PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

Wireless Networks And Mobile Computing (03105351)

Type of Course: BTech

Prerequisite: Basic knowledge of JAVA and XML.

Rationale: The course deals with the new technologies in wireless and mobile communications networks. It emphasizes on the use of these technologies and the understanding of their operations for the sake of mobile computing. This course introduces the knowledge of wireless and mobile networks technologies and its applications. The course deals with various aspects of wireless and mobile networks including wireless LAN, wireless WAN and cellular networks, Wireless technology protocols and standards.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
3	0	2	4	60	30	20	20	-	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Mobile Computing Architecture**: Types of Networks, LANs,MANs,andWANs, Architecture forMobile Computing, 3-tier Architecture, Design Considerations for MobileComputing. Transmission Fundamentals-Signals for Conveying Information, Analog and Digital Data Transmission, Channel Capacity, TransmissionMedia, Multiplexing	10%	8
2	**Cellular Wireless Networks**: Principles of Cellular Networks,First- Generation Analog Second-Generation TDMA Second-Generation CDMA,Third-Generation Systems **Antennas and Propagation**-Antennas, Propagation Modes, Line-of-Sight Transmission, Fading in the Mobile Environment **Modulation Techniques**-Signal Encoding Criteria, Digital Data-Analog Signals, Analog Data-Analog Signals, Analog Data-Digital Signals **Spread Spectrum**-The Concept of Spread Spectrum,Frequency Hopping Spread Spectrum,Direct Sequence Spread Spectrum,Code Division Multiple Access	25%	12

3	**Global system for mobile communication**: Global system for mobile communication, GSM architecture, GSM entities, call routing in GSM,PLMN interface, GSM addresses and identifiers, network aspects in GSM,GSM frequency allocation, authentication and security	15%	6
4	**General packet radio service(GPRS)**: GPRS and packet data network, GPRS network architecture, GPRS network operation, data services in GPRS, Applications of GPRS, Billing and charging in GPRS	15%	6
5	**Wireless System Operations and standards**: - Wireless Local Loop, WiMAX and IEEE 802.16 Broadband Wireless Access Standards **Mobile IP** and Wireless Application Protocol	12%	6
6	**Wi-Fi and the IEEE 802.11 Wireless LAN Standard**: IEEE 802 architecture, IEEE 802.11 architecture and services, IEEE 802.11 Medium access control, IEEE 802.11 physical layer. **Bluetooth** - Radio specification, baseband specification, link manager specification, logical link control and adaption protocol.	13%	6
7	**Android**: APIs, Android Architecture, Application Framework, The Application components, The manifest file, downloading and installing Android, Exploring the Development Environment, Developing and Executing the first Android application, Working with Activities, The LinearLayout Layout, The RelativeLayout Layout, The ScrollView Layout, The TableLayout Layout, The FrameLayout Layout, Using the TextView, EditText View, Button View, Radio Button, CheckBox, ImageButton, RatingBar, The options Menu, The Context Menu.	10%	4

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Mobile Communications
   Jochen Schiller; Pearson
2. Adhoc and Sensor Networks: Theory and applications
   C D M Cordeiro, D. P. Agarwal; World Scientific,, 2006
3. Mobile Computing
   Asoke K Telukder, Roopa R Yavagal; TMH
4. Android: A Programmer’s Guide
   J. F. DiMarzio; McGraw Hill Education

Course Outcome:

After Learning the course the students shall be able to:

After learning the course the students shall be able to:
1.
Understand the concepts of wireless and mobile networks as compared to the conventional wire-based networks.
2.
Understand the need and the requirements for wireless and mobile network technologies,
3.
Understand the concepts of wireless access technologies and various standards,
4.
Apply the knowledge gained to understand the wireless LAN technology,

List of Practical:

1. Perform Network Wireless Commands.
2. Write a program to simulate Fixed Time Division Multiplexing. Take 12 stations. Every station has time slice of 417 microseconds. Delay should be 10ms. Every time the station gets turn, it shows message
3. Write a program that identifies the bluetooth devices in the wireless range
4. Write a program that prints the signal strength of WiFi connection of the given computer
5. Prepare a wireless ad hoc network and show its working.
6. Write a program to find hamming distance. For example Hamming distance d(v1,v2)=3 if v1=011011,v2=110001.
7. Develop an android app which displays “Hello, welcome to Android Lab” message
8. Develop an android app which displays: I. Dialogbox II. Application that checks which button you have clicked III. ListView with multiple choices in android
9. Create simple Hello World application in android.
10. Develop an android app which displays a form to get following information from user. 1. Username 2. Password 3. Email Address 4. Phone Number 5. Country 6. State 7. State 8. Gender 9. Interests 10. Birth Date 11. Birth Time Form should be followed by a Button with label “Submit”. When user clicks the button, a message should be displayed to user describing the information entered.
11. Develop calculator Android Application

