GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: ADVANCE JAVA PROGRAMMING
(COURSE CODE: 3360701)

Diploma Programme in which this course is offered	Semester in which offered
Computer Engineering/ Information Technology	Sixth

1. RATIONALE

This course provides the knowledge necessary to understand java and develop dynamic web pages using java server page (JSP). It covers the basic underlying concepts and techniques recently used in the IT industry. After going through this course student will be able to do Web Development and Desktop Application Development.

2. COMPETENCY

The course content should be taught and implemented with the aim to develop required skills in the students so that they are able to acquire following competency:

- **Develop Graphical User Interface applications in JAVA, Servlet and JSP"**

3.   COURSE OUTCOMES (Cos)

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.
   i.   Develop Java Applet Programming using various techniques
  ii.   Develop applications using Abstract Window Toolkit
 iii.   Update and retrieve the data from the databases using JDBC-ODBC.
  iv.   Develop server side programs using Servlets.
   v.   Develop Java Server Pages applications using JSP Tags.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	**T**	**P**	**C**	**ESE**	**PA**	**ESE**	**PA**	
3	0	4	7	70	30	40	60	**200**

Legends: L - Lecture; **T -** Tutorial/Teacher Guided Student Activity; **P -** Practical;
C - Credit; **ESE** - End Semester Examination; **PA** - Progressive Assessment

5. COURSE CONTENT DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit - I **Java Applets**	1a. Explain concept of applet life cycle 1b. Differentiate applet and application	1.1 Applet Programming : local and remote applets, difference between applet and application, applet life cycle, developing executable applet code
	1c. Develop code for simple Java applets 1d. Explain applet tag and its parameter 1e. Use the methods of the applet and component classes required for a basic applet	1.2 Web Page Design : applet tag, adding applet to HTML file, running the applet, passing parameter to applet, various methods and component classes to develop basic applet
Unit -II **Abstract Window Toolkit (AWT)**	2a. Describe the classes in the AWT package that relate to the applet class	2.1 Abstract Window Toolkit(AWT): classes hierarchy, windows fundamentals 2.2 Frame Windows : creating a frame window in applet, canvas, creating windows program
	2b. Describe the AWT graphics explain controls and how to apply them in the container	2.3 Graphics-AWT Controls: Labels, TextField, Push buttons 2.4 Layout Managers (Flow Layout, Border Layout, Grid Layout, Card Layout) 2.5 Developing Graphical User Interface using Swing: JApplet,JLabel,JTextField, JButton,JCheckBox, JRadioButton, JComboBox, Menus
	2c. Develop simple programs using event class and event listener interface	2.6 Event Classes: MouseEvent Class , ActionEvent Class, WindowEvent Class 2.7 Event Listner Interface: MouseListener, ActionListener, WindowListener and KeyListner
Unit – III **Java Data Base Connectivity (JDBC)**	3a. Describe the basics of JDBC and its connectivity	3.1 Two-Tier Database Design, Three-Tier Database Design 3.2 The JDBC API: The API components, database operations like creating tables, CRUD(Create, Read, Update, Delete) operations using SQL
	3c.Explain different types of JDBC drivers and their advantages and disadvantages	3.3 JDBC- advantages and disadvantages 3.4 JDBC drivers

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	3d. Develop program using JDBC to query a database and modify it	3.5 JDBC-ODBC bridge 3.6 Develop java program using JDBC
Unit IV **Servlets**	4a. Describe life cycle of servlet	4.1 The life cycle of a servlet 4.2 The Java Servlet Development Kit 4.3 The Simple Servlet: create and compile servlet source code, start a web browser and request the servlet, example of echo servlet and deployment in tomcat server
	4b. Develop program using javax.servlet package	4.5 The javax.servlet Package: reading database/table records and displaying them using servlet
Unit V **Java Server Pages (JSP)**	5a. Explain the architecture of JSP and its life cycle 5b. Develop simple programs using Java Server Pages tags	5.1 Relation of Applets and Servlets with JSP 5.2 JSP Scripting Elements 5.3 JSP Expressions 5.4 Difference between JSP and Servlet 5.5 JSP Declarations 5.6 Simple JSP program to fetch database records

6. SUGGESTED SPECIFICATION TABLE WITH HOURS AND MARKS (Theory)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total
1.	Java Applets	09	4	4	4	12
2.	Abstract Window Toolkit (AWT)	12	6	8	7	21
3.	Java Data Base Connectivity (JDBC)	05	4	4	4	12
4.	Servlets	08	5	5	5	15
5.	Java Server Pages (JSP)	08	2	3	5	10
	Total	**42**	**21**	**24**	**25**	**70**

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED LIST OF EXERCISES/PRACTICAL

The practical should be properly designed and implemented with an attempt to develop different types of skills **(outcomes in psychomotor and affective domain)** so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical. However, if these practical are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.*
Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

Sr. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Approx. Hrs. required
1	I	Develop an applet that draws a circle. The dimension of the applet should be 500 x 300 pixels. The circle should be centered in the applet and have a radius of 100 pixels. Display your name centered in a circle.(using drawOval() method)	2
2		Draw ten red circles in a vertical column in the center of the applet.	2
3		Built an applet that displays a horizontal rectangle in its center. Let the rectangle fill with color from left to right.	2
4		Develop an applet that display the position of the mouse at the upper left corner of the applet when it is dragged or moved. Draw a 10x10 pixel rectangle filed with black at the current mouse position.	2
5		Develop an applet that contains one button. Initialize the label on the button to "start", when the user presses the button, which changes the label between these two values each time the button is pressed.	2
6		Develop an applet that uses the mouse listener, which overrides only two methods which are mousePressed and mouseReleased.	2
7	II	Develop a program that has only one button in the frame, clicking on the button cycles through the colors: red->green->blue and so on. One color changes per click.(use getBackGround() method to get the current color)	4
8		Develop an program that contains three check boxes and 30 x 30 pixel canvas.The three checkboxes should be labeled "Red", "Green","Blue". The selection of the check boxes determine the color of the canvas. For example, if the user selects both "Red" and "Blue", the canvas should be purple.	2

9		Create an application that displays a frame with a menu bar. When a user selects any menu or menu item, display that selection on a text area in the center of the frame	2
10		Develop a program that draws two sets of ever-decreasing rectangles one in outline form and one filled alternately in black and white.	4
11	III	Develop a database application that uses any JDBC driver	4
12		Develop a Graphical User Interface that performs the following SQL operations: a) Insert b) Delete c)Update.	4
13		Develop a program to present a set of choice for user to select a product and display the price of product.	4
14	IV	Develop a simple servlet program which maintains a counter for the number of times it has been accessed since its loading, initialize the counter using deployment descriptor.	4
15		Create a web form which processes servlet and demonstrates use of cookies and sessions.	4
16	V	Develop a simple JSP program for user registration and then control will be transfer it into second page.	4
17		Develop a simple JSP program for user login form with static and dynamic database	4
18		Develop a JSP program to display the grade of a student by accepting the marks of five subjects.	4
		Total Hours	**56**

8. SUGGESTED LIST OF STUDENT ACTIVITIES
Following is the list of proposed student activities such as:
  i.   Understanding of advance JAVA programming.
  ii.   Demonstrate advance JAVA programming in real world.
  iii. Develop a program with real world application
  iv.   Develop mini projects
  v.   Solve real time industry problems through advance JAVA programming.

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)
  i.   Faculty should demonstrate the features of Advance Java for clear understanding of the students
  ii.   Concepts should be introduced in classroom input sessions and by giving demonstration through projector.
  iii. More focus should be given on practical work which will be carried out in laboratory sessions. If possible some theory sessions may be conducted in labs so that theory and practice can go hand in hand.
  iv.   Group Discussion and presentation of relevant websites
  v.   Faculty should allow students to use their creativity and let them struggle to learn on their own during practical sessions. However, faculty should remain around the students and should help them when they are stuck.

