

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus for S. Y. B. Sc (Computer Science) with effect from
June 2018

Name of Program	Bachelor in Computer Science
Abbreviation	B.Sc.(Computer Science)
Duration	3 Years (Full Time – Regular Course)
Eligibility	Candidate must have passed standard 12th (H.S.C.) Examination in Science stream through Gujarat Higher Secondary Board (G.H.S.E.B.) or any other equivalent board (C.B.S.E. / I.C.S.E.) with English subject. Students passed with vocational stream in 12 th (H.Sc.) are also eligible. Candidate passed ITI and Diploma are eligible as per the norms of Gujarat Government.
Objective of the Program	The basic objective of the program is to open a channel of admission for computing courses for students, who have done the 10+2 and are interested in taking computing/IT as a career. The program caters to the needs of the students aspiring to excel in the fields of computers. The program is designed to develop computer professionals versatile in almost all field of computer application .The main emphasis of the course is preparing students in the field of computer science and application areas of computer science including software development skills.
Program Outcome	It will open field for the aspiring students to opt further career or masters’ level study in the fields of Research, Design, Architecture and software development. It is also preparing aspiring students to work in companies at entry levels and also independently.
Medium of Instruction	English
Program Structure	Three years of Graduate level course comprises of six semesters.

Course Structure for Second Year B.Sc.(Computer Science) Semester-III

Course	Paper Code	Paper Title	Theory (Marks)		Practical (Marks)		Total Credits
			Internal	External	Internal	External	
Core Compulsory	301	Object Oriented Programming: C++	20	50	10	20	3
	302	System Development using c# .Net	20	50	10	20	3
	303	Relational Database Management System - 1	20	50	10	20	3
IDS: Can course	ID-01 ID-02 ID-03	E-Commerce and Cyber Security Computerised Accounting Business Systems	20	50	-	-	2
Foundation Elective (to be selected from NCC / NSS / Saptadhara)			NIL				2
Total:							13

For Practical:

1. Batch Size – 25 Maximum
2. The journal should be certified by the concerned faculty and also by the Head of the Department, failing which the student should not be allowed to appear for External Practical Examination.
3. P.N.: In case of Generic Elective Paper available in both semesters, it can be opted only during one semester. The same title cannot be repeated in another semester.

Course Code	Theory		Practical		University Examination (Theory + Practical)		Internal Marks	Total Marks
	Credit	Hours	Credit	Hours	Duration	Marks		
301	2	2	1	2	2	50+20	20+10	100
302	2	2	1	2	2	50+20	20+10	100
303	2	2	1	2	2	50+20	20+10	100
IDS: Can course	2	2	-	-	2	50	20	70
Total:	8	8	3	6	8			

Course Structure for Second Year B.Sc.(Computer Science) Semester-IV

Course	Paper Code	Paper Title	Theory (Marks)		Practical (Marks)		Total Credits
			Internal	External	Internal	External	
Core Compulsory	401	Data Structure using C++	20	50	10	20	3
	402	Web Development using C#.Net	20	50	10	20	3
	403	Relational Database Management System - 2	20	50	10	20	3
IDS: Can course	ID-01 ID-02 ID-03	E-Commerce and Cyber Security Computerised Accounting	20	50	-	-	2
Foundation Elective (to be selected from NCC / NSS / Saptadhara)			NIL				2
Total:							13

For Practical:

1. Batch Size – 25 Maximum
2. The journal should be certified by the concerned faculty and also by the Head of the Department, failing which the student should not be allowed to appear for External Practical Examination.
3. P.N.: In case of Generic/Elective/Paper available in both semesters, it can be opted only during one semester. The same title cannot be repeated in another semester.

Course Code	Theory		Practical		University Examination (Theory + Practical)		Internal Marks	Total Marks
	Credit	Hours	Credit	Hours	Duration	Marks		
401	2	2	1	2	2	50+20	20+10	100
402	2	2	1	2	2	50+20	20+10	100
403	2	2	1	2	2	50+20	20+10	100
IDS: Can course	2	2	-	-	2	50	20	70
Total	8	8	3	6	8	150	50	370