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

Principles Of Compiler Design (03105352)

Type of Course: BTech

Prerequisite: Basic knowledge in Theory of Computations, Data Structures and Algorithms

Rationale: The course builds on the student's core knowledge of languages, grammars and programming and provides an opportunity to see how these core areas can come together to form an application area. It teaches how Compiler of a Programming Language works. It also focuses on various designs of Compiler and structuring and optimizing various phases of a Compiler. It is also necessary to learn types of Grammar, Finite state machines, lex, yacc and related concepts of languages.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
4	0	2	5	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction to Compiler**: Introduction to Compiler, single and multi-pass compilers, Overview and use of linker and loader, types of Compiler, Cousins of the Compiler, Front-end and Back-end of compiler, Phases of Compiler, Difference between interpreter, assembler and compiler, Bootstrapping.	10%	6
2	**Lexical Analyzer:**: Role of Lexical Analyzer, Input buffering, Specification of tokens, Recognition of tokens, Regular expression, Regular Expression to Finite automata, Design of lexical analyzer, Tool for lexical analyzer, Optimization of DFA, Error handling, Syntactic specification of programming languages: Context free grammars, derivation and parse trees, Ambiguous grammar.	20%	10
3	**SYNTAX ANALYSIS AND PARSING TECHNIQUES:**: Introduction to Parsing and its technique, Top-Down Parsing, Bottom Up Parsing, Operator precedence parsing, LR parsers, LR parsers using Ambiguous Grammars, Automatic Generation of Parsers.	30%	14

4	**SYNTAX DIRECTED TRANSLATION & INTERMEDIATE CODE GENERATION:**: Syntax-Directed Definitions, Construction of Syntax Trees, Bottom-Up Evaluation of S-Attributed Definitions, L-Attributed Definitions and Implementation of Syntax directed Translators, translation schemes, Intermediate code and translation of assignment statements, Boolean expression and control structures. Error Recovery: Error Detection & Recovery, Ad-Hoc and Systematic Methods	20%	10
5	**Run Time Environment and Storage Allocation**: Storage organization, activation records, Storage allocation strategies, Access to Non local Names, Parameter passing, symbol table, data structure used for symbol table generation, dynamic storage allocation techniques.	10%	8
6	**Code Generation and Code Optimization**: Global data flow analysis, Basic Block and Flow graphs, Directed Acyclic Graph, DAG representation of Basic Blocks, Simple Code Generator, Issues in the design of Code generator, Local optimization, Loop optimization, Peephole Optimization.	10%	8

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Compilers: Principles, Techniques and Tools (TextBook)
   Aho, Lam, Sethi, and Ullman; Pearson; Second, 2014
2. Compilers: Principles, Techniques and Tools
   Aho, Sethi, and Ullman; Addison-Wesley, 1986
3. Compiler Design in C
   Allen I. Holub; Prentice-Hall/Pearson
4. Engineering a Compiler
   Keith D. Cooper & Linda Torczon., Morgan Kaufmann; Elsevier; Second

Useful Links:

1. Lex
2. Flex
3. Yacc
4. Bison
5. Dev. C++
6. Turbo C

Course Outcome:

After Learning the course the students shall be able to:

After learning the course the students shall be able to:
1. Understand the basic concepts and application of Compiler Design.
2. Able to design a compiler for a simple programming language.
3. Distinguish the basic techniques used in compiler construction such as lexical analysis, top-down, bottom-up parsing, context-sensitive analysis, and intermediate code generation.
4. Determine the basic data structures used in compiler construction such as abstract syntax trees, symbol tables, three-address code, and stack machines.
5. Able to use the tools related to compiler design effectively and efficiently like Lex and Yacc.
6. Able to write the optimized code.