10. SUGGESTED LEARNING RESOURCES
(A) List of Books*

Sr No.	Title of Book	Author	Publication
1	Complete Reference Java 2	Herbert Schildt	TMH
2	Core Java Volume-I Fundamentals	Cay S. Horstmann Gary Cornell	Pearson
2	Swing: A Beginner's Guide	Herbert Schildt	TMH
3	Java Programming Cook Book	Herbert Schildt	MGH
4	Unleashed Java 2 Platform	Jamie Jaworski	Sams Techmedia
5	Java Programming	Sachin Malhotra, Saurabh Choudhary	Oxford
6	Introduction to Java Programming	Y. Daniel Liang	Pearson
7	Web Technology with Advanced Java	Soumadip Ghosh	University Press
8	Java Enterprise Edition A Practical Approach	B. Mohamed Ibrahim	University Press
9	Java Swing	Obert Eckstein, Marc Loy, Dave Wood	O'Reilly Media
10	Java 2 Intermediate to Advanced User Guide for Technicians	Benjamin Aumaille	Firewall Media

*Preferably Latest editions

(B) List of Major Equipment/Materials

Hardware: Desktop Computer P-IV processor or higher
Software: jdk1.2 or higher version, BlueJ, NetBeans , Eclipse

(C) List of Software / Learning Websites

  i. **Java Applets**
     http://docs.oracle.com/javase/tutorial/deployment/applet/index.html
 ii. **Introduction to GUI Programming**
     http://math.hws.edu/javanotes/c6/index.html
iii. **Creating a GUI using AWT**
     http://www.tutorialspoint.com/awt/
 iv. **Creating GUI using Java Swing**
     https://docs.oracle.com/javase/tutorial/uiswing/
  v. **JDBC Database Access**
     https://docs.oracle.com/javase/tutorial/jdbc/
 vi. **Servlet Technologies**
     http://www.oracle.com/technetwork/java/index-jsp-135475.html
vii. **Java Server Pages**
     http://www.oracle.com/technetwork/java/javaee/jsp/index.html

viii. **The Java EE 6 Tutorial**
    https://docs.oracle.com/javaee/6/tutorial/doc/bnafd.html

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. P. P. Kotak**, H. O. D Computer Department, A. V. P. T. I, Rajkot
- **Prof. R. M. Shaikh**, H.O.D Computer Department, K. D. Polytechnic, Patan
- **Prof. K. N. Raval**, H.O.D Computer Department, R. C. Technical Institute, Ahmedabad
- **Prof. R. M. Shah**, Sr. Lecturer in Computer Technology, Government Polytechnic, Ahmedabad.
- **Prof .(Ms.) A. S. Galathiya**, Lecturer Computer, R C Technical Institute, Ahmedabad.
- **Prof. H. J. Prajapati**, Lecturer (IT), Government Polytechnic, Himatnagar.
- **Prof.A. J. Shah**, Lecturer IT, L.J Polytechnic, Ahmedabad.

Coordinator and Faculty Members from NITTTR Bhopal

- **Dr. Shailendra Singh,** Professor Head, Dept. of Computer Engineering and Applications
- **Dr M A Rizvi,** Associate Professor, Dept. of Computer Engineering and Applications

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: PROFESSIONAL PRACTICES USING DATABASE
(COURSE Code: 3360702)

Diploma Program in which this course is offered	Semester in which offered
COMPUTER ENGINEERING	SIXTH

1.   RATIONALE

The course is associated with database administration and with those developers who want to use maximum functionalities of the MySQL database. The pass out of this course will be able to implement user privileges, set resource limitations, and access controls. In addition, students will learn to apply new features such as creating and using stored procedures, triggers and views of MySQL database, applying backup and security features of MySQL database management. Thus this course would help students in administration of database in a more professional way.

2.   COMPETENCY

The course content should be taught and implemented with the aim to develop different types of skills so that students are able to acquire following competencies:

- **Apply MySQL GUI Tools (SQLyog) as MySQL manager and admin tool, along with various database techniques such as triggers, event handling, user management, backup, recovery and security features of MySQL for database management and administration.**

3.   COURSE OUTCOMES

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

 i.   Perform various database operations using MySQL GUI tools
 ii.   Implement triggers, and stored routines of MySQL
 iii.   Implement event handling
 iv.   Perform User Management in MySQL
 v.   Apply database backup and recovery techniques

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	**T**	**P**	**C**	**ESE**	**PA**	**ESE**	**PA**	
0	0	4	4	0	0	40	60	**100**

Legends: L - Lecture; **T -** Tutorial/Teacher Guided Student Activity; **P -** Practical;   **C -** Credit; **ESE -** End Semester Examination; **PA** - Progressive Assessment

5.   COURSE CONTENT DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I: Introduction to MySQL	1a. Describe basic steps of installation, and command line operations of MySQL 1b. Utilize enlisted MySQL GUI tools for various database operations	1.1 Introduction to MySQL 1.2 Install MySQL on Windows 1.3 Start and stop MySQL from command line 1.4 Brief Introduction to MySQL GUI tools • SQLyog MySQL GUI manager and admin tool • phpmyAdmin • MySQL Query Browser • MySQL Administrator
Unit – II: MySQL Triggers & Routines	2a. Describe MySQL Trigger	2.1 Basics of Trigger 2.2 Create and drop a trigger 2.3 Find all triggers in database
	2b. Define and operate MySQL Stored Routine	2.4 Stored Routine 2.5 Create and invoke a stored routine 2.6 Alter a stored routine 2.7 Drop a stored routine
Unit – III : MySQL Cursor and Event Scheduler	3a. Utilize functionalities of MySQL Cursor	3.1 Basics of Cursor 3.2 Defining the cursor 3.3 Retrieve values from cursor 3.4 Close the cursor
	3b. Use MySQL Events	3.5 Events 3.6 Turning event scheduler on 3.7 Create the event 3.8 Find all events in database 3.9 Chang the event and Drop the event
Unit – IV: User Management	4a. Perform User Management in MySQL	4.1 Basics of MySQL User 4.2 Access Control List 4.3 Manage User Accounts 4.4 GRANT and REVOKE Command 4.5 Reset Root Password
Unit - V Backup and Recovery	5a. Use Database for Taking Backup and Recovery	5.1 Back up MySQL 5.2 Uses for backup 5.3 Backup Frequency 5.4 Copy database into another machine 5.5 Recovery from crashes

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (Theory)

Note: There is no end of the term exam in this course and hence specification table is not applicable.

7. SUGGESTED LIST OF PRACTICAL EXERCISES

The practical should be properly designed and implemented with an attempt to develop different types of skills **(outcomes in psychomotor and affective domain)** so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical. However, if these practical are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.*

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

Sr. No.	Unit No.	Practical/ Exercises	Approx Hrs. Required
1	I	Install and configure MySQL database	4
2	I	Install and use of SQLyog	4
3	I	Install and use of phpmyadmin	4
4	I	Install and Use of MySQL Browser	4
5	I	Install and use of MySQL Administration	4
6	II	Create table and perform various task such as Create a product and product_price_history table. The price of product change constantly. Write a trigger for updating product_price_history table when product price change in product table and such other database can be explored	4
7	II	Implement and manipulate trigger such as Create a trigger for deleting all the products of particular product type when that product type is deleted and similar for other databases.	2
8	II	Write stored routines such as write a routine for counting all product types and other such routines can be performed	4
9	II	Manipulate on routines such as write a routine for updating price of all product by 5% and other such routines can be performed	2
10	III	Create cursors such as create a cursor for selecting all product whose price is more than 1000 and other such cursors can be implemented	4
11	III	Perform various event handling operations such as create an event that checks the product types having quantity less than 20 in stack at every ten minutes and such other procedure can be done	4
12	III	Implement precise events such as create an event that checks the product which has been sold maximum in a day and same exercises can be performed	4
13	IV	Create and manage user accounts in MySQL	4
14	IV	Practice with GRANT and Revoke Command	4
15	V	Practice with database backup and recovery operations as well security operations	4
		Total Hours	56

8.   SUGGESTED STUDENT ACTIVITIES

Following is the list of proposed student activities such as:
   i. Presentation on different database comparison
   ii. Seminar on Database installation and applications

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)
   i.   Faculty should demonstrate an Open source database technology for clear understanding of the students
   ii.   Concepts should be introduced in input sessions in labs by giving demonstration through projector so that theory and practice can go hand in hand.
   iii.   Group Discussion and presentation of database systems.
   iv.   Faculty should allow students to use their creativity and let them struggle to learn on their own during practical sessions. However, faculty should remain around the students and should help them when they are stuck.