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Effective From: June 2018

Course: 301: Object Oriented Programming: C++

Course Code	301
Course Title	Object Oriented Programming : C++
Credit	2
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June, 2015
Purpose of Course	This course imparts the knowledge of Object Oriented Programming Language. The concepts of class, objects and related features of OOPs are covered in this course. The course is aimed to give inner depth of Object oriented programming language concepts.
Course Objective	To make students understand concepts of Class and Objects. To make students understand concepts of Inheritance, Polymorphism. To make students understand the basic concepts of Constructors/Destructors. To make students understand function overloading, operator overloading, virtual functions. To make students understand concepts of arrays, pointers, dynamic memory allocation
Pre-requisite	Concepts of C programming Language.
Course Out come	At the end of the course, student is expected to have clear concepts about the Class, Objects and related terminologies. Students can apply object oriented concepts which is essential for further studies.
Course Content	<p>Unit-1: Introduction of Classes and Objects</p> <p>1.1 Introduction to Object Oriented Programming. 1.2 C++ fundamentals. 1.3 Classes and Objects</p> <p>1.3.1 Classes 1.3.2 Constructors and Destructors 1.3.2 Inline functions 1.3.3 Defining inline functions within a class. 1.3.4 Friend functions and classes. 1.3.5 Static class members. 1.3.6 Static data members and member functions. 1.3.7 Local and nested classes. 1.3.8 Passing objects to and returning objects from function. 1.3.9 Object assignment.</p> <p>Unit-2: Arrays, Pointers</p> <p>2.1 Array of objects 2.2 References 2.3 this pointer 2.4 Dynamic allocation operators</p> <p>Unit-3: Function and Operator Overloading:</p> <p>3.1 Function overloading 3.2 Copy constructors and Default arguments. 3.3 Function overloading.</p>

	<p>3.4 Overloading constructor functions 3.5 Copy constructors 3.6 Default function arguments 3.7 Operator overloading 3.8 Creating a member Operator Function 3.9 Operator overloading using friend functions</p> <p>Unit-4: Inheritance : 4.1 Base class Access control 4.2 Inheritance and protected members 4.3 Inheriting multiple base classes. 4.4 Constructor destructors and inheritance</p> <p>Unit-5: Polymorphism: 5.1 Virtual base class 5.2 Virtual functions 5.3 Templates and Generecity 5.4 File Handling-Modes and I/O Functions</p>
Reference Books:	<ol style="list-style-type: none"> 1. The complete reference C++ : Herbert Schildt, TMH. 2. Object Oriented Programming in C++ : Robert Lafore - Galgotia Publication. 3. C++ : Effective Object Oriented Software Construction - Kayshav Dattari. 4. Object Oriented Programming using C++ - Addition Wesley. 5. Object Oriented Programming in C++ - Balaguruswamy.
Teaching Methodology	Discussion, Independent study, Seminars and Assignment
Evaluation Method	30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 70% assessment is based on end semester written examination

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Effective From: June 2018

Course: 302: System Development using c#.Net

Course Code	302
Course Title	System Development using c#.Net
Credit	2
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June, 2015
Purpose of Course	This course imparts the knowledge of primarily an integrated, interactive development environment (“IDE“). The visual studio-IDE has been highly optimized to support rapid application development (“RAD”). It is particularly easy to develop graphical user interfaces and to connect them to handler functions provided by the application.
Course Objective	To make students understand concepts of GUI and .NET Framework. To make students understand concepts of IDE and CLR. To make students understand optimization to support RAD.
Pre-requisite	Concepts of GUI.
Course Out come	At the end of the course, student is expected to have clear concepts about the GUI, IDE , CLR and Rapid Application development Tool. Students can understand the concept of front-end tool as a base for developing interactive project.
Course Content	<p>Unit-1: OVERVIEW OF MICROSOFT .NET FRAMEWORK</p> <ol style="list-style-type: none"> 1.1. What is .net framework & its benefits 1.2. The Common Language Runtime(CLR), Purpose of CLR 1.3. Managed/Unmanaged code, Compilation & Exception 1.4. Memory Management, Garbage Collection 1.5. The .Net Framework Class Library. 1.6. .NET Web Services 1.7. Introduction to Ms Visual Studio .NET <p>Unit-2: C#.NET PROGRAMMING LANGUAGE</p> <ol style="list-style-type: none"> 2.1 Data Types, Types Conversion Functions, Operator & Exceptions 2.2 Variable Declaration : Level, Lifetime, Scope & Accessibility 2.3 Decisions Structures 2.4 Loop Statements: While, Do.... Loop, For...Next, For...Each...Next 2.5 Nested Control Statements, Exit & End Statements 2.6 Procedures <p>Unit-3: Designing Using Interface</p> <ol style="list-style-type: none"> 3.1 Working with Forms 3.2 Basic Windows Controls 3.3 Menus, Timer, Common dialog control, Rich Textbox 3.4 Treeview & Listview controls, Toolbar, Statusbar 3.5 SDI & MDI Application

