Core Course
CC-208 Database Management System - II

Course Introduction:
The aim of the course is to make student how to use these concepts in database applications.

Objectives:
Students would be able to:
1.) Decide where and how to store and retrieve the information effectively using advanced concept of database
2.) Recognize the elements of Database for real life applications.
3.) Familiar with the advanced database concepts such as distributed database, business intelligence and data warehouse etc.
    .

No. of Credits: 3
Theory Sessions per week: 4
Teaching Hours: 40 hours

UNIT	TOPICS / SUB TOPICS	TEACHING HOURS
	Introduction to SQL	**10 hours**

1	• **Introduction to SQL**
	• **Data Definition Commands**
	   ○ Data Types
	   ○ Creating Table Structures
	   ○ SQL Constraints
	• **Data Manipulation Commands**
	   ○ Adding Table Rows
	   ○ Saving Table Changes
	   ○ Listing Table Rows
	   ○ Updating Table Rows
	   ○ Restoring Table Contents
	   ○ Deleting Table Row
		5 hrs

	• **Select Query**
	   ○ With Conditional Restrictions
	   ○ Arithmetic Operators
	   ○ Logical Operators
	   ○ Special Operators
	• **Advanced Data Definition Commands**
	   ○ Changing a Column's Data Type
	   ○ Changing a Column's Data Characteristic
	   ○ Adding a column
	   ○ Dropping a column
	   ○ Advanced Data Update
	   ○ Copying Parts of Table
	   ○ Adding Primary and Foreign Key Designations
		5 hrs

		o Deleting Table From The Database	
		• **Aggregate Functions**	
		• **View**	
	Business Intelligence and Data Warehouse		**10 hours**
2		• **The need for data analysis**	
		• **Business Intelligence**	4 hrs
		o Business Intelligence Architecture	
		o Decision Support Data	
		▪ Operational Data Vs. Decision Support Data	
		▪ Decision Support Database Requirements	
		• **The Data Warehouse**	1 hrs
		• **Online Analytical Processing**	4 hrs
		o Multidimensional Data Analysis Techniques	
		o Advanced Database Support	
		o Easy-To-Use End-User Interface	
		o Client/Server Architecture	
		• **Data Mining**	1 hrs
3		**Distributed Database Management System**	**10 hours**
		• **Distributed Database Management Systems**	5 hrs
		o Evolution of DDBMS	
		o Distributed Processing and Distributed Database	
		o DDBMS Advantages and Disadvantages	
		o Characteristics of DDBMS	
		o Components of DDBMS	
		• **Levels of Data and Process Distribution**	5 hrs
		o Single-Site Processing, Single-Site Data(SPSD)	
		o Multiple-Site Processing, Single-Site Data(MPSD)	
		o Multiple-Site Processing, Multiple-Site Data(MPSD)	
		• **Distributed Database Transparency Features**	
		• **Distributed Transparency**	
		• **Transaction Transparency**	
		o Distributed Requests and Distributed Transactions	
		o Distributed Concurrency Control	
		o Two-Phase Commit Protocol	
		• **Performance Transparency and Query Optimization**	
4		**Advanced SQL**	**10 hours**
		• **Set Operators**	2 hrs
		o Union	
		o Union All	
		o Intersect	
		o Minus	

	• **SQL Join**
	   o Cross Join
	   o Natural Join
	   o Join Using Clause
	   o Join On Clause
	   o Outer Join
	• **SQL Functions**
	   o Date and Time
	   o Numeric
	   o String
	   o Conversion
		5 hrs

	• **Subqueries**
	   o Where Subqueries
	   o In Sub queries
	   o Multirow Subquery Operators: Any and All
	   o From Subqueries
	   o Attribute list Subqueries
	   o Correlated Subqueries
	• **Sequence**
		3 hrs

Textbook:

Database System Concepts (First Edition: 2008)
Publisher: Cengage Learning
By Peter Rob and Carlos Coronel

Chapter-12 (12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7, 12.8, 12.9, and 12.10)),
Chapter-13 (13.1, 13.2, 13.3, 13.4,(13.4.1, 13.4.2), 13.5, 13.6(13.6.1, 13.6.2, 13.6.3, 13.6.4), 13.9) Excluding (13.5.1, 13.5.2, 13.6.5, 13.6.6, 13.6.7, 13.6.8,13.7, 13.8, 13.10)
Chapter-7 (7.1, 7.2 (7.2.4, 7.2.5, 7.2.6, 7.2.7) 7.3, 7.4, 7.5, 7.6.3) Excluding (7.1.1, 7.1.2,   7.2.3)
Chapter-8 (8.1, 8.2, 8.3, 8.4, 8.5)

Reference Books:

1. Introduction to Database Management Systems (First Edition 2006)
     Publisher: Tata McGraw-Hill
     By ISRD Group

2. An Introduction to Database Systems (Eighth Edition 2006)
     Publisher : Pearson
     By C. J. Date, A. Kannan & S. Swamynathan

3. An Introduction to Database Systems
     Publisher: Pearson
     By ITL Education Solutions Limited.

Core Course
CC-209 Visual and Windows programming

Course Introduction:

The course would make students acquainted with the VB .NET programming language. The Course allows students to learn how to deal with a visual interface while acquiring important programming skills such as creating projects with decisions, loops and arrays.

Objectives:
The students would be able to:
1.) Learn the fundamentals of the Microsoft Visual Basic .Net programming language.
2.) Become familiar with Visual Studio IDE.
3.) Be aware of the real functions of desktop application development.
4.) Deal with basic but important properties of the controls.

No. of credits: 3
Theory sessions per week: 4
Teaching Hours: 40

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
	An Introduction to Visual Basic.NET and Program Design	**10 hours**
1	• Introduction	
	• What is Microsoft Visual Basic.NET?	
	• Programming and Application Development	

	• **Application Types**
	   o Windows Applications
	   o Web Applications
	   o Console Applications
	   o Windows Service
	   o Web Services
	   Components	

	• **Object-oriented Programming and object-oriented design**
	   o Objects
	   Rapid application development
		5 hrs

	• **What is .Net?** The Common Language Runtime	
	The VB.NET Integrated Development Environment	

	• **Exploring the VB.NET Integrated Development Environment**
	   o Menu bar and Toolbars
	   o Status Bar
	   o Windows
	   o The components of a VB.NET Solution	

	Building an application in the VB.Net Environment	

	• **Working with Form**
	  o Changing the size of a form
	  o Using the property window
	  o Object box
	  o Properties List
	  o Toolbar
	  o Description Pane
	  o Setting Properties
	     ▪ Name
	     ▪ Start Position
	     ▪ Title(Text)
	     ▪ Form border style
	     ▪ Back color
	     ▪ Fore color
	     ▪ Enabled
	     ▪ Window state
	     ▪ Control box
	     ▪ Icon	

	• **Common Properties of Control**	3 hrs

	• **Textbox Control**
	  o Setting Properties
	     ▪ Name
	     ▪ Border style
	     ▪ Text
	     ▪ Text align
	     ▪ Auto size
	     ▪ Max length
	     ▪ Multi line
	     ▪ Read only
	     ▪ Word wrap
	     ▪ Location: X
	     ▪ Location: Y
	     ▪ Height
	     ▪ Width
	     ▪ Tab stop
	  o Methods
	     ▪ Cut
	     ▪ Copy
	     ▪ Paste
	     ▪ Clear
	     ▪ Focus
	     ▪ Select
	     ▪ Select all
	     ▪ Show	

	• **Label**
	   o Setting Properties
	      ▪ Name
	      ▪ Flat style
	      ▪ Image
	      ▪ Image align
	      ▪ Text
	      ▪ Location: X
	      ▪ Location: Y
	      ▪ Height
	      ▪ Width		

	• **Numeric up down**
	   o Setting properties
	      ▪ Name
	      ▪ Border style
	      ▪ Text align
	      ▪ Up down align
	      ▪ Value
	      ▪ Interceptarrowkeys
	      ▪ Decimal places
	      ▪ Increment
	      ▪ Maximum
	      ▪ Minimum
	      ▪ Thousands Separator
	      ▪ Location: X
	      ▪ Location: Y
	      ▪ Height
	      ▪ Width
		2hrs	

