

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM

COURSE TITLE: ADVANCED DATABASE MANAGEMENT SYSTEM (Code: 3340701)

Diploma Programme in which this course is offered	Semester in which offered
Computer Engineering	4th Semester

1. RATIONALE:

This subject is associated with the designing of database for business, scientific and engineering application. By the end of this course the students will be able to write simple and advanced PL/SQL code blocks, use advanced features such as ref cursors and bulk fetches and database designing with normalization. Hence students will be able to design relational database which will help them in designing phase of projects in forthcoming semester.

2. COMPETENCY:

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

- **Design a relational database system with appropriate functionality to process the data and with constraints to maintain data integrity and avoid data redundancy.**

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. Execute various advance SQL queries related to Transaction Processing & Locking using concept of Concurrency control.
- ii. Demonstrate use of Database Object.
- iii. Perform PL/SQL programming using concept of Cursor Management, Error Handling, Package and Triggers.
- iv. Understand Functional Dependency and Functional Decomposition.
- v. Apply various Normalization techniques.

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 Student Activity; P - Practical; C - Credit;
ESE - End Semester Examination; PA - Progressive Assessment

5. COURSE DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I Advanced SQL	1a. Explain & practice Transaction Control and Data Control Language	1.1 Transactional Control: Commit, Save point, Rollback 1.2 DCL Commands : Grant and Revoke
	1b. Explain types of Locks 1c. Test the locks on database	1.3 Types of locks : i. Row level locks ii. Table level locks iii. Shared lock iv. Exclusive lock v. Deadlock
	1d. Practice using various Database Objects	1.4 Synonym : Create synonym 1.5 Sequences: Create and alter sequences 1.6 Index : Unique and composite
	1e. Describe different types views and test it on a database	1.7 Views : Create/Replace, Update and alter views
Unit– II PL / SQL and Triggers	2a. Describe the fundamentals of the PL/SQL programming language	2.1 Basics of PL / SQL 2.2 Datatypes 2.3 Advantages
	2b. Use different Control Structures 2c. Write and execute PL/SQL programs in SQL*Plus	2.4 Control Structures : Conditional, Iterative, Sequential
	2d. Explain & Implement Concepts of exception handling	2.5 Exceptions: Predefined Exceptions ,User defined exceptions
	2e. Implement procedure, function, cursor in Package	2.6 Cursors: Static (Implicit & Explicit), Dynamic 2.7 Procedures & Functions 2.8 Packages : Package specification, Package body, Advantages of package
	2f. Describe the various types of triggers 2g. Write, code, test and debug various types of triggers	2.9 Fundamentals of Database Triggers 2.10 Creating Triggers 2.11 Types of Triggers : Before, after for each row, for each statement

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit– III Functional Dependency and Decomposition	3a. Describe Functional Dependency 3b. Solve problems of functional dependencies	3.1 Basics of Functional Dependency 3.2 Functional dependency diagram and examples 3.3 Full function dependency (FFD) 3.4 Armstrong’s Axioms for functional dependencies 3.5 Redundant functional dependencies 3.6 Closures of a set of functional dependencies
	3b. Describe and solve problems using decomposition	3.7 Lossy Decomposition 3.8 Lossless join decomposition 3.9 Dependency-Preserving Decomposition
Unit– IV Normalization	4a. Describe different Normal Forms 4b. Solve problems of normalization	4.1 Basics of Normalization 4.2 Normal Forms i. First Normal Form (1NF) ii. Second Normal Form (2NF) iii. Third Normal Form (3NF)
Unit– V Transaction Processing	5a. Analyse various concurrency control methods	5.1 Introduction to transaction concepts 5.2 Concurrency 5.3 Methods for Concurrency control i. Locking Methods ii. Timestamp methods iii. Optimistic methods

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

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks (Duration – 42 Hours)			
			R Level	U Level	A Level	Total
1.	Advanced SQL	10	8	2	8	18
2.	PL / SQL and Triggers	10	8	4	10	22
3.	Functional Dependency and Decomposition	8	4	4	2	10
4.	Normalization	8	4	4	4	12
5.	Transaction Processing	6	4	2	2	8
	Total	42	28	16	26	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.