10. SUGGESTED LEARNING RESOURCES
   ### A).   List of Books

Sr. No.	Title of Book	Author	Publication
1	MySQL Administrator	Sheeri Cabral	Wiley
2	Oracle And Mysql	B. Mohamed Ibrahim	Firewall Media 2013
	MySQL 5	Michael Kofler	Apress
3	MySQL Admin Cookbook	Daniel Schneller, Udo Schwedt	Packt
4	The Power of Oracle 10g	Rajeev A Parida	Firewall Media

B).   List of Major Equipment/ Instrument with Broad Specifications

   i.   **Hardware:** Latest server system with fourth generation multi core processors, 16 GB RAM, Minimum two 1Tb hard disk, High end networking support, RAID backup support, Power backup, Nodes available in market with latest configuration
   ii.   **Software:** MySQL (open source), SQLyog, MySQL Query Browser and other Administrative tools.
   iii.   **Equipment:** Multimedia Projector

C). Additional Resources of MIS that can be used for conducting Practical as well as case studies

   i. http://www.mysqltutorial.org/mysql-administration.aspx
   ii. http://www.tutorialspoint.com/mysql/mysql-administration.htm
   iii. http://www.washington.edu/itconnect/connect/web-publishing/shared-hosting/using-mysql-on-shared-uw-hosting/basic-mysql-administration/
   iv. http://www.vtc.com/products/MySQL-5-Administration-Part1-Tutorials.htm

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- **Prof. A. J. Shah**, Lectuer Computer, L. J. Polytechnic, Ahmedabad.

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- **Dr. Shailendra Singh, Professor & Head,** Department of Computer Engineering and Applications.

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM

COURSE TITLE: NETWORK MANAGEMENT AND ADMINISTRATION
(COURSECODE: 3360703)

Diploma Programmes in which this course is offered	Semester in which offered
Computer Engineering	Sixth

1.   RATIONALE

To access remote programs, data, and hardware resources lying either on the same organization's computers or from other enterprises or public sources for resource sharing, e-commerce, use of social network etc, connecting the IT resources is the prime requirement of today. The computer networks provide communication possible. In this scenario the management and administration of network in effective manner becomes an important aspect. The course introduces students to the fundamentals of network management, primarily for TCP/IP networks. The students of this course will be able to design, install, configure and experience hands-on management of typical network components. They will also be able to administer and manage the network. After learning this course student will be employable in the industry working in the area of network installation and management or they can start their own business providing hardware and software solutions to different organization in the area of networking.

2.   COMPETENCY

The course content should be taught and implemented with the aim to develop required skills in the students so that they are able to acquire following competency:

- **Plan, install, configure, administer and manage a computer network**

3.   COURSE OUTCOMES

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

  i. Explain Directory Services and Remote Access

  ii. Set-up and use Virtual Private Network

  iii. Explain Network protocols and services

  iv. Install and configure Network server operating system

  v. Configure various services on Windows server platform

  vi. Troubleshoot Network

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	**T**	**P**	**C**	**ESE**	**PA**	**ESE**	**PA**	
3	0	4	7	70	30	40	60	200

Legends: L-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit
ESE - End Semester Examination; **PA** - Progressive Assessment.

5. COURSE CONTENT DETAILS

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I **Exploring Directory Services and Remote Access**	1a.Describe Directory Service 1b.Describe different Directories Access Protocols.	1.1 Directory Services: Define Directory Service, Definition of Novelle Directory, Windows Domain, MS Active Directory, X500 Directory Access Protocol, Lightweight Directory Access Protocol, Forests, Trees, Roots and Leaves.
	1c.Describe Active Directory Architecture. 1d.Write LDAP Notation. 1e.Identify Globally unique identifiers.	1.2 Active Directory Architecture: Object Types, Object Naming, Canonical Names, LDAP Notation, Globally unique identifiers, User Principle Names, Domain, Trees & Forests.
	1f.Set-up Remote Network Access. 1g. Explain PSTN, ISDN, DSL, CATV.	1.3 Remote Network Access: Need of Remote Network Access, PSTN, ISDN, DSL, CATV.
	1h. Set-up and configure VPN. 1i. List VPN Protocols.	1.4 Virtual Private Network: VPN Protocols, Types of VPN, VPN Clients, SSL VPNs.
Unit– II **Network Protocols and Services**	2a.Explain DHCP architecture & RARP. 2b. Differentiate various IP addressing schemes.	2.1 Dynamic Host Control Protocol(DHCP): DHCP Origins, Reverse Address Resolution Protocol (RARP), The Bootstrap Protocol (BOOTP), DHCP Objectives, IP Address assignments, DHCP Architecture.

Unit	Major Learning Outcomes	Topics and Sub-topics
	2c. List DNS Objectives. 2d. Draw DNS Hierachy. 2e. Describe Name Resolutions. 2f. List Resolvers. 2g.Explain DNS registration process.	2.2 Introduction to Domain Name Systems (DNS): DNS Objectives, Domain Naming, Top Lavel Domains, Second Level Domains, Sub-domains, DNS Functions, Resource Records, DNS Name Resolution, Resolves, DNS Requests, Root Name Servers, Resolving a Domain Name, DNS Name Registration.
	2h. Set-up Local and network Print Devices.	2.3 Network Printing Concepts: Locally Connected Print Devices, Setting up local Print Devices, Shared Print Devices, Sharing Locally Attached Print Devices, Describe Windows Network Printing and Add print Wizard.
Unit– III **Network** **Planning and** **Implementation**	3a. Design and configure a small Network. 3b. List out Network Applications.	3.1 Designing Network – Accessing Network Needs, Applications, Users, Network Services, Security and Safety, Growth and Capacity Planning, Meeting Network Needs – Choosing Network Type, Choosing Network Structure, Choosing Servers.
	3c. Install and Configure Windows Server. 3d. Create Domain controller.	3.2 Installing and Configuring Windows Server - Preparing for Installation, Creating windows server boot disk, Installing windows server, Configuring server/ client. 3.3 Setting windows server - Creating Domain controller, Adding the DHCP and WINS roles, Adding file server and print server, Adding Web based Administration.