	• **Button**
	   o Setting Properties
	      ▪ Name
	      ▪ Flat style
	      ▪ Image
	      ▪ Image align
	      ▪ Text align		

	• **Textbox and Numericupdown control methods**
	   o Assignment statement
	   o Comment statements		

2	**Working with Variables, Constants, Data types and Expressions**
	  • **Group box**
	   o Setting properties
	      ▪ Name
	      ▪ Flatstyle
	      ▪ Text
	      ▪ Gridsize: width
	      ▪ Gridsize: height
	      ▪ Tabindex
	  • Sizing and aligning controls
	  • Setting a default button on a form and locking controls
		10 hours	

		• **Radio button**
		  o Setting properties
		    ▪ Name
		    ▪ Check align
		    ▪ Checked
		    ▪ Flatstyle
		    ▪ Image
		    ▪ Image align
		    ▪ Text
		    ▪ Auto check
		    ▪ Tabindex
			3 hrs

		• **Declaring constants and variables**
		  o Data types
		  o Declaring constants
		  o Option strict statement
		  o Declaring global variable
		  o Declaring Local variable
		  o Converting data types
			4 hrs

		• **Numeric Expressions and operator precedence**
		  o Arithmetic operators
		  o Forming valid numeric expressions
		  o Evaluating of numeric expressions
		  o Using parentheses in numeric expressions
		  o Construction of error free numeric expressions
		• **Intrinsic functions**
		  o The Pmt function
			3hrs

3	**Decision Making and Other Controls**		**10 hours**

		• Introduction
		• **Combo box Control**
		  o Setting Properties
		    ▪ Name
		    ▪ Dropdown style
		    ▪ Text
		    ▪ Dropdown width
		    ▪ Integral height
		    ▪ Maxdropdownitems
		    ▪ Maxlength
		    ▪ Sorted
		    ▪ Selected Index
		    ▪ Items
		  o Methods
		    ▪ Add()
		    ▪ Remove()
		    ▪ Remove At()
		    ▪ Clear()
		    ▪ Count()
		    ▪ Contains()
		    ▪ Insert()
		    ▪ Copyto()
			3hrs

		Listbox control - Setting properties - Name - Items - Columwidth - Itemheight - Items - Selection mode - Sorted - multicolumn **Decision making control structures** - If…then…else statement - The nested If…then…else structure - Select case statement	
		- The messagebox class and show() method - The focus method **Logical Operators** - Not - And - Or - Xor - Other logical operators - Combining Logical Operators - Logical operator in string expression	2hrs
	Repetition and multiple forms		
		Check box control - Setting properties - Name - Appearance - Checkalign - Checked - Checkstate - Flatstyle - Image - Imagealign - Text - Autocheck - Threestate - Declaring Objects - Showing a form	2hrs

	• **Repetition and the Do statement**
	   o Do_while and Do_until
	   o While_endwhile
	   o The For..Next
	      ▪ Nested for…next
	      ▪ For Each..next
	• **String manipulation**
	   o Manipulating strings
	• Concatenation Operator
	• Keyboard events
		3hrs

4	**Using Menus, Common Dialogs, Procedures, Functions and Arrays**	**10 hours**

	• Introduction
	• **Creating menus on a Mmenubar**
	   o Setting properties
	      ▪ Name
	      ▪ Checked
	      ▪ Defaultitem
	      ▪ Enabled
	      ▪ Radicheck
	      ▪ Shortcut
	      ▪ Text
	   o Creating access keys
	• **Status Bar**
	   o Setting properties
	      ▪ Panels
	      ▪ Sizing grip
	      ▪ Showpanels
	   o Statusbar panel properties
	      ▪ Alignment
	      ▪ Autosize
	      ▪ Borderstyle
	      ▪ Icon
	      ▪ Minwidth
		2hrs

	• **Picturebox**
	   o Setting properties
	      ▪ Image
	      ▪ Sizemode
	      ▪ Picquestion
	      ▪ Stretchimage
	      ▪ Top, bottom, left, right
	• **Common dialog controls**
	   o Open filedialog control
	   o Save filedialog control
	   o Font dialog control
	      ▪ Setting properties
	          i. Allowscriptchange
	          ii. Font
	          iii. Scripts only
	          iv. Show apply
		3hrs

	v. Show color vi. show effects o Color dialog control	

	• **Arrays**
	  o The dim statement for arrays
	  o Dynamic dimensions
	  o Declaring arrays
	  o Array methods
	• **Function procedures**
	  o Declaring a function procedure
	  o Returning a value and existing a function procedure
	• **Sub procedures**
	  o Declaring sub procedures
	  o Passing arguments between procedures
	• Calling a sub procedure
		5hrs

Note:
These topics can be covered using any version of .NET framework and Visual Studio. Therefore, there will be <u>NO</u> restriction in using the version available with the institute.

Textbook:
Microsoft Visual Basic .NET
Complete Concepts and Techniques
Publication: Cengage
By: Gary B. Shelly, Thomas J. Cashman and Jeffery J.Quasney

Reference Book:

1. Programming in Visual Basic .NET
Publication: TATA McGraw-HILL EDITION
By:Julia Case Bradley and Anita C. Millspaugh

Core Course
CC -210 Core Java

Course Introduction:

Students will be provided with basic knowledge of Java programming language – Platform independent concept, object oriented concept, threading, package, interface and applets.

Objectives:

 Students would be able to:

1.) Create their own logic and implement using java language for problem solving.

2.) Understand how to use JAVA programming for real life applications.

No. of Credits: 3
Theory Sessions per week: 4
Teaching Hours: 40

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
	Java Introduction	**10 hours**
	- Creating first java classes - Introduction to Object Oriented Programming Concept - Learning about Java - Features of Java - Analyzing a java application that uses console output - Adding comments to a java - Saving, compiling and running a java application - Creating a java application using GUI output	3 hrs
1	**Using data within java programs** - Constants - Literals - variables - Keywords - Identifiers **Data Types** - Integer - Floating point - Character - Boolean **Understanding numeric type conversion** **Operators in Java** - Arithmetic - Relational (Comparison operators) - Boolean Logical - Increment and Decrement - Conditional - Bitwise	3 hrs

		• **Using the JOptionPane Class for GUI input**	

		• **Using methods, classes and objects**
		  ○ Creating methods with zero, one and multiple arguments
		  ○ Class concepts and creating a class
		  ○ Creating instance methods in a class
		  ○ Declaring objects and using their methods
		  ○ Static method
		  ○ Understanding block and scope
		  ○ Method overloading
		  ○ Constructors
		  ○ Sending arguments to constructors
		  ○ Constructors overloading
		  ○ 'this' keyword
		  ○ Static variable
		  ○ Working with constants
			4 hrs

2		**Decision Making, Looping, Strings, Arrays and Wrapper Classes**	**10 hours**

		• **Flow Control Statements**
		  ○ if and if…..else
		  ○ Nesting if… else
		  ○ Using logical AND and OR operators
		  ○ switch statement
		  ○ Using the conditional AND not operators
		  ○ Using the NOT operator
		  ○ Understanding precedence
		
		• **Looping**
		  ○ while loop
		  ○ Using the arithmetic operators
		  ○ for loop
		  ○ do…. while loop
		  ○ Nested loops
			2 hrs

		• **Characters, String class and String Buffered class**
		  ○ Manipulating characters class
		    ▪ isUpprCase(), toUpperCase(), isLowerCase(), toLowerCase()
		    ▪ isDigit(), isLetter(), isLetterOrDigit(), isWhitespace()
		  ○ Manipulating String class
		    ▪ Declaring a String Object
		    ▪ Comparing String values
		    ▪ toUpperCase() , toLowerCase()
		    ▪ length(), indexOf(), charAt(), endswith(), startWith()
		    ▪ replace(), toString()
		  ○ Manipulating StringBuffer class
		    ▪ setLength(), capacity(), append(), insert()
		    ▪ setChartAt(), charAt()
			3 hrs