List of Practical:

1. Program to implement Lexical Analyzer.
2. Program to count digits, vowels and symbols in C.
3. Program to check validation of User Name and Password in C.
4. Program to implement Predictive Parsing LL(1) in C.
5. Program to implement Recursive Descent Parsing in C.
6. Program to implement Operator Precedence Parsing in C.
7. Program to implement LALR Parsing in C.
8. To Study about Lexical Analyzer Generator(LEX) and Flex(Fast Lexical Analyzer)
9. Implement following programs using Lex. a. Create a Lexer to take input from text file and count no of characters, no. of lines & no. of words. b. Write a Lex program to count number of vowels and consonants in a given input string.
10. Implement following programs using Lex. a. Write a Lex program to print out all numbers from the given file. b. Write a Lex program to printout all HTML tags in file. c. Write a Lex program which adds line numbers to the given file and display the same onto the standard output.
11. Write a Lex program to count the number of comment lines in a given C program. Also eliminate them and copy that program into separate file.
12. To Study about Yet Another Compiler-Compiler(YACC).
13. Create Yacc and Lex specification files to recognizes arithmetic expressions involving +, -, * and / .
14. Create Yacc and Lex specification files are used to generate a calculator which accepts integer and float type arguments.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

Information Security (03105354)

Type of Course: BTech

Prerequisite: Students should be familiar with basic concepts of computer networks and Mathematics including modular arithmetic.

Rationale: This course provides an introduction to the fundamental principles of cryptography and its applications on the information security domain. This subject covers various important topics concern to information security like symmetric and asymmetric cryptography, hashing, message and user authentication, digital signatures, key distribution.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
3	0	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction**: Computer Security Concept, The OSI Security Architecture, Security Attacks, Security Services, Security Mechanism, A Model for Network Security	5%	2
2	**Classical Encryption Techniques :**: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography	10%	6
3	**Block Ciphers and the Data Encryption Standard:**: Block Cipher Principles, Data Encryption Standard (DES), Deferential and Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher Operation, RC4	15%	8
4	**Number theory and Advance Encryption Standard**: The Euclidean Algorithm, Modular Arithmetic, Groups, Rings, and Fields, Finite Fields of the Form GF(p), Polynomial Arithmetic, Advance Encryption Standard(AES): structure, key expansion	15%	8
5	**Asymmetric Ciphers**: Prime Numbers, Fermat's and Euler's Theorems, Testing for Primality Principles of Public-Key Cryptosystems, The RSA Algorithm, Diffie-Hellman Key Exchange	15%	6

6	**Cryptographic Data Integrity Algorithms**: **Hash Function:** Hash Function and its Application, Security Requirements for Cryptographic Hash Functions, Hash Functions Based on Cipher Block Chaining, Secure Hash Algorithm (SHA), **Message Authentication code:** Message Authentication Requirements, Message Authentication Functions, Requirements for Message Authentication Codes, Security of MACs, HMAC, **Digital Signature:** Introduction to Digital Signatures, Digital Signature Standard	15%	8
7	**Key Management and Distribution**: **Symmetric Key Distribution:** Symmetric Key Distribution Using Symmetric Encryption, Symmetric Key Distribution Using Asymmetric Encryption, **Asymmetric Key Distribution:** Distribution of Public Keys, X.509 certificates. **Pseudorandom numbers:** Principles of Pseudorandom Number Generation, Pseudorandom Number Generators, Pseudorandom Number Generation Using a Block Cipher	15%	6
8	**User Authentication**: Remote User-Authentication Principles, Remote User-Authentication Using Symmetric Encryption, Kerberos, Remote User-Authentication Using Asymmetric Encryption	10%	4

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Cryptography And Network Security, Principles And Practice (TextBook)
   William Stallings; Pearson
2. Cryptography & Network Security
   Behrouz A. Forouzan; Tata McGraw-Hill
3. Information Security Principles and Practice
   Deven Shah,; Wiley-India
4. Information Security Principles and Practice
   Mark Stamp; Wiley IndiaEdition
5. Information systems security
   Nina Godbole; Wiley Publications,2008

Course Outcome:

After Learning the course the students shall be able to:

After learning the course the students shall be able to:
1. Define the concepts of Information security and their use.
2. Describe the principles of symmetric and asymmetric cryptography.
3. Understand the concepts of hashing with algorithms and apply them.
4. Understand and use the various key management and remote authentication mechanisms.

List of Practical:

1. Implement Caesar cipher encryption-decryption.
2. Implement Monoalphabetic cipher encryption-decryption.
3. Implement Playfair cipher encryption-decryption.
4. Implement Polyalphabetic cipher encryption-decryption.
5. Implement Hill cipher encryption-decryption.