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit– IV **Network** **Configuration**	4a. Manage User Accounts and Security Group.. 4b. Administer shared resources. 4c. Configure back-up and print Server.	4.1 Working With User Accounts - Adding a User, Modifying User Account, Deleting or Disabling a User Account. 4.2 Working With Windows Security Groups – Creating Group, Maintaining Group Membership. 4.3 Working with Shares – Understanding Share Security, Cresting Shares, Mapping Drives 4.4 Administering Printer Shares – Setting up Network Printer 4.5 Working with Windows Backup – Using Windows Servers Backup Software
Unit– V **Troubleshooting** **of Networking**	5a. Troubleshoot Network faults. 5b. Set Priorities. 5c. Work with network troubleshooting tools.	5.1 Understanding the Problem – Troubleshooting, Segmenting the Problem, and Isolating the Problem, Setting Priorities. 5.2 Troubleshooting Tools – Hardware Tools, Software Tools, Monitoring and Troubleshooting Tools
	5d. Assign files permissions to users/groups.	5.3 Internal Security – Account Security, File and Directory permissions, Practices and user education

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (Theory)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Exploring Directory Services and Remote Access	08	04	04	04	12
II	Network Protocols and Services	10	06	06	06	18
III	Network Planning and Implementation	10	04	06	06	16
IV	Network Configuration	08	02	04	08	14
V	Troubleshooting of Networking	06	00	04	06	10
	Total	**42**	**16**	**24**	**30**	**70**

Legends: R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED LIST OF EXERCISES/PRACTICALS

The practical/exercises should be properly designed and implemented with an attempt to develop different types of cognitive and practical skills *(Outcomes in cognitive, psychomotor and affective domain)* so that students are able to acquire the competencies.

Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of **Programme Outcomes/Course Outcomes in affective domain** as given in a common list at the beginning of curriculum document for this programme. Faculty should refer to that common list and should ensure that students also acquire those Programme Outcomes/Course Outcomes related to affective domain*

NOTE: In all the Practical Exercise, the configurations and operations have to be performed on windows platform except where O. S. is specified.

S. No.	Unit No.	Practical Exercises (Outcomes' in Psychomotor Domain)	Hrs. required
1	I	Execute Basic TCP/IP utilities and commands. (eg: ping, ipconfig, tracert, arp, tcpdump, whois, host, netsat, nslookup, ftp, telnet etc...)	02
2	I	Configure a router (Ethernet & Serial Interface) using router commands including access lists on any network simulator (eg. packet Tracer)	04
3	I	Configure VPN components and Set-up VPN.	05
4	I/III	Design and implement small network using actual physical	04

S. No.	Unit No.	Practical Exercises (Outcomes' in Psychomotor Domain)	Hrs. required
		components with IP address scheme	
5	I	Configuration of the following a) Remote Login Service – TELNET/SSH b) Configuration of FTP server and accessing it via FTP Client.	04
6	II	Setting up and Configuring Local Print Device and Network Print Device	02
7	III	Creating Windows Server Boot Disk.	01
8	III	Installing Windows Server	02
9	III	Installing and configuring Linux Server	03
10	III	Configure following services on Linux server: i) Managing User accounts and device configuration	02
11	III	ii) Configure and use Telnet and VNC	02
12	III	iii) Windows connectivity through Samba Server	03
13	III	iv) Configure web server and FTP server	02
14	III	v) Configure proxy server	01
15	III	Installing Active Directory & Creating AD Objects	04
16	III	Create Domain Controller	03
17	IV/V	Create new Users & assign privileges/ Permission.	02
18	IV	Modify/ Delete/Deactivate Users and groups	02
19	IV	Configure Print Server & Backup Server	04
20	V	Identify, Segment Network Faults and troubleshoot	04
21	V	Manage Microsoft Windows Internet Security Services (WINS)	04
22	V	Manage Microsoft Certificate Services.	03
23	IV/V	Manage Desktop Configuration using Group Policy & Remote Installation Services.	03
Total Hours (Perform any practical from above for total 56 hours duration so that all of the units are covered)			**66**

8. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like:
  i. Visit to various network service providers' site.
 ii. Survey of latest tools available to manage and administering website, and its presentation
iii. Presentation/demonstration of assigned project.

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)
  i. Concepts should be introduced in classroom input sessions and by giving demonstration through projector.
 ii. More focus should be given on practical work which will be carried out in laboratory sessions. If possible some theory sessions may be conducted in labs so that theory and practice can go hand in hand.
iii. Group Discussion and presentation of live websites related to networking
 iv. Faculty should allow students to use their creativity and let them struggle to learn on their own during practical sessions. However, faculty should remain around the students and should help them when they are stuck.

10. SUGGESTED LEARNING RESOURCES

A) List of Books:

S. No.	Title of Book	Author	Publication
1.	The Complete Reference Networking	Craig Zacker	Tata McGraw Hill
2.	The Real World Network Troubleshooting Manual	Alan Sugano	Firewall Media
3.	Networking A Beginner's Guide	Bruce Hallberg	Tata McGraw-Hill
4.	Introduction to Networking	Bruce Hallberg	Tata McGraw-Hill
5.	Networking + Certification Training Kit	Richard A. McMahon, Sir	Microsoft Press
6.	MCSE Training Kit Networking Essential Plus	Microsoft Press	MicroSoft Press

B) List of Major Equipment/ Instrument with Broad Specifications
  i. Computer System with latest configuration and memory, laptops, servers
 ii. Open source Free software for Network Management & Administration.
iii. Multimedia projector
 iv. Internet Access
  v. Access to library resources
 vi. Crimping Tool & Cable Tester.
vii. Cable samples.

C) **List of Software / Learning Websites**

    i.   Software: Microsoft windows operating system vista7/8 and windows 2008/2012 server, linux server. VNC Server

    ii.   Hardware: Switches, Routers, Practical kits

    iii.   For TCP/IP commands: http://commandwindows.com/tcpiputil.htm

    iv.   For router configuration: https://perso.ens-lyon.fr/christophe.crespelle/enseignements/ASR/cisco-config.pdf

    v.   Active directory services : http://www.serverwatch.com/tutorials/article.php/1474461/Active-Directory-Tutorial-A-Quick-Start--Set-Up-Guide.htm

11.   COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. P. P. Kotak**, H. O. D Computer Department, A. V. P. T. I., Rajkot
- **Prof. R. M. Shaikh**, H.O.D Computer Department, K. D. Polytechnic, Patan
- **Prof. K. N. Raval**, H.O.D Computer Department, R. C. Technical Institute, Ahmedabad
- **Prof. (Ms.) Manisha P. Mehta**, Sr. Lecturer in Computer Technology, K. D. Polytechnic, Patan
- **Prof   R. M. Shah**, Sr. Lecturer in Computer Technology, Government Polytechnic, Ahmedabad.
- **Prof. S. R. Solanki**, Sr. Lecturer in Computer Engg., Government Polytechnic, Dahod

Coordinator and Faculty Members from NITTTR Bhopal

- **Dr. Shailendra Singh**, Professor and Head, Department of Computer Engineering and Applications,
- **Dr. R. K. Kapoor**, Associate Professor, Department of Computer Engineering and Applications,

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: MOBILE COMPUTING AND APPLICATION DEVELOPMENT
(COURSE CODE: 3360704)

Diploma Program in which this course is offered	Semester in which offered
Computer Engineering	Sixth

1.   RATIONALE

The use of mobile communication and android based applications are increasing day by day. It is therefore necessary for students to know that how mobile communication works and how to build mobile apps for android operating system. This course covers the necessary concepts which are required to understand mobile communication and to develop Android Applications. Thus it is key course for computer engineers, who want to work in the area of communication.