		• **Arrays**
		  ○ Declaring and initializing an array
		  ○ Using subscripts with an array
		  ○ Passing array to methods
		  ○ Creating arrays of strings
			3 hrs

		o Using two-dimensional and multidimensional arrays o The Arrays class ▪ binarySearch(), equals(), fill(), sort() methods of array class	
	• **Wrapper Classes** (Overview) o Byte class, short class, Integer class, Long class, Float class, Double class, Boolean class	2 hrs
	Exception Handling and Inheritance	**10 hours**

3	• **Excepting Handing**
	  o Learning about exceptions
	  o Understanding the limitations of traditional error handling
	  o Trying code and catching exceptions
	  o Throwing and catching multiple exceptions
	  o 'finally' block
	  o Understanding the advantages of exception handling
	  o Checked and unchecked exception
	  o Creating own exceptions (custom exception)
		4 hrs

	• **Inheritance**
	  o Concept of inheritance
	  o Extending classes
	  o Method overriding
	  o Constructor calling during inheritance
	  o Super class constructor that require arguments (using 'super' keyword)
	  o Accessing super class methods (using 'super' keyword)
	  o Method which cannot be override
	    ▪ 'final' method
	    ▪ 'final' super class
	    ▪ Static method
		4 hrs

	• **Interfaces and Abstract Classes**
	  o Defining Abstract class
	  o Using Abstract class
	  o Defining Interfaces
	  o Implementing Interfaces
	  o Multiple inheritance using Interfaces
		2 hrs

	Packages, Multithreading, Applets and Applets Graphics	**10 hours**

4	• **Packages**
	  o Define a Package
	  o Creating a Package
	  o Class and package
	  o Import statement
	  o Importing a Package
	  o Access Protection (Access modifiers)
		2 hrs

• **Multithreading** ◦ Introduction ◦ Thread Life Cycle ◦ Creating and running thread (using Thread class and Runnable interface) ◦ Thread Priorities ◦ Thread join(), sleep() method	4 hrs
• **Applets** ◦ Introduction ◦ Lifecycle of an Applet ◦ Comparing Applets and Application ◦ Creating Applets ◦ Parameters passing in applet	2 hrs
• **Applets Graphics** ◦ Line, Rectangles, Ovals, Arcs, Polygons, Polyline methods	2 hrs

Textbook:

 JAVA for Beginners
 Publication : Cengage Learning
 By: Joyce Farrell

Reference Book:

 1. Object Oriented Programming in java
  Publication : Dreamtech
  By Dr. G.T.Thampi

 2. JAVA Programming
  Publication: Pearson
  By Hari Mohan Pandey

Core Course
CC-211 Object Oriented Analysis and Design

Course Introduction:
This course introduces students to the concepts of the Structured Approach and Object-Oriented Approach for System Development in MIS applications.

Objectives:
Students would be able
1.) To understand the concept, role and importance of Structured and Object-Oriented approach.
2.) To recognize the different phases of System Development Life Cycle for real-life applications.
3.) To identify the key points to take into account while using Structured and Object-Oriented approach for System Development.
4.) To comprehend the type of Structured and Object-Oriented model to apply according to the scenery of applications.
5.) To be aware of the real stages and phases for System Development.
6.) To be familiar with various diagrams to draw for System Development using UML.
7.) To implement their key knowledge in form of Case Study.

No. of Credits: 3
Theory Sessions per week: 4
Teaching Hours: 40 hours

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
	System Analysis and Design	**10 hours**

	• Introduction
	• **Software Development Models**
	  o Waterfall Model
	  o The Incremental Model
	  o The Spiral Model
		2 hrs

1	• **System Analysis & Design (SAD)**
	  o Introduction
	  o Overview Feasibility Study
	    ▪ Operational Feasibility
	    ▪ Technical Feasibility
	    ▪ Economic Feasibility
	    ▪ Schedule Feasibility
	  o Requirement Modeling / Fact-finding techniques
	    ▪ Interview
	    ▪ Document review
	    ▪ Observation
	    ▪ Questionnaires and surveys
		4 hrs

	o Data and Process Modeling	

		▪ Data Flow Diagram: Concepts, Symbols, Rules, Construction of DFD for any Case Study ▪ Data Dictionary: Concepts, Rules, Construction of Data Dictionary for any Case Study.	4 hrs
	Object Oriented Analysis & Design		**10 hours**
2	• Introduction		

	• **Object-Oriented Modeling:**
	  o Analysis Model
	  o Architecture Model
	  o Component Design Model
	
	• **Object-Oriented Approach:**
	  o Object Orientation
	  o Object-Oriented Analysis
	  o Object-Oriented Design
			4 hrs

	• **The Constituents of OOAD:**
	  o Objects and Classes
	  o Links and Association
	  o Generalization and Specialization
	  o Aggregation and Composition
	
	• **Pillars of Object-Oriented Analysis and Design**
	  o Abstraction
	  o Encapsulation
	  o Inheritance
	  o Polymorphism
	  o Coupling
	  o Cohesion
	  o Components
	  o Interfaces
	
	• **The Language of OOAD – Unified Modelling Language:**
	  o UML Diagrams
			6 hrs

	Use Case Diagram, Class Diagram and Object Diagram		**10 hours**

3	• **Use-Case Diagram:**
	  o Introduction
	  o Scope of Use-Case Diagram
	  o Benefits of Use-Case Diagram
	  o Elements of Use-Case Diagram:
	    ▪ Actors
	    ▪ Use-Cases
	    ▪ Relationship between Actor and Use Case
	    ▪ Relationship between Use-Cases
	    ▪ Relationship between Actors
			4 hrs

		o Guidelines for design of Use-Case Diagram o Draw the Use-Case diagram for any Case study	

	• **Class Diagram:**
	   o Analysis and Design version of Class Diagram
	   o Elements of Class Diagram:
	   o Guidelines for design of Class Diagram
		3 hrs

	• **Object Diagram**
	   o Introduction
	   o Elements of Object Diagram:
	      ▪ Objects
	      ▪ Links
	   o Guidelines for design of Object Diagram
	   o Draw the Class and Object Diagram for any Case Study
		3 hrs

4	**Sequence Diagram, Collaboration Diagram, Activity Diagram & State Chart Diagram.**	**10 hours**

	• **Sequence Diagram:**
	   o Introduction
	   o Elements of Sequence Diagram:
	      ▪ Life Lines
	      ▪ Messages
	      ▪ Activation
	      ▪ Guards
	      ▪ Combined Fragments
	      ▪ Objects
	   o Guidelines for design of Sequence Diagram
	   o Draw the Sequence Diagram for any case study
		3 hrs

	• **Collaboration Diagram:**
	   o Introduction
	   o Elements of Collaboration Diagram:
	      ▪ Links
	      ▪ Messages
	      ▪ Objects
	   o Guidelines for design of Sequence Diagram
	   o Draw the Sequence Diagram for any case study
		2 hrs

	• **Activity Diagram:**
	   o Introduction
	   o Elements of Activity Diagram:
	      ▪ Initial State
	      ▪ Final State
	      ▪ Action / Activity
	      ▪ Transitions
	      ▪ Decision
	      ▪ Synchronization, Fork and Join
	      ▪ Swimlanes
	      ▪ Object and Object Flow
		3 hrs

o Guidelines for design of Activity Diagram o Draw the Activity Diagram for any case study	

• **State Chart Diagram:**
 o Introduction
 o Elements of State Chart Diagram:
   ▪ Initial State
   ▪ Final State
   ▪ State
   ▪ Transitions
 o Guidelines for design of State Chart Diagram
 o Draw the State Chart Diagram for any case study
	2 hrs

Textbook:

1. Magnifying Object-Oriented Analysis and Design
   Publisher: PHI
   Author: Arpita Gopal and Netra Patil

2. System Analysis and Design Methods
   Publisher: Cengage Learling
   By: Gary B. Shelly, Thomas J. Cashman, Harry J. Rosenblatt

Note: Only Unit-1 will be covered from Text Book-2.

Reference Book:

1. System Analysis and Design with UML version 2.0 an Object-Oriented Approach
   Publisher: Wiley
   By: Alan Dennis, Barbara Haley Wixom, David Tegarden

2. Object-Oriented Analysis & Design with Unified Process
   Publisher: Cengage Learning
   By: Satzinger, Jackson, Burd

Core Course
CC-212 *CC-208 Practical

Course Introduction:
This course aims at developing the techniques and skills of database designing as well as querying which can be applied in the several applications.