S. No.	Unit No.	Practical/Exercises (Outcomes in Psychomotor Domain)	Hrs.
1	1	Perform queries for DCL Commands and Locks	4
2	1	Implement authorization, authentication, privileges on database.	4
3	1	Perform queries to Create synonyms, sequence and index	4
4	1	Perform queries to Create, alter and update views	4
5	2	Implement PL/SQL programmes using control structures	6
6	2	Implement PL/SQL programmes using Cursors	4
7	2	Implement PL/SQL programmes using exception handling.	4
8	2	Implement user defined procedures and functions using PL/SQL blocks	6
9	2	Perform various operations on packages.	4
10	2	Implement various triggers	4
11	3	Practice on functional dependencies	4
12	4	Practice on Normalization – using any database perform various normal forms.	4
13	5	Practice on transaction processing	4
Total Hours			56

8. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like:

- i. Prepare power point presentation for different database objects.
- ii. Prepare seminar on Functional dependency with examples of redundant functional dependency.
- iii. Prepare case study explaining the the need for converting a large table to many smaller tables using 1NF, 2NF, 3NF.
- iv. Design database which can be used in the course on .net programming
- v. The created procedures and functions in pl/sql packages should be used in ADO.net concepts of .net programming.

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

Concepts will be introduced in lectures and problem solving will be done through tutorials. Practical work will be through laboratory sessions. The course activities include: Formal Lecture: 30% Supervised Classroom Work: 30% Supervised Laboratory Experiences: 30% Unsupervised Directed Learning: 10%
Group discussion of real life database design and normalization

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

Sr. No.	Title of Books	Author	Publication
1	Database Systems Concepts, design and Applications	Singh, S. K.	Pearson Education, New Delhi, 2012
2	Sql/ Pl/SQL	Bayross, Ivan	BPB
3	An Introduction to Database Systems	Date, C. J.	Pearson Education, New Delhi, 2012
4	Database System Concepts,	Korth, Henry	MGH

(B) List of Major Equipment/Materials

- i. Computer System with latest configuration and memory
- ii. Multimedia Projector

(C) List of Software/Learning Websites

- i. Software: Oracle 10e/11g express edition
- ii. DBMS:<http://nptel.iitm.ac.in/video.php?subjectId=106106093>
- iii. SQL Plus Tutorial: <http://holowczak.com/oracle-sqlplus-tutorial/>
- iv. DatabaseTutorials:<http://www.roseindia.net/programming-tutorial/Database-Tutorials>
- v. Notes : <http://service.felk.cvut.cz/courses/X36SQL//cviceni/plsql/pdf/>
- vi. SQL Basic Concepts: <http://www.w3schools.com/sql/>
- vii. SQL Tutorial : <http://beginner-sql-tutorial.com/sql.htm>

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE**Faculty Members from Polytechnics**

- **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, Ahmdeabad
- **Prof. J. J. Karagthala**, Lecturer Computer Engineering Department, GGP Ahmedabad
- **Prof. R. B. Pancholi**, Lecturer Computer Engineering Department, L. J. Ahmedabad

Coordinator and Faculty Members from NITTTR Bhopal

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

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT**COURSE CURRICULUM
COURSE TITLE: COMPUTER NETWORKS
(Code: 3340702)**

Diploma Programmes in which this course is offered	Semester in which offered
Computer Engineering	4 th Semester

1. RATIONALE

One of the major components of computer based information systems is computer networks. Through computer networks we can share hardware, Software, Processing, Data and Applications besides getting global connectivity for internet based communication and services.

For diploma students it is important to understand the function of computer networks and obtain requisite knowledge about hardware and software requirements of networks and acquire skills to establish a network using necessary hardware & software tools and configure various services over it. The objectives of this course are to make students learn the technology of establishing, commissioning (making operational) and maintaining computer networks.

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 competency:

Use Software and hardware technology to establish, Commission (make operational) and maintain computer networks.

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. Describe various protocols, models in networks.
- ii. Explain operations of TCP, HTTP, and DNS.
- iii. Illustrate use of Subnets, Ipv4 and Ipv6 in computer networks.
- iv. Design simple computer networks.
- v. Establish and Commission simple computer networks
- vi. Identify and solve network operational problems.

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	150
3	0	2	5	70	30	20	30	

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

5. COURSE DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I Basics of Computer Network	1 a. List the applications of Computer Networks. 1 b. Differentiate various line configurations. 1 c. Design a computer network considering particular topology. 1 d. Categories computer network based on scope and connection 1 e. Explain use of various types of servers.	1.1 Definition & history of networks 1.2 Usage of Computer Networks 1.3 Standard Organizations and Protocols 1.4 Line Configuration 1.5 Network Topology 1.6 Categories of network Based on scope Based on Connection 1.7 Applications and features of different types of servers: File server, Print Server, Mail Server, Web Server, Proxy Server
Unit – II The Reference Model for network communication	2 a. List all layers of OSI and TCP/IP. 2 b. Explain functions of each layer. 2 c. Differentiate between connection oriented and connectionless approach 2 d. Compare OSI and TCP/IP Model.	2.1 OSI model & function of each Layer 2.2 TCP/ IP model 2.3 Connection oriented v/s Connectionless approach 2.4 Comparison of OSI & TCP/IP Models
Unit – III Transmission Media	3 a. List guided and unguided transmission media. 3 b. Select appropriate transmission media for a given network.	3.1 Types of Transmission Media 3.2 Guided Media: Twisted Pair, Coaxial Cable, Fiber 3.3 Un Guided Media : Electromagnetic spectrum, Radio Transmission, Microwave Transmission, Infrared Transmission, Satellite Communication