2.   COMPETENCIES

The course content should be taught and implemented with the aim to develop required skills in the students so that they are able to acquire following competencies:

- **Explain functioning of different mobile communication technologies such as GSM and CDMA**
- **Explain development process of open source mobile application**

3.   COURSE OUTCOMES (COs) :

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

- Explain functioning of different mobile technology
- Demonstrate Android activities life cycle
- Execute operations on GUI objects
- Perform Event driven programming
- Apply various techniques on working with menu

4.   TEACHING AND EXAMINATION   SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PA	ESE	PA	
3	0	4	7	70	30	40	60	200

Legends: L - Lecture; **T -** Tutorial/Teacher Guided Student Activity; **P -** Practical; **C -**Credit; **ESE** - End Semester Examination; **PA** - Progressive Assessment

5.   COURSE CONTENT DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics

Unit – I
 	
Introduction to Mobile Computing
	1a. Explain brief Introduction to Mobile technology and generations
	1b. Define and explain characteristics of GSM and CDMA
	1c. Explain services and architecture of GSM AND Mobile Computing
	1d. Explain characteristics , Application & Security issue of Mobile Computing
	1c. Explain Middleware and Gateway for Mobile Computing
	1d. Explain Mobile IP and mobile Communication Protocol
	1e. Introduction to Mobile computing through telephony
		1.1 Concept of Mobile Communication
		1.2 Different generations of wireless technology
		1.3 Basics of cell, cluster and frequency reuse concept
		1.4 Noise and its effects on mobile
		1.5 Understanding GSM and CDMA
		1.6 Basics of GSM architecture and services like voice call, SMS, MMS, LBS, VAS
		1.7 Different modes used for Mobile Communication
		1.8 Architecture of Mobile Computing(3 tier)
		1.9 Design considerations for mobile computing
		
		1.10 Characteristics of Mobile Communication
		1.11 Application of Mobile Communication
		1.12 Security Concern Related to Mobile Computing
		
		1.13 Middleware and Gateway required for mobile Computing
		1.15 Making Existing Application Mobile Enable
		
		1.16 Mobile IP
		1.17 Basic Mobile Computing Protocol
		
		1.18 Mobile Communication via Satellite
		  • Low orbit satellite
		  • Medium orbit satellite
		  • Geo stationary satellite
		Satellite phones

Unit – II **Introduction to Android**	2a. Analyze Open source mobile technology, Explain Basics of Application development 2b. Explain Framework, SDK, Emulation 2c. Explain Android Application structure	2.1 Overview of Android 2.2 What does Android run On – Android Internals? 2.3 Android for mobile apps development 2.5 Environment setup for Android apps Development 2.6 Framework - Android- SDK, Eclipse 2.7 Emulators – What is an Emulator / Android AVD?

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
		2.8 Android Emulation – Creation and set up 2.9 First Android Application
Unit – III **Android Activities and GUI Design Concepts**	3a. Explain Android Activities lifecycle and UI Layout 3b. Explain Expressions, Manifest, other necessary UI concept	3.1 Design criteria for Android Application : Hardware Design Consideration, Design Demands For Android application, Intent**,** Activity, Activity Lifecycle and Manifest 3.2 Creating Application and new Activities 3.3 Simple UI -Layouts and Layout properties :Introduction to Android UI Design, Introducing Layouts
	3c.List and explain GUI Objects, 3d. Explain Layout Design concepts	3.5 XML Introduction to GUI objects viz.: Push Button , Text / Labels , EditText, ToggleButton , Padding
Unit – IV **Advanced UI Programming**	4a. Explain Android Event driven Programming, Activity Lifecycle, Explain Exception handling	4.1 Event driven Programming in Android (Text Edit, Button clicked etc.) 4.2 Activity Lifecycle of Android
Unit – V **Toast, Menu, Dialog, List and Adapters**	5a.Demonstrate working with menu and dialog, Themes, Dialog 5b.Perform Demo Application Launching 5c Perform Database operation	5.1 Menu :Basics, Custom v/s System Menus, Create and Use Handset menu Button (Hardware) 5.2 Dialog : Creating and Altering Dialogs 5.3 Toast : List & Adapters 5.4 Demo Application Development and Launching 5.5 Basic operation of SQLite Database 5.6 Android Application Priorities

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Introduction to Mobile Computing	14	10	10	2	22
II	Introduction to Android	6	2	6	2	10
III	Android Activities and GUI Design concepts.	8	2	4	8	14
IV	Advanced UI Programming	6	2	2	6	10
V	Toast, Menu, Dialog, List and Adapters	8	2	6	6	14
	Total	**42**	**18**	**28**	**24**	**70**

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED LIST OF EXERCISES/PRACTICAL

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills **(outcomes in psychomotor and affective domain)** so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.*
Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

Sr. No.	Unit No.	Practical Exercises	Hrs. Required
1	II	Installation and setup of java development kit(JDK),setup android SDK,setup eclipse IDE,setup android development tools (ADT) plugins,create android virtual device	4
2	II	Create "Hello World" application. That will display "Hello World" in the middle of the screen using TextView Widget in the red color	4
3	III	Create application for demonstration of android activity life cycle	2
4	III	Create Registration page to demonstration of Basic widgets available in android.	4
5	III	Create sample application with login module.(Check username and password) On successful login, Chnage TextView "Login Sucessful". And on failing login, alert user using Toast "Login fail"	4
6	III	Create login application where you will have to validate usename and passwords Till the username and password is not validated , login button should remain disabled.	4
7	III	Create and Login application as above. Validate login data and display Error to user using setError() method.	4
8	III	Create an application for demonstration of Relative and Table Layout in android.	4
9	III	Create an application for demonstration of Scroll view in android	2
10	III	Create an application for demonstration of Explicitly Starting New Activity using Intent.	2
11	III	Create an application that will pass two number using TextView to the next screen , and on the next screen display sum of that number.	4
12	III	Create spinner with strings taken from resource folder(res >> value folder). On changing spinner value, change background of screen.	4

13	IV	Create an application that will get the Text Entered in Edit Text and display that Text using toast (Message).	4
14	IV	Create an application that will Demonstrate Button onClick() Event and change the TextView Color based on button Clicked	4
15	V	Create an UI such that, one screen have list of all the types of cars. On selecting of any car name, next screen should show Car details like: name, launched date, company name	4
16	V	Create an application that will Demonstrate Dialog Box Control In Android	4
		Total hour	**58**

8.   SUGGESTED STUDENT ACTIVITIES

Following is the list of proposed student activities such as:
i.   Design sample GUI
ii.   Prepare and Present presentation on different mobile technology and on Open Source Technology
iii. Prepare comparison of technical features of different mobile communication Technologies being used by popular service providers (such as VSNL, Reliance, Vodafone, Idea etc.) in your city/town

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

i. Faculty should demonstrate an Open source technology specifically java and should give some clear understanding of mobile technology using some simulation or pictorial representation.
ii. Concepts should be introduced in classroom input sessions and by giving demonstration through projector.
iii. More focus should be given on practical work which will be carried out in laboratory sessions. If possible some theory sessions may be conducted in labs so that theory and practice can go hand in hand.
iv. Group Discussion and presentation of related websites should be arranged.
v. Faculty should allow students to use their creativity and during practical sessions let them struggle to learn on their own. However, faculty should remain around the students and should help them when they are stuck.

10. SUGGESTED LEARNING RESOURCES

A)   List of Books

Sr. No.	Title of Book	Author	Publication
1	Building Android Apps	IN EASY STEPS	McGraw-Hill Education
2	Professional Android 2 Application Development	Reto Meier	Wiley India Pvt Ltd
3	Beginning Android	Mark L Murphy	Wiley India Pvt Ltd
4	Pro Android	Sayed Y Hashimi and Satya Komatineni	Wiley India Pvt Ltd

Suggested Readings:

    i. Android Studio Development Essentials by Neil Smyth
    ii. The Definitive Guide to SQL Lite by Michael Owens

B) List of Major Equipment/ Instrument with Broad Specifications

    i.   **Hardware:** Necessary Kits or Environment to briefly introduce mobile technology environment like GSM, CDMA and GSM services, Computer with latest configuration
    ii.   **Software:** Java, Netbeans, Eclipse, Android SDK (open source)

C) Additional Resources of MIS that can be used for conducting Practical as well as case studies

    i. http://www.tutorialspoint.com/android/
    ii. http://www.tutorialspoint.com/android/android_overview.htm
    iii. http://www.codelearn.org/android-tutorial/android-introduction
    iv. http://pl.cs.jhu.edu/oose/resources/android/Android-Tutorial.pdf
    v. http://mobisys.in/blog/2012/01/introduction-to-android-sqlite-database/
    vi. www.appmakr.com/Android
    vii. www.telerik.com/android-development
    viii. developer.android.com/training/basics/firstapp

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- **Prof. J. L. Vyas**, Lectuer Computer, L. J. Polytechnic, Ahmedabad.