6. Implement Simple Transposition encryption-decryption.
7. Implement One time pad encryption-decryption.
8. Demonstrate working of DES using Cryptool.
9. Implement Diffi-Hellmen Key exchange Method.
10. Implement RSA encryption-decryption algorithm.
11. Demonstrate working of Digital Signature using Cryptool.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

Advanced Java Technology (03105380)

Type of Course: BTech

Prerequisite: Core Java, Web Technology

Rationale: The course aims at teaching advanced concepts of Java and enables the student to understand the process of constructing an enterprise wide application. After learning the course, the students will be able to do GUI, database, network and RMI programming. Along with that, they will be able to create servlet, jsp, jsf, EJB etc. to develop an enterprise application.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
4	0	2	5	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**AWT & Swing**: Abstract Window Toolkit classes hierarchy, windows fundamentals , creating a frame window in applet, canvas, creating windows program, Graphics-AWT Controls, Layout Managers, JApplet, JLabel, JTextField, JButton, JCheckBox, JRadioButton, JComboBox, Menus, MouseEvent Class , ActionEvent Class, WindowEventClass MouseListener, ActionListener, WindowListener and KeyListner	7%	6
2	**Java Database Programming:**: Introduction, SQL syntax, Environment, Drive Types, Connections, Statements, Result Sets, Data types, Transactions, Creating a JavaBean, JavaBean Properties, Types of beans, Stateful Session bean, Stateless Session bean, Entity bean	7%	6
3	**Java Network Programming:**: Network Programming with Java.net package, client programs, server programs, content and protocol handlers, chat application example	8%	5
4	**Java RMI Programming:**: RMI architecture, RMI registry, Writing distributed application with RMI, Naming services, Naming And Directory Services, Overview of JNDI, Object serialization and Internationalization	8%	4

5	**Java Enterprise Edition:**: Java Enterprise Edition, Architecture, Containers, Facilities provided by the server, Developing applications. Changes from Java EE 5 to Java EE 8.	8%	4
6	**Java Server Side Programming: Servlet Tehnology & Filter:**: Servlet Overview and Architecture, Interface Servlet and the Servlet Life Cycle, Handling HTTP get Requests, Handling HTTP post Requests, Redirecting Requests to Other Resources, Session Tracking, Cookies, Session Tracking with HttpSession , Event handling in Servlets, Introduction of Filte, Filter Config.	12%	7
7	**Java Server Side Programming: JSP Technology:**: Understanding JSP page, Servlet v/s JSP, JSP elements, JSP objects, JSP best practices. Implementing AJAX with JavaScript.	10%	5
8	**JSP Tag Extension and JSP Tag Library:**: JSP tag extensions, elements of tag extensions, tag extension API, Understanding the tag files, creating custom tags, Classical and simple tag handlers. Implementing JSP tag library, working with core, XML, i18n, SQL, and functions tag libraries.	10%	6
9	**Java Server Faces:**: Elements of JSF, JSF Request processing Life cycle, JSF Tag Libraries, JSF standard UI component, Working with Basic beans, JSF input validation, JSF type conversion, Handling Page navigation in JSF, Internationalization support in JSF Configuring JSF Application.	10%	6
10	**Java Server Business Logic Components (Model): EJB, Spring, Struts:**: Services provided by EJB container, Importance of separation of business logic, Types of EJB. Entity bean, Session bean, and Message driven beans. Spring and Struts. Use of Entity and Session beans.	10%	6
11	**Java Persistence API and Hibernate:**: Implementing Entities and Java Persistence API, Understanding Object Relational Mapping, Understanding the Java Persistence API, Introducing Entities, Life cycle of entity, Entity Relationship type, Mapping collection based Relationships, JPQL, Crating Sample Applications, Hibernate technology. Comparing Hibernate with JPA.	10%	5

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Java Server Programming Java EE6 Black Book (TextBook)
   ; Dreamtech Press
2. The complete reference J2EE (TextBook)
   ; Keogh, McGrawHill
3. Herbert Schildt, Java – The Complete Reference (TextBook)
   ; , Tata McGraw- Hill, Seventh Edition
4. Java EE 5 for beginners
   by Bayross and Shah; SPD

5. Head First EJB
   ; O'Reilly
6. Beginning Hibernate
   Jeff Linwood, Dave Minter; Apress

Useful Links:

1. Jdk
2. NetBeans
3. Eclipse
4. Glassfish / Apache server

Course Outcome:

After Learning the course the students shall be able to:

After learning the course the students shall be able to:
1. Understand the need of an enterprise application, use of enterprise server, enterprise solutions.
2. Design console based, GUI based and web based applications.
3. Implement client-server, network and database programming.
4. Develop distributed applications using RMI
5. Implement an end to end solution from creation of database to display to client for enterprise application.