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit IV Network devices	4 a. Explain use of various Network devices. 4 b. Differentiate Layer 2 and Layer 3 Switches. 4 c. State the use of Network Management Software.	4.1 Repeaters 4.2 Hubs 4.3 Switches 4.4 Routers 4.5 Access Points 4.6 Gateways 4.7 Bridges 4.8 Difference between Layer 2 and Layer 3 Switches. 4.9 Introduction of Network Management software
Unit V IP Protocol and Network Applications	5 a. Explain IP v4 and IP v6 protocol. 5 b. Select appropriate class for given network size. 5 c. Illustrate subnet and usage of subnet masking. 5 d. Explain DNS, Email and FTP, HTTP.	5.1 IP Protocol – IP v4, IP v6. 5.2 Addressing Schemes 5.3 Subnet & masking 5.4 DNS 5.5 Email 5.6 FTP 5.7 HTTP

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	Basics of Computer Network	8	5	5	4	14
II	The Reference Model for network communication	9	5	5	4	14
III	Transmission Media	8	4	4	6	14
IV	Network devices	8	4	4	6	14
V	IP Protocol and Network Applications	9	3	5	6	14
	Total	42	21	23	26	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 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.

S. No.	Unit No.	Practical/Exercises (Outcomes in Psychomotor Domain)	Hrs. required
1	I	Install & Test Network Interface Card.	02
2	III	Prepare and Test Straight UTP Cable.	02
3	III	Prepare and Test Cross UTP Cable.	02
4	I & III	Develop a small Network. (Hands on Training.)	04
5	IV	Install Windows 2003/Windows 2008 Network operating System	02
6	I	Install & Configure File Server.	02
7	I	Install & Configure Print Server	02
8	I	Install & Configure Mail Server	02
9	I	Install & Configure Proxy Server	02
10	I	Install & Configure Web Server	02
11	I	Install & Test Router, Repeater and Bridge.	02
12	IV	Install a small wireless network using access points.	02
13	V	Set, Configure & Test Internet.	02
Total			28

8. SUGGESTED LIST OF STUDENT ACTIVITIES

- i. Identify type of Network in your Institute.
- ii. Prepare a design of Network in your Institute
- iii. Visit your Institute server room and various places where Racks and servers installed, identify various Network components, collect information about installation of necessary hardware and software.
- iv. Visit any ISP in your area.
- v. Prepare Charts of Network Topologies.
- vi. Seminar presentations.

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

Students should be exposed to layout of local area network installation in the institute and its technology and give an environment to establish, configure and trouble shoot a small network by giving hands on practice.

10. SUGGESTED LEARNING RESOURCES

A) List of Books

S.No.	Title of Book	Author	Publication
1.	Computer Networks	Andrew S Tannebaum	Pearson, 2012

		& David J Wetherall	
2.	Information Technology Today	S. Jaiswal	Galgotia Publications
3.	Computer Networks	Bhushan Trivedi	Oxford University Press, 2013
4.	Data Communication & Networking,	Forouzen	Tata McGraw Hill
5.	Data & Computer Communication,	Williams Stallings	Prentice Hall of India
6.	Networks for Computer Scientists and Engineers	Youlu Zheng & Shakil Akhtar	Oxford University Press, 2012

B) List of Software/Learning Websites

- i. <http://nptel.iitm.ac.in/courses.php?disciplineId=106>
- ii. <http://www.edrawsoft.com>
- iii. Network Simulator Tool: GNS3 v0.8.5, NetSimK

C) List of Major Equipment/ Instrument with Broad Specifications

- i. Computer systems
- ii. Network Cable Cat 5/Cat 6.
- iii. Crimping Tool
- iv. UTP Cable Tester
- v. Layer 2 Switch
- vi. Wireless Access point and Wireless router
- vii. Impacting Tool
- viii. Network cable connectors
- ix. Network Trainer Kit

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. K. N. Raval**, H.O.D Computer Department, R. C. Technical Institute Ahmedabad,
- **Prof. Manisha P Mehta**, Sr. Lecturer in Computer Technology, K. D. Polytechnic, Patan.
- **Prof. Sunil R. Solanki**, Lecturer in Computer Engineering, Govt. Polytechnic Dahod.
- **Prof. Sachin D. Shah**, Lecturer in Computer Engineering, R. C. Technical Institute, Ahmedabad.