Coordinator and Faculty Members from NITTTR Bhopal

- **Dr M A Rizvi**, Associate Professor, Department of Computer Engineering and Applications.
- **Dr R K Kapoor**, Associate Professor, Department of Computer Engineering Applications. .

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

Course Curriculum
DYNAMIC WEBPAGE WITH SCRIPTING LANGUAGE
(Code: 3360705)

Diploma Programmes in which this course is offered	Semester in which offered
Computer Engineering (Elective Group: Web Development, Elective: II)	Sixth

1. RATIONALE

Responsiveness of any device is demand of the present era. World has been changing from static text data to interactive dynamic data. Moreover, people want to see and interact with webpage on their computer, mobile or even TV sets. The situation is made further complex by use of different operating systems and technology being used in devices of different makes. To design an application suitable for all kind of devices is a challenge of current technology. This course provides the knowledge necessary to develop dynamic web pages using Javascript, jQuery and AJAX. It introduces students to Javascript & jQuery and how the languages can be used to turn static HTML pages into dynamic, interactive web pages. Students will learn the syntax of the Javascript & jQuery languages and how client-side scripts interact with server-side with validations. The students of this course will be able to develop dynamic web based applications with multimedia elements. Hence the industries demand to develop interactive web pages/ web based applications is also satisfied by this course content.

2. COMPETENCY

The course content should be taught and implemented with the aim to develop required skills in the students so that they are able to acquire following competency:

- **Develop dynamic Web based applications using html, CSS3, JavaScript, jQuery and Ajax.**

3. COURSE OUTCOMES (COs):

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

  i.   Create and modify dynamic web assets using Canvas and CSS
 ii.   Develop web page using Java script
iii.   Develop web page using object models in JavaScript
 iv.   Develop web based application using jQuery
  v.   Develop web based application using AJAX

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	**T**	**P**	**C**	**ESE**	**PA**	**ESE**	**PA**	200
3	0	4	7	70	30	40	60	

Legends: L-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit **ESE** - End Semester Examination; **PA** - Progressive Assessment.

5.   COURSE CONTENT DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I **Form Designing using Canvas and CSS**	1a. Write HTML script using enlisted Elements	1.1 Advanced Elements in HTML : Semantic Page Elements: address, article, hgroup, menu, nav section Inline semantic elements : Command, details, dfn, figcaption, figure, summary/details, time, wbr Media elements : canvas, embed, source, svg Event List :Onabort, Onafterprint, Onplay,Onpause, Onprogress, Onscroll, Onunload,Onvolumechange, Onwaiting
	1b. Develop HTML documents using CANVAS tag	1.2 Working with Canvas : canvas Basic concepts, Controlling file and stroke styles (colors, gradients, patterns), drawing essential shapes (drawing rectangles, drawing text, enhancing shapes with shadows), Drawing more complex shapes (Line-drawing options, Making arcs and circles, making quadratic curves, producing a bezier curve)

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	1c. Explain various CSS formatting styles and apply it to created HTML documents	1.3 Formatting with CSS 1.4 Basics of style sheet: define CSS, use of CSS, types of CSS, syntax, margi, padding, text, font, links 1.5 Employing local styles & making use of ids and classes with Example 1.6 Using floating positioning and absolute positioning
	1d. Explain improved CSS3 elements and apply CSS3 formatting to HTML Documents	1.7 CSS3' new selection tools : attribute selection, not, nth-child, new pseudo-classes (link,visited,active,hover,focus,first-letter,first-line,first-child,before,after, language), @font-face, column support, text-stroke, text-shadow 1.8 Flexible Box layout Model : creating a flexible box layout, viewing a flexible box layout 1.9 New visual Elements: opacity, box-shadow, border-radius, Key Frames, Color values, gradients, image borders, reflections, rounded corners, shadows, transformations, transition animation, transparency 1.10 Medial Query – Responsive Design/Web page
Unit– II Working with JavaScript	2a . List data types, operators and control flow statements in JavaScript.	2.1 JavaScript concept, Origin of JavaScript, Advantages of java script, Java script syntax. 2.2 Variables, Data Types, Operators, Literals, Array and Functions 2.3 JavaScript Control Statements
Unit – III Object Models in JavaScript	3a. Discuss various object models in JavaScript.	3.1 Java script document object model: Learning DOM , Introducing object in Model, Form object, Window object, Document object, Browser object, , Navigator object, The String Objects, Date and Math Object, use of Built in object, User defined object 3.2 The Document Object: Basic, Writing to Documents, Dynamic Documents

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	3b. Explain form objects and write application using enlisted form objects.	3.3 Form Object - Forms and Forms-based Data: The Form Object , Working With Form Elements and Their Properties, Button Object, Text Objects, Text Area Objects, Hidden Objects, Check Box Objects, Radio Button Objects, Selecting Objects
	3c. Describe importance of validation and write applications based on it.	3.4 Form Validation : Form Validation: A Process , Testing Data , Preparing Data for Validation and Reporting Results, Trapping Empty Fields, Finding Invalid Values, Intercepting the Submit Button, Validating Non-text Form Objects
	3d. Explain window objects and write applications using enlisted window objects.	3.5 Window Object : The window object, Dialog Boxes, Status Bar Messages, Window Manipulations 3.6 Dates and Math Objects : The Date Object, Using and manipulating dates, Displaying the date and time, Time Zones, Extracting the Date, Extracting the Hrs., The Math Object and its constants
Unit– IV Working with jQuery	4a. Discuss various types of jQuery events 4b. Write application based on enlisted events.	4.1 jQuery Events: Define events 4.2 Mouse Events: Click, dblclick,hover 4.3 Keyboard Events : keypress, keydown , Keyup,Keyrelease 4.4 Form Events : submit ,Onload 4.5 Document/Window Events : load , resize , scroll, unload 4.6 bind() and Event Helper Method with Example
Unit –V Working with Ajax	5a. List Applications of Ajax. 5b. Create a Simple Ajax application 5c. Differentiate between AJAX and Non-Ajax Applications 5d. Develop a webpage	5.1 Ajax Basic :The purpose of basic, The XML Http Web Application, Callback function, Traditional Application, Web page Application, Use of HTML and Xml in Ajax 5.2 Passing Data : XML- Creating child function, Dynamic Table, Object Literals – Array, Object, Array in Objects, Objects in Array , JSON Introduction – Syntax, Advantages, Disadvantages

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	using AJAX	5.3 Ajax Application: Login Form, Preloaded Data, Feedback from using validation, Live search, Dynamic Dependable Dropdown using Ajax- Country, state and city Examples. 5.4 Jquery in Ajax

6.   SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (Theory)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Form Designing using Canvas and CSS	08	04	04	05	13
II	Working with JavaScript	06	04	04	05	13
III	Object Models in JavaScript	10	05	05	05	15
IV	Working with jQuery	08	04	05	05	14
V	Working with Ajax	10	05	05	05	15
Total Hours/Marks		**42**	**22**	**23**	**25**	**70**

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's Revised taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7.   SUGGESTED LIST OF EXERCISES/PRACTICALS

The practical should be properly designed and implemented with an attempt to develop different types of skills **(outcomes in psychomotor and affective domain)** so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical. However, if these practical are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.*