	<p>Unit-4: Data Access</p> <ul style="list-style-type: none"> 4.1 History of Microsoft Data Access Technologies 4.2 Overview of ADO.NET 4.3 The Server Explorer & Query Builder 4.4 ADO.NET Object Model 4.5 Programming ADO.NET-provider, Adapter, Reader, command objects 4.6 Disconnected Architecture <p>Unit-5: Exception Handling</p> <ul style="list-style-type: none"> 5.1 Error in Programming 5.2 Exception Handling Overview 5.3 Structures Exception Handling 5.4 On Error statement 5.5 Debugging
Reference Books:	<ul style="list-style-type: none"> 1. Beginning c# by wrox publication 2. Programming in c# by E. Balaguruswami TMH 3. Visual C#.Net Black book by Kogent Learnig Solutions 4. Professional C# by wrox Publication
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Course: 303: Relational Database Management System -I

Course Code	303
Course Title	Relational Database Management System –I
Credit	2
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June, 2015
Purpose of Course	This course imparts the knowledge of Database Management System, Entity Relationship model, Relationship Model, SQL (DDL, DML and DCL).
Course Objective	To make students understand concepts of Database. To make students understand concepts of Entity Relationship Management. To make students understand the basic concepts of Relationship Model. To make students understand optimization to support SQL.
Pre-requisite	Concepts of Data and Data storage.
Course Out come	At the end of the course, student is expected to have clear Concepts about database, storage of data, database models, Entity and relationship, various keys and SQL.
Course Content	<p>Unit-1: Introduction to DBMS</p> <p>1.1.1 Concepts of Database 1.1.2 Requirement of database system. 1.1.3 Data models and data independence 1.1.4 DDL, DML 1.1.5 Database Manager, Database Administrator.</p> <p>Unit-2: Entity Relationship Models</p> <p>2.1 Entities and Entity sets 2.2 Relationship and relationship sets 2.3 Mapping constrains 2.4 Primary keys 2.5 Integrity constraints-Domain, Entity and Referential 2.6 Entity Relationship diagram and reducing it to tables.</p> <p>Unit-3: Relational Model</p> <p>3.1.1 Structure of relational database. 3.1.2 Relation algebra. 3.2 Introduction to other models 3.2.1 Network Model 3.2.2 Hierarchical Model</p> <p>Unit-4: SQL Queries</p> <p>4.1 Overview of SQL 4.2 Various types of data, conventions and terminology 4.3 CREAT TABLE Command : Indexing, Altering a table, Dropping a table, Table level Constraints, Declaring Constraints, PRIMARY KEY constraint, Foreign and Parent keys, Multicolumn Foreign keys, FOREIGN KEY constraint, Foreign key restrictions. 4.4 Retrieval of information from tables. : Making a query, SELECT command, column reordering, Use of relational</p>

	<p>operators, use of Boolean operators, operations like IN, BETWEEN, LIKE, NULL, NOT etc., Aggregate functions, COUNT</p> <p>4.5 Formatting Query output : String and expressions, Ordering output by fields, multiple columns, Aggregate Group, Column number, ORDER BY, with NULL.</p> <p>4.6 Querying multiple tables : Joining tables through Referential Integrity, Equijoins and other kinds of joins, joins of more than two tables, Joining a table to itself.</p> <p>4.7 Entering Deleting and Changing Field Values : DML Update command, UPDATE with multiple columns, UPDATIng to NULL values, INSERT command, using sub queries with UPDATE commands.</p>
Reference Books:	<ol style="list-style-type: none"> 1. Henry Kroth & Silbershats, Database System Concept. 2. C.J. Date, Introduction to Database Design, Addition Wesley, Nasora. 3. Martin Gruber, Understanding SQL, BPB Pub., New Delhi. 4. Ivan Baross, SQL, PL/SQL The Programming Language of ORACLE, BPB Pub., New Delhi. 5. SQL / PLSQL programming By P.S. Despande wiley Dream Tech Pub. 6. J Ullman, Principles of Database Systems, Galgotia Pub., New Delhi. 7. ORACLE Manuals. 8. SQL Manuals 9. ORACLE 10g The Complete Reference, ORACLE Press, TMH, Delhi. 10. Oracle PL/SQL programming - Oracle press - Tata Megrawhill. 11. Microsoft Sql server - pretince hall of India.
Teaching Methodology	Discussion, Independent study, Seminars and Assignment
Evaluation Method	30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 70% assessment is based on end semester written examination