control** ➢ Introduction ➢ Understanding the Physical Security Domain ➢ Physical Security Threats ➢ Providing Physical Security ❖ **Operations Security** ➢ Introduction ➢ Operation Security Principles ➢ Operations Security Process and Controls ➢ Operations Security Controls in Action	**5** **5**
3	**Access Control System and Methodology and Cryptography**	**10**
	❖ **Access Control Systems Methodology** ➢ Introduction ➢ Terms and Concepts ➢ Principles of Authentication ➢ Biometrics ➢ Single Sign-On ➢ Remote User Access and Authentication ❖ **Cryptography** ➢ Introduction ➢ Applying Cryptography to Information Systems ➢ Basic Terms and Concepts ➢ Strength of Cryptosystems ➢ Putting the Pieces to Work ➢ Examining Digital Cryptography	**4** **6**
4	**Telecommunications , Network and Internet Security and hours Application Development Security**	**10**
	❖ **Telecommunications , Network and Internet Security** ➢ Introduction ➢ Network and Telecommunications Security ➢ Feet Up ➢ Network Security in Context ➢ The OSI Reference Model 6 hrs ➢ Data Network Types ➢ Protecting TCP/IP Networks ➢ Basic Security Infrastructures ➢ Firewalls	**6**

	➢ Intrusion Detection Systems ➢ VPNs ❖ **Application Development Security** ➢ Introduction ➢ The Practice of Software Engineering ➢ SDLC 4 hrs ➢ Distributed Systems ➢ Malware ➢ Antivirus Software ➢ Improving Security Across the SDLC	**6**

o **Textbook**

Information Security Principles and Practices (First Edition 2008) Publisher: Pearson
By Mark Merkow and Jim Breithaupt

REFERENCE BOOKS:

1. Information Security Theory and Practice
   Publisher: PHI
   By Dhiren R. Patel
2. Computer Security Fundamentals
   Publisher: Pearson
   By Chuck Eastiom

GUJARAT UNIVERSITY
BCA SEM-V SYLLABUS

COURSE TITLE	SEC301 Mobile Application Development
COURSE CODE	SEC-301
COURSE CREDIT	3
Session Per Week	3
Total Teaching Hours	40 HOURS

AIM

To develop the skill about the basic mobile application development using Android
To create android apps with different features and basic functionalities

LEARNING OUTCOMES

On the completion of the course students will:
1.Understand the meaning and syntax of android programming
3.Understand the basic android terminology and technology
4.To design activities using simple and advanced controls of android
5.To understand the fundamental concepts of mobile app development

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	**Introduction to Android**	**10**
	❖ History of Mobile Software Development ❖ The Open Handset Alliance ❖ The Android Platform ❖ Android SDK ❖ Building a first Android application ❖ Anatomy of Android Application	**4**

	❖ Android Terminology ❖ Context, Activity, Services, Intents ❖ Application tasks with activities ❖ Activity Life cycle ❖ Managing activity transitions with intents ❖ Working with services ❖ Receiving and Broadcasting intents	**6**
2	**Android Application Design**	**10**
	❖ Using Android Manifest File ❖ Editing Manifest file using Eclipse ❖ Editing Manifest file manually ❖ Managing applications identity and system requirements ❖ Registering activity with manifest file ❖ Working with permissions	**4**
	❖ Managing Application Resources ❖ Working with different types of resources ❖ String, color, Dimensions, Drawables, images, animation, menu	**6**
3	**User Interface Elements**	**10**
	❖ Android views and layouts ➢ TextView, Spinner, Buttons, Checkboxes, Switches, RadioGroups ➢ ToggleButton, Date and Time Controls ➢ Progressbar, Seekbar, Ratingbar, Chonometer, clocks	**6**
	❖ User Interfaces and Layouts ➢ Viewgroups ➢ Built-in Layout classes ➢ FrameLayout, LinearLayout, RelativeLayout,TableLayout, GridLayout ➢ Multiple Layouts on a screen	**4**
4	**Data driven Containers**	**10**
	❖ Listview, Gridview , Galleryview, ArrayAdapter, CursorAdapter ❖ AdapterView, ListActivity, TabActivity	**6**
	❖ Fragment Lifecyle ❖ List Fragment ❖ WebView Fragment ❖ Working with Dialogs ❖ Types of Dialogs ❖ Lifecycle of a Dialog	**4**
TEXT BOOK/S:		

- Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education

REFERENCE BOOKS:

- Reto Meier, “Professional Android 2 Application Development”, Wiley India Pvt Ltd (2011)
- Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd (2009)
- Sayed Y Hashimi and Satya Komatineni, “Pro Android”, Wiley India Pvt Ltd (2009)

WEB RESOURCES:

- https://developer.android.com/training/index.html
- http://www.androidhive.info/2011/
- https://developer.android.com/guide/components/index.html

REQUIRED SOFTWARE/S

- Android Studio 2.3 (https://developer.android.com/studio/index.html)
- Java version 1.8

GUJARAT UNIVERSITY
BCA V SYLLABUS

COURSE TITLE	FC301 Operation Research
COURSE CODE	FC-301
COURSE CREDIT	2
Session Per Week	3
Total Teaching Hours	40 HOURS

AIM

This course aims to equip the students with the basic knowledge of Operations research like Linear Programming, Transportation, and Assignment Problems, Sequencing problems and PERT – CPM Simulations.

LEARNING OUTCOMES

The student would be able
To understand general concept of Operation Research Techniques.
To know the Phases and processes of OR.
To easily identify the application area of Operation Research given the problem area..

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	**Operations Research and Linear Programming** ❖ **Operations Research** ➢ History of Operations Research ➢ Decision Making ➢ Framework for Decision Making ➢ Classification of Operations Research Models ❖ **Linear Programming** ➢ Listing the Common Linear Programming Problems ➢ Basic Terminology ➢ Assumptions of a Linear Programming Model ➢ Introduction of Graphical Solution ➢ Simplex Method and its strategy ➢ Big M Method ➢ Solving problem using excel solver	**10**
2	**Transportation**	**10**

	❖ **Transportation Problems** ➢ Transportation Problem and Its Solution ➢ Northwest Corner Rule ➢ Least Cost Method ❖ **Assignment Problem** ➢ Assignment problem and its solution	
3	**Sequencing Problems**	**10**
	❖ Methods to Solve Single Machine Scheduling Problems ❖ Johnson's Algorithm for Solving N jobs and Two/Three Machine Problem ❖ Three Machine And N Jobs Scheduling Problems using Johnson's Algorithm Extension ❖ Job Shop Scheduling: Two Jobs and M Machines	
4	**Network Models, Simulation**	**10**
	❖ **Network Model** ➢ Network Minimization ➢ Maximum Flow Problem ➢ Linear Programming Approach to Network Problems ❖ **Simulation** ➢ Introduction ➢ Monte-Carlo Simulation and its Application	

Text Book

❖ Operations Research
Publisher: Cengage Learning
By M.V.Durga Prasad

- **Chapter – 1** (1.1, 1.2, 1.3, 1.4)
- **Chapter – 2** (2.1, 2.2, 2.3, 2.5(Overview), 2.6, 2.7, 2.8, 2.11)
- **Chapter – 4** (4.1, 4.1.1 (Except Vogel's Approximation Method), 4.3)
- **Chapter – 8** (8.1, 8.2, 8.3, 8.4)
- **Chapter – 9** (9.1, 9.2, 9.3)
- **Chapter – 15** (15.1, 15.2, 15.3)

REFERENCE BOOKS:

1. Operations Research (Edition 2008)
   Publisher : McGraw Hill
   By P Sankara Iyar
2. Operation Research (Edition- 2010)
   Publisher: Jaico Publishing House
   By Aditham B. Rao

GUJARAT UNIVERSITY
BCA V SYLLABUS

COURSE TITLE	FC301 Management Information System
COURSE CODE	FC-301
COURSE CREDIT	2
Session Per Week	3
Total Teaching Hours	40 HOURS

AIM

This course aims to familiarize students with concepts in management information system and to initiate interest in MIS. This course also aims to introduce the students to apply various concepts of MIS in existing systems. Students will be familiarized with different functional areas and systems where MIS is applied.