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

Sr. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Approx Hours. Required
1	I	Write, test and debug small applications with previous HTML tags, input tags, input types.	02
2	I	Write, test and debug small applications with HTML5 Semantic Page Elements, inline semantic elements, media semantic elements.	02
3	I	Write, test and debug small applications with Basic CSS.	02
4	I	Write, test and debug small applications with CSS by employing local styles & making use of ids and classes, managing appearance, absolute and float positioning.	02
5	I	Write, test and debug small applications Using HTML5 and CSS3tag	02
6	I	Write, test and debug small applications with CSS3 using flexible box layout model.	04
7	I	Write, test and debug small applications/template and linking page.	02
8	I	Write, test and debug small applications with Canvas tag.	02
9	II	Write test and debug a JavaScript program illustrating the use of variables and its data types.	02
10	III	Write test and debug a JavaScript program illustrating the importance of Document Object Model.	02
11	III	Write, test and debug a form and implement java script showing all the major form validations.	02
12	III	Write test and debug a JavaScript program illustrating the importance of Window Object Model.	02
13	III	Write test and debug a JavaScript program illustrating the Date and math Objects.	04
14	IV	Write test and debug a jQuery program representing the use of hide(), show() and toggle() functions.	04
15	IV	Write test and debug a program implementing jQuery fading methods.	04
16	IV	Write test and debug a program implementing mouse and	04

		keyboard events.	
17	V	Create a Registration form with validation using Ajax	02
18	V	Write a program to creating image slider using javascript	02
19	V	Form validation program using jquery	04
20	V	Ajax Example with JavaScript to get content of another file	02
21	V	JQuery Ajax method to get content of another file	02
22	V	Write a program to swapping two images using javascript	02
Total Hours			**56**

8.   SUGGESTED LIST OF STUDENT ACTIVITIES
Following is the list of proposed student activities such as:

i.   Survey of various animated websites and latest tools available to create animated website
ii.   Seminar on various readymade examples of HTML5/CSS3 website available
iii. Make small interactive website in the group
iv.   Demonstration of individual assigned project

9.   SPECIAL INSTRUCTIONAL STRATEGIES (if any)
i.   Concepts should be introduced in classroom input sessions and by giving demonstration through projector.
ii.   More focus should be given on practical work which will be carried out in laboratory sessions. If possible some theory sessions may be conducted in labs so that theory and practice can go hand in hand.
iii.   Group Discussion and presentation of relevant websites
iv.   Faculty should allow students to use their creativity and let them struggle to learn on their own during practical sessions. However, faculty should remain around the students and should help them when they are stuck

10.   SUGGESTED LEARNING RESOURCES

A)   List of Books

Sr No.	Title of Book	Author	Publication
1.	Head First JavaScript Programming	Eric T. Freeman , Elisabeth Robson	O'Reilly Media
2.	Head First HTML and CSS 2nd Edition	Elisabeth Robson and Eric Freeman	O'Reilly Media ,2012

Sr No.	Title of Book	Author	Publication
3.	Speaking JavaScript	Axel Rauschmayer	O'Reilly Media
4.	HTML 5 for dummies Quick Reference	Andy Harris	Wiley Publishing, Inc., 2011
5.	Head First jQuery	Ryan Benedetti and Ronan Cranley	O'Reilly Media
6.	Learning jQuery	Jonathon chaffer and Karl Swedberg	O'Reilly Media

B) **List of Major Equipment/ Instrument with Broad Specifications**
  i.   Computer System with latest configuration and memory, laptops, servers
  ii.   Open source Free software for animations /editors for html5/CSS3
  iii.   Multimedia projector
  iv.   Internet Access
  v.   Access to library resources

C) **List of Software/Learning Websites**
  i.   Software: Microsoft windows operating system from xp/vista7/8 to latest version available in market, Adobe Photoshop CS5 or higher version, HTML5 and CSS3 code editors, html5 and CSS3 compatible browsers
  ii.   http://udacity.com
  iii.   http://www.codecademy.com/learn
  iv.   https://www.udemy.com/learn-html5-programming-from-scratch/
  v.   http://www.microsoftvirtualacademy.com/training-courses/html5-CSS3-fundamentals-development-for-absolute-beginners
  vi.   http://www.w3schools.com
  vii.   https://developer.mozilla.org/en/learn/javascript
  viii.   http://www.learn-javascript-tutorial.com/
  ix.   http://www.html5rocks.com/en/
  x.   http://it-ebooks.info/book/884/

11.   COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. K. N. Raval,** H.O.D Computer Department, R. C. Technical Institute, Ahmedabad
- **Prof. P. P. Kotak**, H. O. D Computer Department, A. V. P. T. I., Rajkot
- **Prof. R. M. Shaikh**, H.O.D Computer Department, K. D. Polytechnic, Patan
- **Prof. (Ms.) Manisha. P. Mehta,** Sr. Lecturer in Computer Engineering, K. D. Polytechnic, Patan
- **Prof. R. M. Shah,** Sr. Lecturer in Computer Engineering, Government Polytechnic, Ahmedabad
- **Ms. J. J. Karagthala,** Lecturer in Computer Engineering, Government Polytechnic for Girls, Ahmedabad.
- **Ms. R. K. Vaghela,** Lecturer in R.C.T.I. Ahmedabad.

Coordinator and Faculty Members from NITTTR Bhopal

- **Dr. Sanjay Agarwal, Professor,** Department of Computer Engineering and Applications**.**
- **Dr. Shailendra Singh, Professor Head,** Department of Computer Engineering and Applications**.**

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: ADVANCE WEB TECHNOLOGY
(COURSE CODE: 3360706)

Diploma Programme in which this course is offered	Semester in which offered
Computer Engineering	Sixth

1.   RATIONALE:

This course focuses on building interactive web sites and web applications. Advanced Web Technologies are based on ASP.Net technology with VB. Emphasis is placed on Standard Web Controls and database programming. The students of Diploma in Computer Engineering should have skills in ASP.Net Programming techniques using VB.Net. This course aims that student should learn creating interactive web applications using server controls, database and Ajax and easily get absorbed in current industry requirement. This course is therefore a core course for students who want to work in the area of webpage development.

2.   COMPETENCY:

The course content should be taught and implemented with the aim to develop required skills in the students so that they are able to acquire following competency:

- **Develop GUI based Web application using ASP.Net with Visual Basic**

3.   COURSE OUTCOMES (COs):

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

1. Apply the concept of Client Server architecture.
2. Develop web applications using standard ASP.Net control and validation control.
3. Design and develop interactive web applications using master page and theme.
4. Develop asynchronous web application using database programming and Ajax.

4. TEACHING AND EXAMINATION SCHEME.

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	
3	0	4	7	70	30	40	60	200

Legends: L -Lecture; **T -**Tutorial/Teacher Guided Student Activity; **P -**Practical; **C -** Credit;**ESE**-End Semester Examination; **PA** -Progressive Assessment

5.   COURSE CONTENT DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics

Unit – I Introduction to ASP.Net Web Programming & IDE	1a. Describe features of ASP.Net over ASP and Client Server Architecture	1.1 Basics of ASP.NET
		   1.1.1 Features of ASP.NET
		   1.1.2 Differences between ASP.NET and Classic ASP
		   1.1.3 Web Applications and Webpage
		   1.1.4 Components of Web application
		   1.1.5 Client Server Architecture

	1b. Explain utilization of various parts of IDE	1.2 Creating simple Web Application in ASP.NET
		   1.2.1 Introduction to Visual Studio
		   1.2.2 Creating a New Web Project (ASP.NET)
		   1.2.3 Opening an Existing Web Site
		   1.2.4 Building Web Sites
		   1.2.5 Set up of work environment, start page, the menu system, toolbars, the new project dialog box, graphical designer, code designer

	1c. Develop simple Web Form using Built-in ASP.Net Objects.	1.3 Working with ASP.Net Web Forms.
		   1.3.1 Types of ASP.Net Files
		   1.3.2 Web Form Round Trip
		   1.3.3 Stages in Web Form Processing
		   1.3.4 ASP.Net Objects (Request, Response, Server, Application, Session)