Objectives:
Students would be able to:
1.) Get familiar with the fourth generation language named structure query language which can be used to solve ad hoc queries.
2.) Experience to design database table and establish relationship between them.

No. of Credits: 3
Practical Sessions per week: 3
Teaching Hours: 40 hours

The students are expected to write programs in SQL using ORACLE software unit wise as given below. 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 examples for practice in lab.

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
	SQL	**10 hours**

1	• **Create table structures.**
	    o With Different data types of SQL
	    o with use of necessary constraints
	        ▪ Primary Key
	        ▪ Foreign Key
	        ▪ Not Null
	        ▪ Unique
	        ▪ Default
	        ▪ Check
		5 hrs

	• **Perform following data manipulation commands on table**
	  For Example:
	    o Adding Table Rows
	    o Saving Table Changes
	    o Listing Table Rows
	    o Updating Table Rows
	    o Restoring Table Contents
	    o Deleting Table Row
		5 hrs

	SQL	**10 hrs**

2	• **Perform select queries on different tables.**
	
	    o with arithmetic operators
	    o with conditional restrictions
	    o with logical operators
		8 hrs

		o with special operators	

		• **Apply advanced data definition commands on table**
		  For Example:
		  o Changing a Column's Data Type
		  o Changing a Column's Data Characteristic
		  o Adding a column
		  o Dropping a column
		  o Advanced Data Update
		  o Copying Parts of Table
		  o Adding Primary and Foreign Key Designations
		  o Deleting Table From The Database
			2 hrs

	Advanced SQL		**10 hours**

3		• **Perform select query with aggregate functions**
		  o Min
		  o Max
		  o Count
		  o Sum
		  o Avg
			2 hrs

		• **Apply set operators on any given two tables.**
		  o Union
		  o Union All
		  o Intersect
		  o minus
			2 hrs

		• **Perform join on given two or more than two tables.**
		  o Cross Join
		  o Natural Join
		  o Join Using Clause
		  o Join On Clause
		  o Outer Join
			6 hrs

	Advanced SQL		**10 hours**

4		• **Demonstrate the use of SQL functions using SQL query on different tables.**
		  o Date and Time
		  o Numeric
		  o String
		  o Conversion
			3 hrs

		• **Demonstrate the use of sub queries on different tables.**
		  o Where
		  o In
		  o Having
		  o Multi rows (Any/ All)
		  o From sub query
		  o Attribute list
		  o correlated
			6 hrs

		• **Create sequences and demonstrate the use of sequence.(Create, Use and Delete)**	1 hrs

Note: The students should maintain the record of typical (not simple ones) programs in their file, which duly certified, should be presented at the time of final examination.

Following type of sample questions can be asked in the final examination

1. CUST(CID,CNAME,CCITY,DOB)

   PROD(PID,PNAME,PCOST,PPROFIT)

   SALE_DETAIL(CID,PID,SALE,SALE_DATE)

   1) Write a query that display purchase detail of all customers based on sale date.
   2) Display the Name of customers who are born in 1985.
   3) Display the name of product starts with "s".
   4) Display details of product having maximum sales.

2. BRANCH_MASTER(B_NO,B_NAME,LOCATION)

   CUSTOMER_MASTER(C_NO,C_NAME,GENDER,DOB,CITY,CONTACT_NO)

   ACCOUNT_MASTER(ACC_NO,ACC_TYPE,B_NO,C_NO,OPEN_DATE,CURR_ BALANCE)

   1) Display details of male customers only.
   2) Display the details of account opened in 1999.
   3) List all records where current balance not less than 4000.
   4) List all branch names where branch number is 1 or 3.

3. EMP(EMP_NO,EMP_NAME,DESIGNATION,MGR_NO,HIREDATE,SALARY, COMMISSION,DEPT_NO)

   DEPT(DEPT_NO,DEPT_NAME,LOCATION)

   1) List DEPTNO as DEPARTMENT NUMBER, Count of Employees as "Number of Employees" FROM Employee table.
   2) List all employees who earn more than the average salary of their departments.
   3) List DEPTNO, sum of salary department wise of employees who earn more than 2000.
   4) Create a view on all the employee details of deptno=10.

4. PERSON (P_ID, LASTNAME, FIRSTNAME, ADDRESS, CITY)

   ORDER (O_ID, ORDERNO, P_ID,ORDER_PRICE)

   1) List all persons in Norway and USA:
   2) Select only the records with NULL values in the "Address" column
   3) List firstname,lastname with an Order month "November".

4) Count the no of persons having average order price=20;

5. PROGRAMMER(NAME,DOB,DOJ,PROF1,PROF2,SALARY)

SOFTWARE(NAME,TITLE,DEV_IN,SCOST,DCOST,SOLD)

STUDIES (NAME,SPLACE,COURSE,CCOST)

1) How many programmers have done the PGDCA course.
2) Display the institute names from the Studies table without Duplicates.
3) Display details of software having maximum scost.
4) Display the names of the programmers whose names contain 2 Occurrences of the letter 'A':

Textbook:
> Database System Concepts (First Edition: 2008)
> Publisher: Cengage Learning
> By Peter Rob and Carlos Coronel

Reference Book:
1. Introduction to Database Management Systems (First Edition 2006)
   Publisher: Tata McGraw-Hill
   By ISRD Group

2. An Introduction to Database Systems (Eighth Edition 2006)
   Publisher : Pearson
   By C. J. Date, A. Kannan & S. Swamynathan

3. An Introduction to Database Systems
   Publisher: Pearson
   By ITL Education Solutions Limited.

Core Course
CC-213*CC-209 Practical

Course Introduction

Students will be implementing basics of VB .NET programming language features like control structures, loops and arrays with basic .NET controls.

Objectives

The students would be able to:

1.) Work hands-on with VB .NET Programming language.
2.) Gain practical knowledge of various VB .NET controls.
3.) Develop skills for effective use of the VB .NET controls.
4.) Understand practical knowledge of programming in real-life application.

No. of credits: 3
Practical sessions per week: 3
Teaching Hours: 40

The students are expected to write program in VB .NET language unit wise as given below.
The list in each unit is **indicative only and may or may not be asked in the examination.**

UNIT		Building an simple application in the vb.net environment with form, textbox, label, numeric up down and button	10 hours
1	1	Create a form with one textbox, one label and one button. Enter your name in textbox. On clicking of button, your name must display into the label.	
	2	Create a form with three buttons Red, green and blue. On the click of red button back color of form will be changed to red and so on.	
	3	Create a form, while running the application the form should always be shown in the middle of the screen.	
	4	Design interface of simple calculator.	
	5	Design a form with numeric up down control. It shows only even numbers from 1 to 50.	
	6	Write a program to create a color pallet. Take three numeric up down for Red, Green and Blue color and one label. And according to scrollbar values the color of label should be changed.	
	7	Change the icon of form.	
	8	Create an application to load image in label.	
	9	Create an application with one textbox and three buttons (left, right, center). On clicking left button, alignment of textbox should be changed to left and respectively.	
	10	Create an application which shows a number like 11,120 in numeric updown.	