List of Practical:

1. Write a program to create registration form for the Student using AWT.
2. Write a program to create calculator using Swing
3. Implement JDBC by connecting with database and execute PreparedStatement
4. Implement JDBC by connecting with database and execute CallableStatement.
5. Implement chat application using java.net.
6. Implement any one sorting algorithm using TCP/UDP on Server application and Give Input on Client side and client should sorted output from server and display sorted on input side.
7. Implement Student information system using JDBC and RMI
8. Call remote procedure from a jvm to another jvm by implementing RMI.
9. Make a simple calculator using RMI.
10. Study the functionalities of Eclipse/NetBeans and Connect to the Glassfish / Apache server
11. Implement a simple Servlet application. Create directory structure, create references for web containers, create necessary web.xml and other config files and execute.
12. Create registration form of student using Servlet & JDBC.
13. Create a JSP page that is a student registration form. Perform server side validations using JSP.
14. Create a custom tag using JSP tag extension / library.
15. Create user interface of a student registration and login using JSF.
16. Transfer all the Business Logic to the EJB of practical 10.
17. Create database and Implement JPA to provide persistence to practical 10.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

.Net Technology (03105381)

Type of Course: BTech

Prerequisite: Requires Basic Knowledge of C and C++

Rationale: This course is design to provide basic ideas of computer programming with C#.net Technology. This course also makes help to understand programming language. It will help to develop their logical abilities also help to understand development of software and web application.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
4	0	2	5	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**An Introduction to .Net Framework**: The .NET Framework: overview, Components, Versions, Applications of .NET,.NET Base Class Library,.NET Namespaces, The Common Language Runtime (CLR), Managed Code, .NET Memory Management / Garbage Collection, Common Type System (CTS), Common Language Specification (CLS) ,Types of JIT Compilers, Security Manager	10%	5
2	**Introduction to Visual Studio**: Developing Console Application, Introduction to Project and Solution in Studio, Entry point method - Main., Compiling and Building Projects, Command Line Arguments , Importance of Exit code of an application, Different valid forms of Main, Compiling a C# program using command line utility CSC.EXE	5%	3
3	**Windows Forms**: forms and Common Tool Box Controls Like Label & button, Textbox , Check Box , Radio Button , Group Box control and methods and events. Working with other controls of toolbox: Date Time Picker, List Box, Combo box, Picture Box, Rich Text Box, Progress bar, Masked Text box, Link Label, Checked List box, Scroll Bars, timer. Working with Menus: creating menu, inserting, deleting, assigning short cut keys, pop up menu. Working Dialog Boxes: OpenFileDialog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog	10%	5

4	**Web Forms**: Introduction to Forms & Web Forms, Web Forms Programming Model (Posting Web Form, Saving State), HTML Server Controls, Web Server Control, User Control, Custom Control and Creating Control at Run Times	10%	5
5	**Validating Asp.net Pages**: ASP.Net validation Controls (Custom Validator, Range Validator, Require Field Validator, Regular Expression Validator, Compare Validator)	10%	3
6	**Understanding C# : Types**: Reference Types , Value Types , The struct, Testing Reference Types , Testing Value Types , Passing Parameters ,Strings, Boxing ,The enum , Defining Types, Interfaces, Arrays Assemblies	10%	6
7	**Understanding C# : Events, Properties, and Methods**: Methods , Method Overloading, Fields, Properties, Events, Events - Delegates, Events - Subscribing , Events - Publishing , Indexers , Operator Overloading, Conversion Operators	10%	5
8	**Web Programming Introduction**: Understanding role of Web Server and Web Browser, Brief about HTTP Protocol, HTTP Request structure, Form Tag and comparison between Get and Post methods, HTTP Response Structure, HTML and JavaScript	10%	4
9	**Data Access using ADO.NET**: Introduction to SQL- Stored Procedures Functions Triggers, Basics of Ado.net Connected and Disconnected modes, Creating Database using VS.NET, Establishing Connection with Database , Connection String Formats, Executing simple Insert, Update and Delete Statements, Executing Select Statement and using SqlDataReader, Stored Procedures, DataSet, DataTable, Primary key and Foreign key constraints	15%	7
10	**Introduction to Bootstrap**: What is Bootstrap Framework, Why Bootstrap, Advantages of Bootstrap Framework, Bootstrap Grid, Bootstrap Components- dropdowns, input groups, navigation, alerts, and much more.	10%	5

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Asp.Net: The Complete Reference (TextBook)
   Macdonald,; Tata mcgraw hill Publication
2. Professional ASP.NET 4.5 in C# and VB, (TextBook)
   by Jason N. Gaylord, Christian Wenz, Pranav Rastogi, Todd Miranda, Scott Hanselman, Scott Hunter; Wiley publication
3. Bootstrap : responsive web development (TextBook)
   by Jake Spurlock,; O Relly.
4. Professional Visual Studio 2013,
   By Bruce Johnson,; Wiley / Wrox