Unit – II ASP.Net Server Controls	2a. Design and Develop small Applications using enlisted Server Controls in ASP.Net with VisualBasic	2.1 Introduction of HTML Controls, ASP.Net Server Controls and Validation Controls
		2.2 Working with Properties, Events & Methods of Server Controls
		   (Button, TextBox, Label, CheckBox, CheckBox list, Radio Button, Link Button, ListBox, Drop Down List, Image, Hyperlink, Panel, Place Holder, File Upload)
		2.3 Validation Controls
		   (Required Field Validator, Compare Validator, Range Validator, Regular Expression Validator,Custom validator, Validation Summary, Validation Group)

Unit– III State Management in ASP.Net	3a.Describe state management techniques to store and transfer page data.	3.1 State Management
		   3.1.1. View State
		   3.1.2. Session State
		   3.1.3. Application State
		   3.1.4. QueryString
		   3.1.5. Cookies

	3b. State steps to configure ASP.Net Configuration files.	3.2 ASP.Net Configuration
		   3.2.1.Global.asax application file
		   3.2.2.Web.config file

Unit – IV Working with Master Page & Themes	4a. Create Master Page and its Content pages in ASP.Net	4.1 Master Pages
		   4.1.1 Create Master pages
		   4.1.2 Create & Develop Content Pages
		   4.1.3 Nest Master Page
		   4.1.4 Access master page controls from content page

	4b. Apply skin and theme to your web application	4.2 Themes
		   4.2.1 Create theme
		   4.2.2 Applying existing theme to an application
		   4.2.3 Create Skin
		   4.2.4 Applying skin to a control

Unit – V Database Programming using ADO.Net and AJAX	5a. Explain ADO.Net Architecture	5.1 ADO.Net Components
		   5.1.1 Connection Object
		   5.1.2 Command Object
		   5.1.3 DataReader
		   5.1.4 DataSets & Data Adapter
		   5.1.5 DataView

	5b. Describe data binding concept on various Data Bound Controls.	5.2 Insert, Update, Delete and DataBinding operation using Data Grid, Data List and Repeater Control

	5c. Develop simple web application with AJAX controls	5.3 ASP.Net AJAX Control
		   5.3.1 Ajax Framework
		   5.3.2 ScriptManager, UpdatePanel & Update Progress Bar Control of Ajax

6. SUGGESTED SPECIFICATIONTABLE WITH HOURS & MARKS(THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total
I.	Introduction to ASP.Net Web Programming & IDE	6	6	6	2	14
II.	ASP.Net Server Controls	14	7	7	8	22
III.	State Management in ASP.Net	6	0	6	4	10
IV.	Working with Master Page & Themes	6	2	4	4	10
V.	Database Programming using ADO.Net and AJAX	10	2	4	6	14
	Total	**42**	**17**	**27**	**24**	**70**

Legends: R = Remember; U= Understand; A= Apply and above levels (Bloom's revised taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7.   SUGGESTED LIST OF EXERCISES/PRACTICAL

The practical should be properly designed and implemented with an attempt to develop different types of skills **(outcomes in psychomotor and affective domain)** so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical. However, if these practical are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.*
Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

S. No.	Unit No.	Practical Exercises (outcomes in psychomotor domain)	Approx. Hours Reqd.
1	I	Study of Visual Studio environment. (Create new web project, Open existing web project, building website, and study of toolbars, menu etc.)	2
2	II	a. Design a ASP.Net web form for User Registration having fields First Name, Last Name, Email, Password, repass, Age (dd-mm-yyyy), Ph. No., address, city, using different Server Controls.	2
		b. Validate all details in above application using validation controls and display all the details in the same form.	2
3	II	Create a page in ASP.Net using VB.Net, to choose a color from drop-down-list and display a message "you have chosen 'color name' ".	1
4	II	Design a page that takes name and message from the user and choose a color by radio button, select a style for ex.-bold, italic, underline fromthe checkbox and display in label control, when you clicked on display button. And clearthe information when you clicked on clear button.	2
5	II	Develop a web form to perform add, update, delete operation on ListBox control.	2
6	II	Create a web page, for book sales. Enter the quantity, title and priceof the book. Calculate the extended price, discount (15%) and after discount, the actual price ofthe book. Show the summary of book sales. (Like total no of books, total discount given, totaldiscounted amount and average discount.) You will need command buttons- calculate, clear sale.	2
7	II	Design a web page to implement upload and download files functionality using File Upload Control.	2
8	III	Develop a web page to implement the concept of state management using Cookies	2

S. No.	Unit No.	Practical Exercises (outcomes in psychomotor domain)	Approx. Hours Reqd.
9	III	Develop a web page to implement the concept of state management using Session and Application	2
10	III	Develop a web page to implement the concept of state management using ViewState and QueryString .	2
11	III	Create a web application using **Global.asax** file which will count the number of visitors on web page.	2
12	III	Use various tags in Web.config file for ASP.NET configuration.	2
13	IV	Create a web site using Master Page Concept having two content pages.	2
14	IV	Create a web application implementing Nested Master Page concept.	2
15	IV	Design a web application to illustrate concept of CSS,Themes and Skin.	2
16	V	Write sample application to connect to database, Fetching and inserting data from database and using Data Reader	4
17	V	Develop a User Registration form designed in Experiment 2. Insert user details in Database and show the same in DataGrid/GridView control.	4
18	V	Create a login page in your web application. Login page must have user name and password fields. If user enters correct ID, Password, he must be redirected to the homepage of your website.	6
19	V	Develop a web application to Add, Update, View and Delete records from Database data shown in Gridview.	6
20	V	Design a web form showing record in Repeater and Data List.	4
21	V	Implement Ajax ScriptManager and Update Panel concept in above practical.	2
22	V	Develop a Login application and show Ajax Progress bar while user trying to log in.	3
Total Hours (perform any practical from above for total 56 hours so that all units are covered)			60

8.   SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities such as:

i.   Expert Session on Current Trends in ASP.Net
ii.   Design and Develop mini project consisting of registration and login facility having user preferred theme.

9.   SPECIAL INSTRUCTIONAL STRETEGIES
i.   Concepts should be introduced in classroom input sessions and by giving demonstration through projector.
ii.   Students should be given sufficient hands on to develop sample web based applications using ASP.NET technology under close guidance of Teachers. If possible some theory sessions may be conducted in labs so that theory and practice can go hand in hand.

iii.   Group Discussion and presentation of relevant websites
iv.   Faculty should allow students to use their creativity and let them struggle to learn
          on their own during practical sessions. However, faculty should remain around the
          students and should help them when they are stuck.

10.   SUGGESTED LEARNING RESOURCES

(A) List of Books:

S.No.	Title of Books	Author	Publication
1	Murach's ASP.Net Web Programming in VB-Net	Mike Murach	Mike Murach & Associates
2	ASP.NET: The Complete Reference Book	Matthew Macdonald	McGraw Hill education
3	Programming in Visual Basic. NET	Julia Case Bradley, Anita C. Millspaugh	McGraw Hill, latest edition
4	Visual Basic .net Comprehensive Concepts and Techniques	Shelly, cashman, Quasney	Cengage learning, 2012

B.   List of Major Equipment/Materials

Hardware: Desktop Computer P-IV processor or higher
Software: .Net Framework 3.5 or higher,Microsoft Visual Studio 2008 or higher

C   List of Software/Learning Websites

v.   http://www.tutorialspoint.com/asp.net/index.htm
vi.   http://www.homeandlearn.co.uk/NET/vbNet.html
vii. https://www.udemy.com/learn-aspnet-from-scratch/?dtcode=QO5KhFV1R5It
viii. http://stepbystepvideotutorials.com/
ix.   http://msdn.microsoft.com/en-us/beginner/default.aspx .

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