2			**Working with Variables, Constants, Data types and Expressions**	**10 hours**
		1	Design a form that has three textboxes and radio button that calculate simple interest and compound interest.	
		2	Design an application which will have 2 radio buttons. One will convert the Celsius to Fahrenheit and another will convert Fahrenheit to Celsius. Show the appropriate output depends on the user's selection. (Use radio button to take user choice and use textbox to enter value).	
		3	Create a loan calculator using Pmt function.	
		4	Take two textbox controls. Enter first name and last name in respective textboxes and on clicking button concatenate first and last name and display it on label.	
		5	Create an interface which allows users to select shapes of his/her choice using radio buttons. Take parameters of that shape using textboxes and calculate area of particular shape.	
		6	Create an Employee Entry form which will include employee's name, address, skills (take radio button for skills) and gender (take radio button for gender). On clicking submit button, display inputted data on a label with proper formatting.	
		7	Write a program to convert integer value into double.	
		8	Write a program to calculate area of circle and use pi value as constant.	
		9	Design and develop a project to convert an English measurement in Miles, Yards, Feet and Inches to a metric measurement in kilometers, meters and centimeters. Use the following formula to change the English measurement to inches. Total inches = 63360*miles + 36*yards + 12*feets + inches Use the following formula to determine equivalent meters. Meters = total inches / 39.37	
		10	Write a program to convert rupees value to dollar value.	
			Decision Making, Repetition and multiple forms	**10 hours**
		1	Enter 5 numbers find out highest and second highest. For highest no check it is prime or not and for second highest calculate Fibonacci series	
		2	Create an application with a textbox in which user can enter a sentence then displays 1) Number of vowels 2) Number of spaces	

3		3) Number of digits 4) Number of special symbols When user press "analysis" button	
	3	Take one textbox. Enter paragraph with multiple lines and find out no. of vowels and no. of digits from paragraph.	
	4	Write a program which will accept a string from user. And then reverse the string without using inbuilt functions for string reverse. Then check whether the string is palindrome or not. Find how many words in string. Also find out how many words starts from "a" character.	
	5	Design a form having two text boxes, combo box and a label. Make the validation so that user can enter only numbers in both textboxes, if user has entered both numerical values then make the combo box visible. The combo box has options like 'ADD', 'SUB','MUL' and 'DIV'. According to user's choice From combo result will display in label.	
	6	Design a form which has Annual salary with income tax facilities. If monthly salary entered then calculate annual salary. According to this income tax as per below conditions. Rs.0 - Rs.50000 - No tax Rs.50000 - Rs.60000 - 10% of annual income Rs.60000 - Rs.150000 - 20% of annual income More than Rs.150000 - 30% of annual income Also print net annual salary after the deduction from tax in label.	
	7	Restrict a textbox to input only digits.	
	8	Create a form with two drop down lists (combo boxes) one for country name and another for President / Head of the country. When user selects a country name from combo box, corresponding President/Head name should be displayed in another combo box.	
	9	Design a form to accept a text from user and then put two text boxes to input word to find and replace. If user clicks on find button, show index of the first occurrence of the word given in find textbox. If user clicks replace button, found word should be replaced with the word given for replace.	
	10	Write a program to transfer an item from First Listbox to Second Listbox and from Second Listbox to First.	
	11	Build a calculator with all arithmetic functions.	
	12	Print multiplication table into listbox. For multiplication take value using Numeric up down.	
		Using menus, common dialogs, procedures, functions and arrays	**10 hours**
	1	Design a form that having subroutine of function with below operations Button1: Find out the avg. of four values.	

4		Button2: Find out the max. From that values. Button3: Find out the min. from that values	
	2	Create an application which provides four textboxes for accepting numbers and three option buttons to select two, three or four. Design function adds to find addition of numbers selected using option buttons.	
	3	Take two picture boxes on form which overlap each other. It we click on first picture it will hide itself and shows second one and if we click second one it will do the same.	
	4	Accept no from user and perform following operations using user defined sub routines or functions. i. Factorial of number ii. Odd/even	
	5	Create MDI form. It must have File menu with option open, Close and Exit. It should also have window menu to arrange the child forms like Tile Horizontal, Tile Vertical, Cascade and Arrange Icons.	
	6	Find out entered number is prime or not using function.	
	7.	Create MDI form. It must have File menu with option Open, Close and Exit and one picture box. Allow users to open any picture using open dialog box, that picture should be displayed in the picture box.	
	8	Create a text editor application. It should perform operation like cut, copy, paste and change in font, color of the selected text	
	9	Create a function to sort an array's elements.	
	10	Write a program to find minimum and maximum values from an array.	

Note : The students should maintain the record of typical (not simple ones) programs in their file which duly certified, should be presented at the time of final examination.

Textbook :
Microsoft Visual Basic .NET
Complete Concepts and Techniques
Publication: Cengage
By: Gary B. Shelly, Thomas J. Cashman and Jeffery J.Quasney
Chapter: 2 (excludes Visual Basic . NET Help)
Chapter: 7 (excludes Multidimension array, Enhanced message box features, using control collection)

Reference Book:
Programming in Visual Basic .NET
Publication: TATA McGraw-HILL EDITION
By: Julia Case Bradley and Anita C. Millspaugh

Core Course
CC-214 *CC-210 Practical

Course Introduction:

Students will be provided with practical knowledge of core java programming language which includes threading, package, applet, interface etc.

Objectives:

    1.) The objective of this subject is to get depth practical knowledge of core java language.
    2.) To know the core concepts of core java programming language.

No. of Credits: 3
Practical Sessions per week: 3
Teaching Hours: 40 hours

The students are expected to write program in 'java' language unit wise as given below. The list in each unit is indicative only and may or may not be asked in the examination.

UNIT		TOPICS / SUBTOPICS	TEACHING HOURS
1		**Java Introduction, Operator, Objects, Methods**	**10 hours**
	1	Write a program to calculate the hypotenuse of right angled triangle when other sides of the triangle are given. (Hypotenuse = square root (x*x + Y *Y))	
	2	Write a program to evaluate simple interest of a given principle, rate and time.	
	3	Write a program to find maximum of two numbers without using third variable.	
	4	Write a program using the arithmetic operators to perform algebraic operations on two numbers. (Algebraic operation is +, - , *, /, %)	
	5	Write a program to calculate the area of square and rectangle by overloading the area method.	
	6	Write a java program to display powers of 2 i.e. 2,4,8,16 etc up to 1024 using bitwise operators.	
	7	Write a java program to scan 3 integer values from the user and display the minimum using conditional operator.	
	8	Write a program to convert inches to centimeters.	
	9	Create a complex number class. The class should have a constructor and methods to add, subtract and multiply two complex numbers and to return the real and imaginary parts.	
2		**Decision Making, Looping, String, Array, Wrapper Classes**	**10 hours**
	1	Write a program to print even number up to 10 using while loop.	
	2	Write a program to check whether the given number is even or odd.	

	3	Write a program to demonstrate calculator using switch statement.	
	4	Write a program to create an array to store 5 integer values. Also initialize the array with 5 numbers and display the array Elements in reverse order.	
	5	Write a program to create integer array containing 10 values. Then print all the prime numbers contained by the array.	
	6	Write a program to create a character array to store 6 characters. Also initialize the array with 6 random characters. Now create another array containing 10 characters. Copy the elements ranging from index 2 to 4of first array to second array at the same index.	
	7	Write a program to sort a list of students on the basis of the marks.	
	8	Write a java program that accepts a string from users and display each character on separate line in reverse order.	
	9	Write a program to create a string array and sort all the string contained by the array.	
	10	Write a program to create a string using the string class and check whether the string is a palindrome or not. A string is a palindrome that is spelled the same both forwards and backwards.	
		Exception Handling and Inheritance	**10 hours**
	1	Write a program to display the sum of digits of given numbers with exception handling.	
	2	Write a java program which takes 2 arguments - a string and its length. If the length of the string is not according to given one then throw the user defined LengthMatchException and handles it appropriately.	
	3	Write a Java program to input n integer numbers and display lowest and second lowest number. Also handle the different exceptions possible to be thrown during execution.	
	4	Write a java program that accepts 5 even numbers from command line. If any of the number is odd then throw custom exception OddException and count such invalid numbers.	
	5	Write a program to define custom exception called "no match exception" that is thrown when a string is not equal to "internet" This string is providing through command line argument.	
	6	Consider an employee class, which contains fields such as name and designation. And a subclass, which contains a field salary. Write a program for inheriting this relation.	
3	7	Consider an employee class, which contains fields such as name and designation. And a subclass, which contains a field salary. Write a program for inheriting this relation.	
	8	Write a class with a method to find the area of a rectangle. Create a subclass to find the volume of a rectangular shaped box.	
	9	Write a program to calculate arithmetic mean in the superclass	

		and standard deviation in the subclass.		
4		**Packages, Multithreading, Applets and Graphics**	**10 hours**	
	1	Write a program to calculate the area by using an interface.		
	2	Write a program to show use of the import statement.		
	3	Write an interface called Numbers, with a method int Process(int x, int y). Write a class called Sum, in which the method Process finds the sum of two numbers and returns an int value. Write another class called Average, in which the Process method finds the average of the two numbers and returns an int.		
	4	Write a java program to create 3 threads using Thread class. Three threads should calculate the sum of 1 to 5, 6 to 10 and 11 to 15 respectively. After all thread finishes main thread should print the sum and average.		
	5	Write a java program that accepts marks of 5 subjects from display the average. If any value is not between 0 and 100 then throw custom exception RangeException and handle it.		
	6	Write a java program 1" at every 1000 Milliseconds and other should display "Thread 2" at every 3000 milliseconds to create 3 threads using Runnable interface. Three threads should calculate the sum of 1 to 5, 6 to 10 and 11 to 15 respectively. After all thread finishes main thread should print the sum and average.		
	7	Write a Java applet that draws a circle centered in the center of the applet and filled with random color. Radius of the circle should be passed as a parameter.		
	8	Write an applet that take three numbers as parameters and displays their sum and average.		
	9	Write a java program that creates two threads using Runnable interface. One thread should display "Thread ".		
	10	Write a Java applet that draws a circle divided in 6 equal parts		