Coordinator and Faculty Members from NITTTR Bhopal

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

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
COURSE CURRICULUM
COURSE TITLE: FUNDAMENTALS OF SOFTWARE DEVELOPMENT
(Code: 3341603)

Diploma Programmes in which this course is offered	Semester in which offered
Information Technology, Computer Engineering	4 th Semester

1. RATIONALE

Software is the single most important technology on the world stage. Software's are used by almost all peoples for various purposes such as withdrawing payments from ATM machines, paying bills of electricity, telephone using ECS systems. Airline, railway tickets reservation online etc. People can work with computers flawlessly over a long period of time. One can also easily modify, upgrade the software without any problem or error. This course helps the students to develop, design, analyze, test & implement the software project during the courses in higher semesters of diploma programme.

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 competency:

- Identify and analyze problems in the field of S/W development

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.

- Explain Software and Software Engineering
- Distinguish various Software Process Models (Approach of Software Development).
- Analyze gather and prepare Software Requirement Specification for given project.
- Draw use case diagrams for given modules and design user interface
- Apply code standard and Identify Software Testing Techniques.

4. Teaching and Examination Scheme

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	150
3	0	2	5	70	30	20	30	

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

5. COURSE DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit-I Software Development Process	1a Explain Software and Software Engineering.	1.1 Software <ul style="list-style-type: none"> • Definition • Characteristics 1.2 Software Myths 1.3 Software Engineering – <ul style="list-style-type: none"> • A layered Technology approach • Definition • Need 1.4 Software development 1.5 Generic Framework activities, Umbrella activities
	1b Compare various project process models and use in project planning.	1.6 Software Development Models <ul style="list-style-type: none"> • Waterfall Model • Incremental Model • RAD Model • Prototyping Model • Spiral Model
Unit-II Software Analysis and Design	2a Identify software requirement	2.1 Requirement Gathering and Analysis 2.2 Software Requirement Specification(SRS) <ul style="list-style-type: none"> • Characteristic • Customer requirement • Functional Requirement
	2b Analyze and design requirement	2.3 Design Process <ul style="list-style-type: none"> • Classification of Design Activities • Classification of Design Methodology 2.4 Cohesion and Coupling 2.5 Data Modeling Concepts <ul style="list-style-type: none"> • Data Objects • Data Attributes • Relationships • Cardinality and Modality 2.6 Data-Flow Diagrams <ul style="list-style-type: none"> • Primitive Symbols of DFD • Develop DFD Model of System • Shortcoming of DFD Model
	2c Develop Activity and use-case diagram	2.7 Scenario-Based Modeling <ul style="list-style-type: none"> • Writing Use-Cases • Developing an Activity Diagram 2.8 Architectural design decisions <ul style="list-style-type: none"> • Architectural views

		<ul style="list-style-type: none"> • Architectural patterns • Application architectures
Unit-III Software Project Management	3a Prepare and manage Schedule for different software development activities	<p>3.1 Responsibility of software project Manager</p> <ul style="list-style-type: none"> • Job responsibility • Required skill to manage software project <p>3.2 Metrics for Size Estimation</p> <ul style="list-style-type: none"> • Line of Code • Function Points <p>3.3 Project Estimation Technique</p> <ul style="list-style-type: none"> • Empirical Estimation Technique • Heuristic Technique • Analytical Estimation Technique <p>3.4 Scheduling</p> <ul style="list-style-type: none"> • Work breakdown structure • Activity network and critical path Method • Gantt Chart • Project Monitoring and control <p>3.5 Risk Management</p> <ul style="list-style-type: none"> • Risk Identification • Risk Assessment • Risk Containment
Unit-IV Software Coding and testing	4a Prepare software Documentation	<p>4.1 Code review</p> <ul style="list-style-type: none"> • Code Work through • Code Inspection <p>4.2 Software Documentation</p> <ul style="list-style-type: none"> • Internal Documentation • External Documentation
	4b Prepare test cases and test the software	<p>4.3 Testing</p> <ul style="list-style-type: none"> • Unit Testing • Black-box Testing • White-box testing <p>4.4 Test Documentation</p>

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	Software Development Process	10	10	08	00	18
II	Software Analysis and Design	14	04	08	10	22
III	Software Project Management	10	04	08	06	18
IV	Software Coding and testing	08	02	02	08	12

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
	Total	42	20	26	24	70

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

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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)	Hrs. required
1	I	Identify the development model for software with proper explanation	02
2	II	Gather requirement for software.	04
3	II	Prepare SRS Document for Software	04
4	II	Design Activity Diagram for system	02
5	II	Design Use-case Diagram for system	02
6	II	Design Data Dictionary of system	04
7	II	Prepare E-R Diagram of System	02
8	II	Design Data Flow Diagram of system	04
9	III	Prepare Gantt chart of system	02
10	IV	Prepare suitable test case for system testing.	02
Total			28

8. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like:

- i. Prepare charts for various models, SDLC life cycles, UML notations etc.
- ii. Prepare SRS documents based on case study.
- iii. Discuss various case studies available on internet.