LEARNING OUTCOMES

The student would be able

1. To familiarize with the concepts, tools and practices of management information system.
2. To understand what is need of decision support system and knowledge management system in an enterprise.
3. To have experience of real world problems through case studies.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	**Management Information System, Strategic Information system and Types of MIS**	**10**
	❖ **Management Information system – An Introduction** ❖ Management ➢ Key Aspects ➢ As a Control System ➢ Levels of Management ❖ Information ➢ Property and cost of information ➢ Cost of Information ➢ Information economics ➢ Types of Information ➢ Classification ➢ Characteristics	

	❖ System ➢ Characteristics & Element ❖ Information System ➢ Classification ❖ Management Information System ➢ Definition | Scope | Characteristics | ➢ Role | Impact | Applications | Benefits | Success and failure ❖ Strategic Management Information System ❖ **Strategic Information system – An Introduction** ➢ Competitive Strategy Concept ➢ The value Chain and Strategy ➢ Using Information Technology for Strategic advantage ❖ **Types of MIS** ➢ Introduction ➢ Transaction Processing System ➢ Management Information System ➢ Decision Support System ➢ Executive Support System for Senior Management ➢ System That Span the Organizational Management ▪ Enterprise System ▪ Supply chain management system ▪ Customer Relationship Management System ▪ Knowledge Management System	
2	**MIS in Functional Areas and Data warehouse & Data Mining**	**10**
	❖ **MIS in Functional Areas** ➢ Accounting Information system ➢ Geographical Information System ➢ Human resource Information System ➢ Inventory Information System ➢ Manufacturing Information System ➢ Marketing Information System ➢ Quality Information System ➢ R&D Information System ❖ **Data Warehousing and Data Mining** ➢ Characteristics of data warehouse ➢ Benefits of data warehouse ➢ Criteria of data warehouse ➢ The Data warehouse Model ❖ Data Mining Model ❖ Discovery, Relationship, Pattern and Data Mining ❖ Element of Data Mining ❖ Benefits of Data Mining ❖ Problem and Issues of data mining	

3	**ERP system and Customer Relationship Management**	**10**
	❖ **ERP system** ➢ Introduction ➢ Sales and Distribution ➢ Finance ➢ Materials Management ➢ Manufacturing ➢ Human Resource ➢ Quality Management ❖ **Customer Relationship Management** ❖ Overview ❖ Electronic customer Relationship Management system ➢ e-CRM versus CRM ➢ Key e-CRM features ➢ Evolving to e-CRM ➢ Technological and business issues involved in e-CRM ➢ E-CRM business drivers ➢ E-CRM assessment ➢ Issues on Implementing e-CRM system ➢ E-CRM Architecture ➢ eCRM components ➢ The five Engines of e-CRM ➢ Implementing of E-CRM ➢ Challenges in delivering true E-CRM	
4	**Knowledge Management System and Decision support system**	**10**
	❖ **Knowledge Management System** ➢ Knowledge Management ➢ Knowledge Management system ➢ Types of Knowledge Management System ▪ Knowledge Network System ▪ Knowledge work system ▪ Artificial intelligence Management System ▪ Expert system ❖ **Decision support system** ➢ Introduction ➢ Decision making and MIS ➢ Decision support system ➢ Group decision Support System	

Textbook

Management Information System: An Insight
Publisher: International Book House Pvt. Ltd.
By Hitesh Gupta