Note : (1) Java editors can be any of the following (with any versions):
        Notepad, Edit plus, UltraEdit, NetBeans, Scite
(2)The students should maintain the record of typical (not simple ones) programs in their file which duly certified, should be presented at the time of final examination.

Textbook:
      JAVA for Beginners
      Publication : Cengage Learning
      By   Joyce Farrell

Reference Book :
   1. Object Oriented Programming in java
       Publication : Dreamtech
       By Dr. G.T.Thampi

   2. JAVA Programming

Publication: Person
By Hari Mohan Pandey

Foundation Course
FC – 202(1) Scientific Computing

Course Introduction:

The course introduces the Computer Science student to the numerical methods necessary for scientific computing such as Error, propagation, solutions of Non linear and Transcendental Equations, interpolation and Curve Fitting.

Objectives:

1.) To understand the concepts, techniques & applications of scientific computing.
2.) To develop the skills of solving real life problems by using computer programming.
3.) To make students to understand the art of applying Mathematical techniques to solve some real life problems.
4.) To gain knowledge of scientific computing.

No. of Credits: 2
Theory Sessions per week: 3
Teaching Hours: 40 hours

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
	Errors in Computation	**10 hours**
1	- Introduction - Significant Digits and Floating-Point Representation **Floating point Arithmetic** - Addition Operation - Subtraction Operation - Multiplication Operation - Division Operation	5 hrs
	- Errors in Computation - Absolute and Relative Errors - Calculation of Absolute and Relative Errors - Error Propagation	5 hrs
	Practical Demo should be given for Floating point Arithmetic and Error in C/C++	
	Numerical Methods for Nonlinear and Transcendental Equations	**10 hours**
2	- Introduction - Graphical Method - Tabulation Method	2 hrs
	Iteration Methods - Bisection Method - False Position Method - Newton–Raphson Method	4 hrs
	Numerical Integration	4 hrs
	- Introduction - General Quadrature Formula (GQF) - Trapezodial Rule - Simpson's 1/3 rule	

	Practical Demo should be given for Iteration Method in C/C++	
3	**Interpolation**	**10 hours**
	- Introduction - Lagrange Interpolation Method - Methods Based on Finite Differences - Forward Differences and the Forward Difference Table - Newton's Forward Interpolation Formula	5 hrs
	- Backward Differences and the Backward Difference Table - Newton's Backward Interpolation Formula - Divided Differences and the Divided Difference Table for Unequally Spaced Points - Newton's Divided Difference Interpolation Formula	5 hrs
	Practical Demo should be given for Interpolation Method in C/C++	
4	**Curve Fitting**	**10 hours**
	- Introduction - Straight Line Fit Using the LSF Method - Reverse Straight Line Fit - Polynomial Fit by the LSF Method - Power Function Fit Using the LSF Method	5 hrs
	- Exponential Function Fit by the LSF Method - Error Estimation in LSF Method - Weighted Least Square Approximation - Straight Line Fit Using the WLSF Method Polynomial Curve Fit Using the WLSF Method	5 hrs
	Practical Demo should be given for different Methods of Curve Fitting in C/C++	

Note: - C/C++ Programs and Algorithms should not be asked in theory examination.
Textbook:

Numerical Analysis with Algorithms and Computer Programs in C++
Publication : PHI Learning Private Limited
By   Ajay Wadhwa
Chapter-1, 2, 4, 8

Reference Book:

1. Computer Oriented Numerical Methods
   Publication: Khanna Book Publishing Co. Ltd.
   By R.S.Salaria

2. Numerical Methods for Scientists and Engineers (Third Edition)
   Publication: PHI Learning Private Limited
   By K. Sankara Rao

Foundation Course
FC-202(2) eGovernance

Course Introduction:

Students will be provided with basic awareness of 'what', 'why' and 'how' of e-governance as well as impact of e-government on different stake holders. E-government implementation requires multi-disciplinary approach. Discussion of Case Studies of successful e-governance projects in developing countries will increase understanding of the technical, public administration, economic, managerial perspective of e-government to the students.

Objectives:

Students would be able to

1.) Comprehend the Need and Scope of E-governance.
2.) Understand how projects affecting mass and different stakeholders are planned and implemented.

No. of Credits: 2
Theory Sessions per week: 3
Teaching Hours: 40 hours

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
	Introduction	**10 hours**
1	• **E-Government: Definition and Scope** ○ Nature of Clients Served and the Service Delivery Process ○ E-Government: Different Stages of Evolution ○ E-Government verses E-Governance.	3 hrs
	• **E-Government in the Context of Developing Countries** ○ Nature of Applications for Different Types of Clients ○ Challenges in Design and Implementation ○ Investments in E-Government ○ Reasons for Implementing E-Government ○ E-Government Readiness of Countries ○ Status of E-Government in India ○ Key Challenges in Further Development of E-Government	5 hrs
	• **Making E-Government Work for Rural Citizens** ○ How can ICT Use and E-Government Help the Poor ○ Challenges in Building Pro-poor E-Government	2 hrs
2	**Benefits and Impact of e-Government**	**10 hours**
	• **Potential Benefits of E-Government for Key Stakeholders** ○ Benefits for Citizens : Results from an Impact Assessment Study ○ Benefits for Businesses: Results from an Impact Assessment Study	5 hrs

		o Benefits for Agencies Implementing E-Government Applications	
		• **Impact of E-Government on Transparency and Corruption** o Results from a Study of Impact on Corruption o Improvement in Transparency through E-Government o Dealing with Corruption through E-Government	5 hrs
3	**E-Governance Projects and its Success**		**10 hours**
		• **Guidelines for Implementing Projects Successfully** o Life Cycle of an E-Government Project o Conceptualizing Project Definition and Scope: Starting Small o Process RE-engineering o Designing a Citizen-centric Service Delivery mechanism o Communicating with Users o Seeking Partnerships: Avoiding Reinvention of the wheels o Phasing Implementation o Capacity to manage change o Strong Internal leadership and Project Management o Risk Factors in Implementing E-Government Projects	10 hrs
4	**Case Studies and the road ahead**		**10 hours**
		• **Government of Citizen (G2C) Applications** o Online Delivery of Municipal Services: Ahmedabad Municipal Corporation, Vijaywada, Kalyan-Dombiwali • **Government to Business (G2B) Applications** o Online Tax Filing Systems in Different Countries o Computerization of Interstate Border Check posts in Gujarat • **Government to Government (G2G) Applications** o Computerization of the Treasuries in Karnataka (Khajane)	8 hrs
		• **E-Government : The Way Ahead**	2 hrs

Textbook:

Unlocking E-Government Potential: Concepts, Cases and Practical Insights
Publication: Sage Publications
by Subhash Bhatnagar

Reference Books:

1. E-Governance Today
   Publication: ICFAI University Press
   by Sowmyanarayan Sadagopan

2. Government Online: Opportunities and Challenges
   Publication: Tata McGaw Hill
   by M P Gupta, Prabhat Kumar, Jaijit Bhattacharya

Foundation Course
FC-202(3) Interpersonal Skills

Course Introduction:
A study related with the interpersonal skill and behavior patterns. The topics include interpersonal communication to problem solving and management with good leadership skills.