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

Application for practical will be assigned to the students by the subject faculty and students will work in a group of 3 – 5

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

S. No.	Title of Book	Author	Publication
1.	Software Engineering: A Practitioner's Approach	Roger S. Pressman	Tata McGraw Hill,
2.	Software Engineering	Ian Somerville	Pearson education PHI
3.	Fundamentals of Software Engineering	Rajib Mall	PHI
4.	Structured System analysis and Design	Madhulika JAin	Bph Publication
5.	Object Oriented Modeling and design with UML, second edition	Michael R Blaha and James R Rambaugh	Pearson Prentice Hall

B) List of Major Equipment/ Instrument with Broad Specifications

Sufficient number of PCs are required according to number of students in the class for practicing development and maintenance of different software.

C) List of Software/Learning Websites

- i. <http://nptel.iitm.ac.in/>
- ii. <http://www.mhhe.com/engcs/compsci/pressman/student/olc/cases.mhtml>
- iii. [http://forum.jntuworld.com/showthread.php?3841-SOFTWARE-ENGINEERING-\(SE\)-Notes- All-8-Units](http://forum.jntuworld.com/showthread.php?3841-SOFTWARE-ENGINEERING-(SE)-Notes-All-8-Units)
- iv. Ppts: www.facweb.iitkgp.ernet.in/~spp/LECT1.ppt
- v. Ppts: <http://www.phindia.com/rajibmall/chapters/>

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE**Faculty Members from Polytechnics**

- **Prof. Sunil K. Paryani**, Lecturer IT, Govt. Polytechnic, Ahmadabad
- **Prof. Bhadresh G. Prajapati**, Lecturer IT, Govt. Polytechnic, Himatnagar

Coordinator and Faculty Members from NITTTR Bhopal

- **Dr. Shailendra Singh**, HOD, Department of Computer Engineering and Application
- **Dr.K.J.Mathai**, Associate Professor, Department of Computer Engineering and Application

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

**COURSE CURRICULUM
COURSE TITLE: .NET PROGRAMMING
(Code: 3340704)**

Diploma Programmes in which this course is offered	Semester in which offered
Computer Engineering	4 th Semester

1. RATIONALE

The .NET platform has evolved quickly to become a robust technology platform for enterprise application development and systems integration. It is a very popular platform these days being used to develop web sites/ web based applications. The students of Diploma in Computer Engineering should have skills in .NET Programming techniques using VB.NET. This course aims that student should learn creating simple applications as well as Applications that are database driven using . NET technology

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 competency:

- To design user interface, code, test and debug vb.net applications

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.

- Explain the architecture of Dot Net Technology.
- Develop single form based .simple Net applications using basic and advanced control
- Develop multiple form and menu based .Net applications
- Develop small ADO.net based database driven .Net application
- Implement and trouble shoot simple .Net Applications

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 DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I Introduction to Microsoft .NET framework and VB.Net	1a. List the components of Framework and describe CLR	1.1 Overview of Microsoft .NET Framework 1.2 The .NET Framework components 1.3 The Common Language Runtime (CLR) Environment 1.4 The .NET Framework class Library
	1b. Recognize various parts of visual basic .net IDE	1.5 Getting Started with Visual Basic .net IDE : Set up of work environment, start page, the menu system, toolbars, the new project dialog box, graphical designers, code designers, intellisense, the object explorer, the toolbox, the solution explorer, the class view window, the properties window, the dynamic help window, the server explorer, the output window, the command window
	1c. List data types, operators 1d. Implement small programs using operators, loops and array	1.6 Visual basic language concept :variables, Constants, Data Types, Operators, Control Structures and loops, Arrays : single and multidimensional array, declaring, dynamic array
Unit– II Introduction to Windows Common Controls	2a. Design user interface using enlisted controls 2b. List control's important properties, methods and events 2c. Develop, test and debug small applications using enlisted controls	2.1 Working with Form :Properties : appearance, behaviour, layout, windows style etc, methods and events 2.2 Differentiate procedure oriented, object-oriented and event driven programming 2.3 Inputbox, Messagebox 2.4 Working with Common Tool Box Controls: Label & button (Properties: flatstyle, image, imagealign etc.), Textbox (Properties: autosize, maxlength, multiline, readonly, wordwrap etc.), NumericUpDown (textalign, updownalign, value, interceptarrowkeys, decimalplaces, increment, maximum, minimum etc.) Check Box (autocheck, checked, checkaligned, checkstate, threestate etc.), Radio Button (check aligned, check, autocheck etc.), Group Box (gridsize:width, height etc.) control and all important methods and events