REFERENCE BOOKS:

1. Management Information Systems(4th Edition)
   Publisher: Mc Graw Hill
   By Waman S Jawadekar
2. Management Information System
   Publisher: PHI
   By Indrajit Chatterjee

GUJARAT UNIVERSITY
BCA V SYLLABUS

COURSE TITLE	FC301 Computer Graphics
COURSE CODE	FC-301
COURSE CREDIT	3
Session Per Week	3
Total Teaching Hours	40 HOURS

AIM

This course aims to familiarize students with the concepts in computer graphics. This course also aims to introduce the students to apply presentation graphics, image processing, graphics system, output primitives, two-dimensional viewing and other graphics system.

LEARNING OUTCOME

The student would be able

1. To familiarize with the concepts, tools and practices of graphics system.
2. To understand what is need of output devices and input devices, with references to graphics system.
3. To familiar with two-dimensional geometric transformation and viewing.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	EACHING HOURS
1	**Survey of Computer Graphics and Overview of Graphics System**	**10**
	❖ **Survey of Computer Graphics** ➢ Computer-Aided Design ➢ Presentation Graphics ➢ Computer Art ➢ Entertainment ➢ Education and Training ➢ Visualization ➢ Image Processing ➢ Graphical User Interfaces ❖ **Overview of Graphics Systems** ➢ Video Display Devices ➢ Refresh Cathode Ray Tubes ➢ Raster-Scan Displays ➢ Color CRT Monitors ➢ Direct-View Storage Tubes	❖

	➢ Flat-Panel Displays ➢ Three Dimensional Viewing Devices. ➢ Stereoscopic and Virtual-Reality Systems ➢ Raster-Scan Display Processor ➢ Random-Scan Systems ❖ **Input Devices** ➢ Keyboards ➢ Mouse ➢ Trackball and Spaceball ➢ Joysticks ➢ Data Glove ➢ Digitizers ➢ Image Scanners ➢ Touch Panels ➢ Light Pens ➢ Voice Systems ❖ **Coordinate Representations** ❖ **Graphics Functions** ❖ **Software Standards** ❖ **PHIGS Workstations** ➢	
2	❖ **Output Primitives**	**10**
	➢ Points and Lines ➢ Line-Drawing Algorithms, DDA Algorithm, Bresenham's Line Algorithm ➢ Loading the Frame Buffer ➢ Circle-Generating Algorithm, Properties of Circles, Midpoint Circle Algorithm ➢ Filled-Area Primitives, Scan-Line Polygon Fill Algorithm, Inside-Outside Tests, Scan-Line Fill of Curved Boundary Areas, Boundary-Fill Algorithm, Flood-fill Algorithm	
3	❖ **Attributes of Output Primitives and Two-Dimensional Geometric Transformation**	**10**
	❖ **Attributes of Output Primitives** ➢ Line Attributes, Line Type, Line Width, Pen and Brush Options, Line Color ➢ Color and Grayscale Levels ➢ Antialiasing ❖ **Two-Dimensional Geometric Transformation** ➢ Basic Transformation ➢ Matrix Representations and Homogeneous Coordinates ➢ Composite Transformations ➢ Other Transformations	
4	**Two-Dimensional Viewing**	**10**

	➢ The Viewing Pipeline ➢ Viewing Coordinate Reference Frame ➢ Window-to-Viewport Coordinate Transformation ➢ Clipping Operations ➢ Point Clipping ➢ Line Clipping, Cohen-Sutherland Line Clipping, Liang-Barsky Line Clipping, Nicholl-Lee-Nicholl Line Clipping, Line Clipping Using Nonrectangular Clip Windows, Splitting Concave Polygons ➢ Polygon Clipping, Sutherland-Hodgeman Polygon Clipping, Weiler-Atherton Polygon Clipping, Other Polygon-Clipping Algorithm	

Textbook

Computer Graphics C Version,
Second Edition
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