5. Sams.Asp.net 3.5,Unleashed,
   By Stephen Walther

Course Outcome:

After Learning the course the students shall be able to:

After learning the course the students shall be able to:
1. Develop confidence for developing software and ability for developing web application.
2. Design and Develop programs with .net compiler

List of Practical:

1. Write an application that emits the words "What a great subject!" to the console window.
2. Write a C# code to Perform Celsius to Fahrenheit Conversion and Fahrenheit to Celsius conversion.
3. Write C# code to display the asterisk pattern as shown below: ***** **** *** ** *
4. Write C# code to do the following - Convert binary to decimal - Convert decimal to hexadecimal
5. Write a program in C# Sharp to create a file and add some text.
6. Write a program in C# Sharp to count the number of lines in a file.
7. Write program to implement arithmetic calculator using Windows form.
8. Develop a windows form app which displays a form to get following information from user. 1. Username 2. Password 3. Email Address 4. Phone Number 5. Country 6. State 7. State 8. Gender 9. Interests 10. Birth Date 11. Birth Time Form should be followed by a Button with label “Submit”. When user clicks the button, a message should be displayed to user describing the information entered. Utilize suitable UI controls (i.e. widgets).
9. Write a program to Enable-Disable Textbox and change width of TextBox programmatically in Asp .Net
10. Show your favorite games in container having title. Final output should be like this:
11. Implement the concept of state Management in Web Application
12. Write a ADO.NET program to display user data from a database.
13. Create a login page using ASP.NET and ADO.NET.
14. Write a ADO.NET program to insert data into the database using stored procedure.
15. Create a Contacts Address Book Application
16. Create a Shopping Cart

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

Computer Graphics (03105382)

Type of Course: BTech

Prerequisite: Basic mathematics is necessary such as vectors, matrix operations, derivatives, and basic trigonometry. Programming skills in C and C++ is also required.

Rationale: The course aims to develop the creative imagination by encouraging pupils to reason in two and three-dimensions and by applying these abilities to the solution of graphical problems of an abstract and practical nature. The course provides a unique range of skills and techniques for graphics primitives. It will allow the pupils to experiment with shape and form, shade and color.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/	Lab Hrs/ Week		T	P	T	CE	P	
4	0	2	5	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction of Computer Graphics**: Introduction, Display Devices, Bitmap and Vector based graphics, Overview of Coordinate system, Overview of Computer Graphics, Computer Graphics Application and Software, Input Devices for Operator Interaction, Active and Passive Graphics Devices, Display Technologies, Storage Tube Graphics Displays, Calligraphic Refresh Graphics Displays, Raster Refresh (Raster-Scan) Graphics Displays, Cathode Ray Tube Basics, Color CRT Raster Scan Basics, Video Basics, The Video Controller, Random-Scan Display Processor, LCD displays.	10%	5
2	**Scan conversion – lines, circles and Ellipses; Filling polygons**: Scan Conversion of: point, line using Digital differential analyzer& Bresenham’s algorithm, circle using midpoint approach, Curve Generation : Bezier and B-Spline curves.Introduction to fractals: generation procedure, classification, dimension and Koch Curve	10%	6
3	**Two Dimensional Transformation and Viewing**: Basic Geometrical 2D transformations: Translation, Rotation, Scaling, Reflection, Shear, their homogeneous Matrix representation and Composite transformation.Introduction, Viewing Pipeline, View Coordinate reference frame , Window to viewport transformation, Point clipping, Line Clipping: Cohen Sutherland Algorithm, Liang Barsky algorithms, Polygon clipping: Sutherland Hodgeman polygon clipping and Weiler Atherton. Text Clipping.	25%	11

4	**Three Dimensional Transformations**: Introduction, Three-Dimensional Scaling, Three-Dimensional Shearing, Three-Dimensional Rotation, Three-Dimensional Translation, Rotation about an Arbitrary Axis in Space, Matrix Representation of 3D Transformations, Composition of 3D Transformations, Affine and Perspective Geometry, Perspective Transformations, Techniques for Generating Perspective Views, Vanishing Points, the Perspective Geometry and camera models, Orthographic Projections, Axonometric Projections, Oblique Projections.	20%	8
5	**Visible Surface determination**: Techniques for efficient Visible-Surface Algorithms, Categories of algorithms, Back face removal, The z-Buffer Algorithm, Scan-line method, Painter's algorithms (depth sorting), Area sub-division method, Visible-Surface Ray Tracing.	10%	5
6	**Illumination and Color Models**: Basic Illumination Model, Diffuse reflection, Specular reflection, Phong Shading Gourand shading, and color models like RGB, YIQ, CMY, HSV.	10%	5
7	**Plane Curves and Surfaces**: Curve Representation, Nonparametric Curves, Parametric Curves, Representation of Space Curves, Cubic Splines, Bezier Curves, B-spline Curves, Parametric Cubic Curves and Quadric Surfaces. Bezier Surfaces **Introduction to Animation**Key Frame Animation, Animation Sequence, Motion Control Methods, Morphing, Warping(only Mesh Warping).	15%	6