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit– III Additional controls and Menus of Windows	3a. List assorted (enlisted) control's and it's properties, events and methods 3b. Develop small applications using appropriate controls	3.1 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
	3c. Develop applications using menu and popup menu	3.2 Working with Menus: creating menu, inserting, deleting, assigning short cut keys, pop up menu
	Unit– IV Advanced Features of VB.Net	4a. Include the dialog boxes in developed applications
4b. Differentiate sub procedures and functions 4c. Create applications using procedures and functions		4.2 Sub Procedures and functions : declaring, passing and returning arguments, exiting from it, pass by value and pass by ref
4d. Differentiate structured and unstructured error handling 4e. Include and execute exception handling in developed application using structured and unstructured error handling		4.3 Exception Handling : Structured Error Handling (TryCatchfinally), Unstructured Error Handling (On error go to line, goto 0, goto -1, resume next)
4e. Develop multiple form application		4.4 Multiple document interface (MDI) : MDI Parent form and child form
Unit– V Inbuilt Functions and Database access using ADO.NET	5a. Use mathematical functions in vb .net applications	5.1 Inbuilt Functions : Mathematical Functions(The Abs function, The Exp function ,The Fix Function , The Int Function, The Log Function , The Rnd() Function, The Round Function, The Sqrt Function),
	5b. Use string function in vb.net applications	5.2 String manipulation(The Mid Function , The Right Function, The Left Function , The Trim Function, The Ltrim Function , The Rtrim Function , The InStr function , The Ucase and the Lcase Functions , The Chr and the Asc functions, Formatting Functions), Format Functions (Formatting Using ToString Method ,Formatting Date and Time)

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	5c. Describe objects of ado.net model 5e. Create ado.net connection to SQL and other odbc servers to view database data	5.3 ADO .NET Object Model: Dataprovider(connection, command, data reader, data adapter, datareaders) Dataset (datatablecollection(datatable, datarows, datacolumns, data constraints), datarelationcollection)
	5f. Develop, test, debug small vb.net based database applications	5.4 ADO .NET Programming :Creating a Database Application, Creating Connection to a Database using ADO.NET , Populating Data in ADO.NET, Browsing Records, Datagrid view, Editing, Saving, Adding and Deleting Records using bounded and unbounded

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 Microsoft .NET framework and Basics of VB.Net	06	6	4	0	10
II	Introduction to Windows Common Controls	08	4	4	6	14
III	Windows More controls and Menus	12	4	8	8	20
IV	Advanced Features of VB.Net	06	2	4	4	10
V	Inbuilt Functions and Database access using ADO.NET	10	0	8	8	16
	Total	42	16	28	26	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 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.

S. No.	Unit No.	Practical Exercises (Outcomes' in Psychomotor Domain)	Hrs. required
1	I	Observe and draw visual .net IDE layout and hands on practice to create, save and open the project	01
2	I	Write, test and debug at least 5 loop, array and operator based vb.net programs	02
3	II	Design forms and write, test and debug programs to test its various properties , methods, events	02
4	II	Write, test and debug program to test input box and message box	01
5	II	Write, test and debug applications to use textbox, label, button	06
6	II	Write, test and debug applications to use radio button, checkbox, numeric updown and group box controls	04
7	III	Write, test and debug application using date time picker, list box, combo box, picture box	04
8	III	Write, test and debug application using rich text box, progress bar, masked text box, link label	04
9	III	Write, test and debug application using checked list box, scroll bars, timer	04
10	III	Write, test and debug applications using menu	02
11	IV	Write, test and debug applications using dialog boxes	04
12	IV	Write, test and debug applications using sub procedures and functions	04
13	IV	Write, test and debug applications using MDI	02
14	V	Write, test and debug applications using math and string manipulation functions	04
15	V	Draw ado.net object model	01
16	V	Create and test connection using ado.net to view SQL express server/Microsoft Access data in textbox etc controls	02
17	V	Create and test connection using ado.net Oracle/other database data in textbox etc controls	02
18	V	Create connection view controls like data-grid view controls	02
19	V	Write, test and debug small application to add, edit, search, delete record in database in bounded mode	03
20	V	Write, test and debug small application to add, edit, search, delete record in database in unbounded mode i.e. through coding	06
Total Hours			58

7. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like:

- i. Study available small VB. Net application on internet and reuse in your application
- ii. Develop VB.net related small applications
- iii. Present the application developed

8. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

The course activities include Lectures and Practical Exercises as per teaching scheme. The programmes in would be executed during practical's sessions. Following needs attention:

- i. Concepts will be introduced interactively in lectures using multimedia projector.
- ii. Students should be given sufficient hands on to develop sample web based applications using .NET technology under close guidance of Teachers.