Objectives:
The student would be able to:
1.) Manage their interpersonal skills and conflicts in an efficient way.
2.) Understand leadership skills and maintain team building.
3.) Practice time management and solve problem related with it.
4.) Solve problems of any issue by resolving conflicts and negotiating.
5.) Structure their ethical decision making.
6.) Appreciate and respect the culture difference and manage cross cultural differences.

No. of Credits: 2
Theory Sessions per week: 3
Teaching Hours: 40 hours

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
	Skill: An Introduction	**10 hours**

1	• **Interpersonal skills and effective management behavior**
	  o Behavior
	  o Motivation
	  o Skill and the need for skills training
		4 hrs

	• **Self Management**
	  o Clarifying Values
	  o Setting Goals and Planning
	  o Group Exercise-The Alligator Rives
		3 hrs

	• **Applying Emotional Intelligence** o Group Exercise-Head versus Heart	3 hrs
2	**Problem Solving**	**10 hours**

	• **Ethical Decision Making**
	  o Group Exercise-Mini Cases
	  o Group Exercise-Anticipating Ethical Conflict
		3 hrs

	• **Creative Problem Solving**	2 hrs
	• **Resolving Conflict**	2 hrs
	• **Negotiating** o Group Exercise-The used car Negotiations	3 hrs

3	**Leadership and Team Building**		**10 hours**
	• **Leadership Qualities and Team Building**		3 hrs
	• **Team Building**		3 hrs

	• **Team Motivation**
	    ○ Goal Setting
	    ○ Case Study-Setting Goals at State Bank of Vermont
			4 hrs

4	**Communication of Management**		**10 hours**
	• **Time Management**		3 hrs
	• **Stress Management**		2 hrs
	• **Communicating across cultures** ○ Group Exercise-What just happened?		3 hrs
	• **Cross Cultural Etiquette**		2 hrs

Textbook:

Training in Interpersonal Skill
Publication: PHI
By Stephen P. Robbins and Phillip L. Hunsaker

Elective Course
EC-202(1) History of Gandhian Movement

Course Introduction:

Mahatma Gandhi is the father of the modern India. According to him Truth is God and God is Truth. His life was an experiment with truth and he had strong faith in peace, truth and non-violence. Basic education was his brainchild and its principles were based on his philosophy of life. The course focuses on Gandhiji's childhood, youth and the movement started by him at South Africa and India.

Objectives:

The Students would be able to:

1.) To know the principles followed by Gandhiji.

2.) To understand how he involved in Satyagraha movement.

3.) To also know how he dealt with injustice done by the British Government before Independence.

4.) To understand the life and works of Gandhiji.

No. of Credits: 2
Theory Sessions per week: 2
Teaching Hours: 20

UNIT	TOPICS / SUBTOPICS
	Gandhiji's Childhood and Youth
1	- Birth and parentage - At school - Marriage - Stealing and Atonement - Glimpses of religion - In England as student - In India as Barrister
	Gandhiji in South Africa
2	- Arrival in South Africa - Getting acquainted with the Indian Problem - Civil rights movement in South Africa 'Indian Opinion' - The Phoenix settlement - The Zulu 'Rebellion' - Domestic Satyagraha - The advent of Satyagraha - Tolstoy Farm

3	**Gandhiji in India**	
	• Founding of the Ashram • Champaran and Kheda Satyagraha • Non- Cooperation Movement • Salt Satyagraha (Salt March) • World War II and Quit India Movement • The Rowlatt Act • 'Navajivan' and 'Young India' • The Birth of Khadi	
4	**World Leaders Inspired by Gandhiji**	
	• Nelson Mandela : The South African leader • Martin Luther King Jr • Aung San Suu Kyi: The Burmese leader • Barack Obama	

Textbook:

Gandhi the Man
Publication: Jaico
By Eknath Easwaran

Reference Book :

1. Gandhi and the Mass Movements
   Publication: Atlantic Publishers
   By S.R.Bakshi

2. Gandhian Non-Violence And India's Freedom Struggle
   Publication: Mahesh Jain
   By Asha Rani

3. Gandhiji's Autobiography
   Publication: Navjivan Publishing House

4. Gandhi and South Africa
   Publication: Navjivan Publishing House

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ELECTIVE COURSE
EC-202(2) Introduction to Science and Technology

Course Introduction

This course offers an introduction of Science and Technology to students from non-science background. The course will deliver positive and informed values and attitudes towards themselves, others and science and technology.

Objectives

The student would be able:

1.) To develop their knowledge and understanding of the role of science in creating/ changing: the environment, information & communication, life-styles products and services, agriculture, health and nutrition.
2.) To understand the impact of technologies people select and use; how these technologies affect other people, the environment and the future
3.) To introduce students to the some aspects of science of the future times and how it will affect human kind.

No. of Credits: 2
Theory Sessions per week: 2
Teaching Hours: 20 hours

UNIT	TOPICS / SUBTOPICS
1	**Introduction to Science and technology and its role**
	• **Introduction to Science**
	o History of science
	o Major Historical Scientific and technological achievements in India
	• **Role of science and technology in today's world**
	o Science and technology and the developing countries
	o Science Policy in India
	o Role of science in India
	o Societal aspects of science and technology in India
	• **Emergence of modern Science in India**
	o Science & technology in the 20th century
	o Science and technology infrastructure in India Today
	o Overview of India's achievements in Science & tech. sphere
	o Variety of Science Communication Media
2	**Nuclear Technology & Material Technology**
	• **Nuclear Technology**
	o Nuclear Energy
	▪ Introduction and Scientific basis of nuclear energy

	o Advantages and Disadvantages of nuclear Fission Energy o Reactor Safety systems o Radioisotopes & its applications o Medical Diagnosis using nuclear medicine o Radiotherapy o Radiation and Environment o Radiation damage and its study o Research and development in nuclear technology in India

	• **Material Technology**
	   o Nanoscience and nanotechnologies
	     ▪ Basics of Nanoscience
	     ▪ Introduction to Nanomaterials
	   o Applications of Nanotechnology
	   o Cryogenics
	   o Laser and Photonics
	     ▪ Photonics and its applications
	     ▪ Lasers and its applications

3	**Space Technology & Earth Sciences in India**
	
	• Space Technology
	   o Launch Vehicle Technology
	   o Propulsion method for launch vehicles
	   o Satellites and their orbits(GTO orbits)
	   o Global Positioning System
	   o Scientific Experiments on the space station
	   o Remote Sensing
	   o Some Important Indian satellites
	   o Brief about PSLV & GSLV
	
	• **Earth Sciences in India**
	   o Introduction to earth science
	• **Meteorological science**
	   o Meterology
	   o Weather Prediction
	   o Weather Modification and cloud seeding

4	**Defence and Biotechnology**
	
	• The effects of weapons of Mass destruction
	• Nuclear Weapons
	• Effects of Nuclear weapons
	• Biological and toxin weapons
	• Missile Technologies
	• Defence in India
	   o Defence Research and development organization
	   o BRAHMOS cruise missiles
	   o Stealth technology and aircraft

- **Biotechnology**
  - What is Biotechnology?
  - Important techniques used in Biotechnology
  - Nanobiotechnology
  - Cloning
  - Bioinformatics technology
  - Major Application Areas of Biotechnology

Text Book:

Science and technology
Publisher: Tata McGraw Hill
Author: Ashok Kumar Singh
Chapters 1 to 13, 26 to 30 and 33 to 39 (to be covered)

Reference Books:

1. CONCEPTS OF NUCLEAR PHYSICS
   Publisher: Tata McGraw Hill
   By Bernard Cohen

2. The Good Earth: Introduction to Earth Science
   Publisher: Tata McGraw Hill
   By David McConnell, David Steer,
       Katharine Owens, Catherine Knight

3. Understanding Space: An Introduction to Astronautics + Website
   Publisher: Tata Mc Graw Hill
   By Jerry Sellers, William Astore,
       Robert Giffen, Wiley Larson

Elective Course
EC-202(3) Introduction to Humanities

Course Introduction:

This elective course in humanities aims at introducing to the subject of social science, with special emphasis on the issues pertaining to evolution of human society, emergence and various aspects of society in modern India. It also covers issues pertaining to social, political and administrative systems existing in India. The course is framed to familiarize students with the developments in economics, arts and aesthetics and the present day challenges experienced by India and the World societies.