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Computer Graphics (TextBook)
   Donald Hearn & M. Pauline Baker; PHI,2011; Second Edition
2. "Computer Graphics with Virtual Reality", (TextBook)
   R. K Maurya; Wiley India.
3. Computer Graphics Principles and Practices
   by Folay Vandam, Feiner, Hughes,; Pearson Pub.
4. Procedural Elements of Computer Graphics
   by Rogers,; Tata McGraw Hill.

Course Outcome:

After Learning the course the students shall be able to:

Upon completion of the subject, students will be able to:
1. Understand contemporary terminology, progress, issues, and trends in Computer Graphics.
2. Understand interdisciplinary nature of computer graphics in the wide variety of examples and applications.
3. Designed and implement graphics primitives.
4. Enhance their perspective of modern computer system with modeling, analysis and interpretation of 2D and 3D visual information.

List of Practical:

1. A brief study of various types of input and output devices.

2. To generate a human face using basic shapes and color in the graphics.
3. WAP to draw line using DDA algorithm
4. WAP to draw line using Bresenham’s algorithm
5. WAP to draw circle using Bresenham’s algorithm
6. WAP to draw eclipse using Midpoint algorithm
7. WAP to implement flood fill and Boundary fill algorithm.
8. WAP to implement polygon filling.
9. Program to implement 2D Transformation.
10. Program to implement 3D rotation about an arbitrary axis.
11. Program to implement Cohen Sutherland line clipping.
12. Program to draw Bezier curve.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

Embedded Systems (03108351)

Type of Course: BTech

Prerequisite: Computer Architecture/Organization, Operating systems, programming knowledge.

Rationale: Tiny operating systems are available in many appliances/devices. While operating systems govern the hardware, real time operating systems help to ease the tasks. It is good for under graduates of computer engineers to learn the Processor level details for real time systems, basic architectures, primitive programming, understand the given real time system

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/	Lab Hrs/ Week		T	P	T	CE	P	
3	-	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction -Embedded Systems**: Overview, Design Challenge — Optimizing Design Metrics, Processor Technology, IC Technology, Design Technology, Trade-offs	15%	6
2	**Custom Single-Purpose Processors**: Hardware- Introduction, Combinational Logic, Sequential Logic, Custom Single-Purpose Processor Design, RT-Level Custom Single-Purpose Processor Design, Optimizing Custom Single-Purpose Processors	15%	6
3	**Standard Single-Purpose Processors**: Peripherals- Introduction, Timers, Counters, and Watchdog Timers, UART, Pulse Width Modulators, LCD Controllers, DMA Controllers, Keypad Controllers, Stepper Motor Controllers, Analog-to-Digital Converters, Real-Time Clocks	20%	10
4	**Designing Embedded Computing Platform**: Common Memory Types, Composing Memory, Memory Hierarchy and Cache, Advanced RAM. Microprocessor Interfacing: I/O Addressing- Interrupts and Direct Memory Access, Arbitration, Multilevel Bus Architectures, Advanced Communication Principles, Serial Protocols, Parallel Protocols, I2C, CAN Bus; I/O Device Interfacing Protocols- GPIB, FIREWIRE, USB, IRDA	20%	10

5	**Computer System Architecture -**: Bus Protocols and Organization-PCI, ISA, EISA, CISC and RISC processor, Harvard and Von Neumann Architecture, Superscalar and VLIW architectures; Introduction to ARM Processor	12%	6
6	**Real Time Operating System**: Real-time concepts, real-time operating systems, Required RTOS, services/capabilities,Resource Management/scheduling paradigms: static priorities, static schedules, dynamic scheduling,Priorityinheritance protocol, Priority ceiling protocol	18%	10