9. SUGGESTED LEARNING RESOURCES

A) List of Books

S. No.	Title of Book	Author	Publication
1.	Visual Basic .net Comprehensive Concepts and Techniques	Shelly, cashman, Quasney	Cengage learning, 2012
2.	Visual Basic .net	Steven Holzner	Dream Tech Press Latest Edition
3.	Murach's Beginning Visual Basic .NET	Anne Prince	Murach
4.	Programming in Visual Basic. NET	Julia Case Bradley, Anita C. Millspaugh	MGH Latest edition

B) List of Major Equipment/ Instrument with Broad Specifications

- i. Computer System with latest configuration and memory
- ii. Multimedia projector
- iii. Internet Access
- iv. Access to library resources

C) List of Software/Learning Websites

- i. Software: Microsoft Visual Studio latest express edition
- ii. <http://www.homeandlearn.co.uk/NET/vbNet.html>
- iii. <http://msdn.microsoft.com/en-us/beginner/default.aspx>
- iv. Videos : <http://www.youtube.com/watch?v=hE05SqxPs9E>,
<http://www.learnvisualstudio.net/>
- v. http://www.tutorialspoint.com/vb.net/vb.net_basic_controls.htm
- vi. <http://www.freelearn110.com/visualbasic/level1/tutorials.html>

- vii.<http://msdn.microsoft.com/en-us/vstudio/hh388573.aspx>,
- viii.<http://msdn.microsoft.com/en-us/library/dd492171.aspx>
- ix.<http://msdn.microsoft.com/en-in/vstudio/cc136611.aspx>

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **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. Manisha P Mehta**, Sr. Lecturer in Computer Technology, K. D. Polytechnic, Patan
- **Prof. R. M. Shah**, Sr. Lecturer in Computer Technology, Government Polytechnic, Ahmedabad

Coordinator and Faculty Members from NITTTR, Bhopal

- **Dr. Priyanka Tripathi**, Associate Professor, Dept. of Computer Engineering and Applications.
- **Dr. R. K. Kapoor**, Associate Professor, Dept. of Computer Engineering and Applications.

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: COMPUTER ORGANIZATION AND ARCHITECTURE
(Code: 3340705)

Diploma Programmes in which this course is offered	Semester in which offered
Computer Engineering	4 th Semester

1. RATIONALE

This course provides detail of computer system's functional components, their characteristics, performance and interactions including system bus, different types of memory and input/output organization and CPU. This course also covers the architectural issues such as instruction set program and data types. On top that, the students are also introduced to the increasingly important area of parallel organization. This course also serves as a basic to develop hardware related projects. And hence it is an important course for all students of computer engineering branch.

2. COMPETENCIES

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 computer architecture theory to solve the basic functional computer problem.**
- **Show and assemble basic computer components.**

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. Describe the organization of a computer system in terms of its main components.
- ii. Identify various parts of a system memory hierarchy.
- iii. Interface digital circuits to microprocessor systems.
- iv. Relate design principles in instruction set design including RISC architectures.

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	0	3	70	30	00	00	100

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

5. COURSE DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I Computer Architecture & Register- Transfer and Micro- operations	1a. Describe different types of Flip Flops.	1.1 Overview of computers and basics of Digital Electronics-Flip Flops, Registers, Shift registers
	1b. Explain registers and register transfers language.	1.2 Register - Transfer-Language 1.3 Register Transfer 1.4 Bus Transfer and Memory Transfer
	1c. Describe various arithmetic micro operations.	1.5 Arithmetic Micro-Operations Addition, Subtraction, Complements, Negation, Increment and Decrement
	1d. List various logic micro operations.	1.6 Logic micro operations
	1e. List various shift operations	1.7 Shift Micro operation. 1.8 Arithmetic Logic Shift Unit
Unit – II Basic Computer Organization	2a. Discuss the various fields of instruction code.	2.1 Instruction Codes
	2b. Define registers and state the role of each register in a basic computer.	2.2 Computer Registers AC or Accumulator, Data Register or DR, the AR or Address Register, program counter (PC), Memory Data Register (MDR), Index register, Memory Buffer Register.
	2c. List the types of computer instruction format.	2.3 Computer Instructions 2.4 Timing and Control
	2d. Develop a control timing signals diagram for the given instruction.	
	2e. Explain phases of instruction cycle.	2.5 Instruction Cycle 2.6 Memory Reference Instructions
	2f. Describe interrupt.	2.7 Input-Output and Interrupt
	2g. Draw functional block diagram of the hypothetical BASIC computer.	2.8 Complete Computer Description
Unit – III Central processor organization & Pipeline processing	3a. Draw General Register organization.	3.1 General Register Organization
	3b. Define stack. Explain the stack organization of CPU.	3.2 Stack Organization
	3c. Define instruction and instruction format.	3.3 Instruction Formats
	3d. Discuss various addressing	3.4 Addressing Modes