No. of Credits: 2
Theory Sessions per week: 2
Teaching Hours: 20 hours

UNIT	TOPICS / SUBTOPICS
	Human Society And Its Evolution
1	• **World Perspective** o Introduction: Meaning of Society, relevance of human beings in relation to the study of social sciences, Evolution in tools/technology in various ages(Stone Age, Bronze Age and Iron Age), Rise of religions of the world. o Role of nature and its adaptation by human beings through different ages, Evolution of human beings as thinking individuals, Evolution of Knowledge(magical form, Scietific and Religious form), Geographical discoveries and Colonisation. o Emergence of the modern world: Fuedalism, Capitalism, Humanism, Secularism. o Post Renaissance influences-on literature, Architecture,Art, Philosophy and Science. o Industrial Revolution and its influence on the society • **Indian Perspective** o Pre-colonial economy: characteristics pertaining to agriculture, trade and handicrafts industry. o Evolution of colonial rule and its impact on India (Drain theory, De-industrialization), impact on the indian agrararian economy. o Important movements in the Indian History before and after Gandhian Era, Economic developments in the pre and post independence period. o Concepts of secularism, nationalism, internationalism, communalism, regionalism. o Major Challenges: Education, Upholding Democracy, Bueracracy etc.

		Social, Politica And Administrative Systems
2		• **Social Structure** o Meaning of social structure; concept of ROLE and STATUS, Components of Social structure- Social stratification and Division of labour. o Social Institutions: Family, Marriage. o Economic Institutions: Types of economic systems(Hunting and gathering, pastoral and horticultural economy, agrarian economy and industrial economy. Political systems and types of authority which impact the social structure. o Religion: Positive and Negative aspects of Religion on society. o Marginalized groups in a society: meaning, Types: orphaned, delinquent, destitute children, Disabled, Women in distress, Commercial sex workers, Scheduled castes, Scheduled tribes, OBCs, Denotified tribes, Minorities. Social Changes and the factors causing them(Biological, geographical, technological,socio-cultural) • **Political systems:** (with reference to India) o History, composition and basic features of the Indian Constitution. o Democracy: meaning, state institutions and the democratic process, role of non-state institutions/groups in the democratic process. • **Administrative Systems** o Administrative Structure: Role of The Chief Executives at Union level, state level and district level. o Composition of line agencies: departments, public corporations and public enterprises, boards and commissions o Composition of staff agencies: General agencies, technical agencies and auxilliary agencies. o Important Administrative Processes: Planning, Decision-making, Communication, Control and co-ordination. o Governance issues and strategies: Characteristics, functions and difference between state and Government. o Governance: its concept, significance and characteristics, relevance of good governance.
3		**Economic Development, Development of Arts and Aesthetics**
		• **Indian Economy** o Features, Development and Growth strategies through planning in the post independence period. Performance of the Indian Economy post 1990(economic reforms era) yanmurthi • **Arts and Aesthetics: (with reference to India)** o Literature: Introduction to Poetry, fiction, drama, novels, short stories.

		o Fine Arts: Introduction to Paintings(pre and post medieval ages, modern era) o Dance: History and Types of Indian Classical Dances o Music: History and Types of Indian Music and major indiginous musical instruments. o Theatre and Indian Cinema: Forms of Theatre in Modern Era, Cinema in modern era and Its impact on the society.

4		**Contemporary Concerns and Challanges: (with reference to India for sub points**
		
		• **Human Security**
		  o Valuing human beings as assets/resources, concept of human rights, concept of human security including health, food
		• **Educaton and Awareness**
		  o Aims and importance of education, challenges to education in the modern era.
		• **Informaiton and Communication Technology**
		  o Role of ICT, Socio- economic implications of ICT
		• **Peace and. Conflict**
		  o Challenges to World Peace, Role, functioning and obstacles to Efforts of the UNITED NATION, SAARC,EU,APEF.
		• **Globilisation**
		  o Pros and cons.
		• **Environment**
		  o Environmental initiatives in India and challenges.

Elective Course
EC-202(4) Disaster Management

Course Introduction:
This course aims to provide an insight into immensely significant area of common welfare. The course will enable a student to understand the major types of natural and man-made disasters and also methods of mitigating their ill-effects on the human race. The course also covers a few modern disasters which are hitherto not experienced by humankind across the globe.

Course Objective:
The student would be able
1) To understand the concept of managing the Disasters when it occurs.
2) To apply their technical knowledge to manage the Disasters.
3) To identify the key points and area where and how to use the Information Technology to manage the damage in disasters.
4) To get detailed knowledge of various Government agencies and NGOs dealing for disaster management.

No. of Credits: 2
Theory Sessions per week: 2
Teaching Hours: 20 hours

UNIT	TOPICS / SUBTOPICS
	Introduction to Disasters / Hazards
1	- Definition of disaster: - General Effects of disasters - Causal Factors - Disasters and development (cause and effect) - Meaning of Disaster Management - Types of Disaster/Hazards: - Natural - Anthropogenic - Sociological - Technological - Transport - Climate change - Social and Psychological dimensions of disasters - Coping with stress, anxiety and fears - Technology and disaster management - Latest Technological equipment - Disaster Response: - Reasons for concern - Objectives - Study of responses in Kutch Earth-quake, 2001

2	**Disaster Management**
	- Definition - Need - Obstacles - Disaster Relief and Factors - International approach to integrated disaster risk management - Risk Mitigation Strategies - Participatory assessment of disaster risk - Disaster Reduction - Communicable diseases occurring after natural disasters - Their prevention - Mass casually management - Technology and disaster management and latest technological equipment to combat disasters
3	**Relief, Rehabilitation, Recovery and Role of NGO and Government**
	- Relief - Rehabilitation - Displacement and Development - Priorities and opportunities in Rehabilitation and reconstruction - Relevance of Mitigation and its techniques - Mitigation measures - People's Participation - Disaster Recovery - Business continuity planning - Role of NGO in Managing disasters - India's natural disaster's proneness: - Management of disasters in India - Institutional and policy framework - Government Policies for Disaster Planning
4	**Use of IT in Disaster Management, Applications and Future of Disaster Management**
	Use of IT in Disaster Management: - Computer Attack - Other latest technological Equipments: - TSUNAMI WARNING SYSTEM - CENS (Community Emergency Notification System) - CREST (Consolidated Reporting of Earthquakes and Tsunamis) - CUBE (Caltech USGS Broadcast of Earthquakes) - DART (Deep Ocean Assessment and Reporting of Tsunamis) - EAS (Emergency Alert System) - EMWIN (Emergency Managers Weather information Network) - GPS (Global Positioning System)

	- ITIC (International Tsunami Information Center) - NOAA (National Oceanic and Atmospheric Administration) - NWS (National Weather Service) - PTWS (Pacific Tsunami Warning Center) - RACE (Rapid Alert Cascadia Earthquake) - REDI (Rapid Earthquake Data Integration) - SAWS (Simultaneous Announcement Wireless System) - THRUST (Tsunami hazard Reduction Using System Tech.) - WC/ATWC (West Coast/Alaska Tsunami Warning Center) - Audio Evacuation System - Laser Scanning - Remote Sensing-GIS Integration - Atmospheric Water Generator - The AIRCRAFT GATEWAY PROCESSOR (AGP) - Mobile Electronic Warfare Platform **Applications in Disaster Management:** - Bio-terrorism - Framing the Problem - Threat assessment - Statistical Seismology and its application

Textbook: Disaster Management
        Publisher: Himalaya Publishing House
        By M. Saravana Kumar

Reference Books:

1.Introduction to Disaster Management
    Publisher: Macmillan
    By Satish Modh

2.The Disaster Recovery Handbook
    Publisher: PHI
    By Michael Wallace and Lawrence Webber

3.Citizen's Guide to Disaster Management
    Publisher: Macmillan
    By Satish Modh

No. of Credits: 2
Theory Sessions per week: 2
Teaching Hours: 20 hours

Syllabus and text book as per B.B.A Syllabus Semester III Elective Course.