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Computers as components - Principles of embedded computing system design
   Wayne Wolf (Morgan Kaufmann); Morgan Kaufmann Publishers
2. Embedded systems Architecture, Programming and Design
   Rajkamal; TMH
3. Embedded System Design : A Unified Hardware Software introduction
   Frank Wahid, & Tony Givargis; John Wiley India
4. Specification and Design of Embedded Systems
   D. Gajski, F. Vahid, S.Narayan, and J. Gong; Prentice Hall
5. Hardware Software Co -design: Principles and Practice
   JorganSyaunstrup and W.Wolf; Springer
6. Programming Embedded Systems in C and C++
   Michael Barr; O'Reilly Media,, 1999
7. RTS: Real-Time Systems
   C.M. Krishna and Kang G. Shin; McGraw-Hill
8. Advances in Hard Real-Time Systems
   J. A. Stankovic and K. Ramamritham; IEEE Computer Society Press, Washington DC

Course Outcome:

After Learning the course the students shall be able to:

Upon completion of the subject, students will be able to:
1. Understand the hardware and software components of an Embedded devices that are used in daily life
2. Design the typical building blocks of an Embedded System
3. Develop an ability to design a system to meet desired needs within realistic constraints such as economic, environmental, social, health and safety, manufacturability and sustainability

List of Practical:

1. Give Specification of anyone of the Embedded Systems with its UML diagram
2. Using Logisim Simulation Tool, Design Full Adder and XNOR gate. And also specify its truth table.
3. Design a Circuit for computing Fibonacci numbers upto 1000 and simulate the operation.
4. Design 7 segment LED using Combinational Analysis Option of Logisim Simulator
5. Explore GCC compiler options (processor and optimization) and analyze the code size for various optimization options
6. Study MAKE command of UNIX and write a C program of calculator with few basics functions defined in separate file. Use MAKE command to generate executable.
7. Study and Perform TAR, GPROF, PROF Commands
8. Write a Matrix multiplication program without using array Data Structure
9. Implement GCD using Logisim Simulator

10. Write an 8051 C program to toggle all the bits of P0 and P2 continuously with 250 ms delay.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of CDC

SYLLABUS FOR 6th Sem BTech PROGRAMME

Employability Skills - 2 (03193352)

Type of Course: BTech

Prerequisite:

Rationale: Cracking aptitude is the first step towards cracking placements and competitive exams

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/		T	P	T	CE	P	
1	1	-	2	-	-	-	100	-	100

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Coding & decoding, series, analogy, odd man out and Visual reasoning**: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
2	**Worksheet on LSRW**: • practice papers of the four language skills will be a revision for students	5%	2
3	**Critical Reasoning**: • By this session, the students will get the in-depth information about various aspects of Critical Reasoning, various types of questions which come in this sub-section.	5%	3
4	**Social Networking**: • This session will provide knowledge about the importance of Social Networking sites in their Professional life.	5%	1
5	**Logical Connectives, Syllogism, Venn diagrams**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
6	**Entrepreneurship skills (SELLING THE CONCEPT)**: This topic will help students develop the skills necessary to develop into Self- Sufficient business leaders through Entrepreneurship studies.	5%	2

7	**Numbers**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
8	**Driving sense (INDUSTRIAL SAFETY NORMS)**: This session will guide students to follow the safety norms of an Industry.	5%	1
9	**Permutation, Combination and Probability**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
10	**ATMA (AIMS Test For Management Admission) – Introduction to AIMS and solving worksheet on AIMS questions**: By this practice session, students will come to know the pattern of MANAGEMENT ADMISSION TEST; by solving previous years papers.	5%	1
11	**Profit and loss, Partnerships and averages**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
12	**XAT-Worksheet on Verbal questions from previous year's XAT paper**: This practice paper will students an insight into the Pattern of Competitive exam papers [verbal section]; by solving previous years papers.	5%	2
13	**Sentence Completion and Para Jumbles**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
14	**IELTS – Covering LSWR questions from IELTS**: the practice papers of IELTS will in a way train students for language based competitive exams.	5%	2
15	**Time, speed and distance**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3

16	**CAT - Worksheet on Verbal questions from previous year's CAT paper**: In this session students will come to know about the Eligibility Criteria, the rounds conducted in the exam, sections and important topics per section for the exam by solving previous years papers.	5%	1
17	**Vocabulary**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
18	**Worksheet on questions from GMAT**: In this session students will come to know about the Eligibility Criteria, the rounds conducted in the exam, sections and important topics per section for the exam by solving previous years papers.	5%	2
19	**Voices and Forms of Speech**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
20	**GRE – Worksheet on GRE's previous year questions**: In this session students will come to know about the Eligibility Criteria, the rounds conducted in the exam, sections and important topics per section for the exam by solving previous years papers.	5%	1

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.