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	modes used in computers.	
	3e. Explain data transfer and data manipulation instruction.	3.5 Data Transfer and manipulation:
	3f. Discuss program control instructions.	3.6 Program Control
	3g. Compare RISC and CISC Architecture.	3.7 RISC 3.8 CISC Characteristics 3.9 RISC Characteristics
	3h. Describe pipelining in CPU Design.	3.10 Parallel Processing
Unit – IV Memory Organization	4a. Classify various types of Memory.	4.1 Memory classifications 4.2 RAM,ROM,PROM,EPROM
	4b. Understand memory hierarchy and interleaving.	4.3 Memory Hierarchy
	4c. Discuss different types of main memory.	4.4 Main Memory and 4.5 Auxiliary Memory
	4d. Discuss different types of auxiliary memory.	
	4e. Define Associative Memory.	4.6 Associative Memory
	4f. Describe cache and virtual memory.	4.7 Cache Memory 4.8 Virtual memory
	4g. List advantages and disadvantages of using cache memory.	
Unit – V Input/output Organization	5a. Define I/O interface.	5.1 Input-Output Interface
	5b. Explain methods of Asynchronous Data transfer.	5.2 Asynchronous Data Transfer 5.3 Strobe Control 5.4 Handshaking
	5c. Describe Asynchronous Serial Transfer.	5.5 Asynchronous Serial Transfer
	5d. Name different modes of data transfer.	5.6 Modes of Data Transfer
	5e. Discuss Input Output processor and its organization.	5.7 Input-Output Processor (IOP)

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	Computer Architecture & Register Transfer and Micro-operations	11	7	10	0	17
II	Basic Computer Organization	6	2	7	2	11
III	Central processor organization & Pipeline processing	10	6	8	2	16
IV	Memory Organization	8	5	10	0	15
V	Input/output Organization	7	3	8	0	11
	Total	42	23	43	4	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

There are no practical in this course and hence it is not applicable

8. SUGGESTED LIST OF STUDENT ACTIVITIES

Group Seminars presentations (Group of max. 3 students) on different topics.

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

Teachers should organize tutorials to implement the curriculum effectively.

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

S. No.	Title of Book	Author	Publication
1.	Computer system Architecture	Mano ,M. Morris	Pearson publication, Latest Edition ISBN: 978-81-317-0070-9
2.	Computer Architecture and Organization	Ghoshal, Subrata	Pearson publication, Latest Edition
3.	Computer Architecture	Parhami, Behrooz	Oxford publication, Latest Edition ISBN: 978-0-19-808407-5

B) List of Major Equipment/ Instrument with Broad Specifications

There are no practical in this course and hence equipment/instruments are not required as such.

C) List of Software/Learning Websites

1. <http://www.ddegjust.ac.in/studymaterial/msc-cs/ms-07.pdf>
2. <http://www.iitg.ernet.in/asahu/cs222/Lects/>
3. http://www.srmuniv.ac.in/downloads/computer_architecture.pdf

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE**Faculty Members from Polytechnics**

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- **Dr. R K Kapoor** Associate Professor, Dept. of Computer Engineering and Applications

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM COURSE TITLE: WEB DEVELOPMENT TOOLS (Code: 3340706)

Diploma Programmes in which this course is offered	Semester in which offered
Computer Engineering	4 th Semester

1. RATIONALE

The Internet has grown from the simple desire to a phenomenon which is leaving hardly any aspects of our daily lives untouched. For facilitating users, web sites carry many types of features. Today developing professional web sites includes a gamut of many kindsof technologies and tools involving GUI, animations, Content management, database, blogs etc. For designing and publishing web documents creating user interfaces, animation and informative reports are basic requirement of the software industry today. After completion of this course the student will be able to utilize these technologies and tools to create a professional website using scripting, blogging tool and a content-management system, database, animation tools.

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 competency:

- **Create interactive website using various tools.**

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. Illustrate the basics of WWW (World Wide Web) and different Web Browsers.
- ii. Use Gmail account and Google Apps
- iii. Create wordpress based user interface and website
- iv. Create small scale animations

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	

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

5. COURSE DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I Web Terminologies	1a. Define various web terminologies 1b. Describe use of client side and server side scripting	1.1 Web Terminologies : web, web page, http, domain name, register and host a domain name, ISP 1.2 XML Technology : XML TREE, XML DTD 1.3 Client side scripting: definition, importance, examples: Javascript, AJAX, APPLET etc 1.4 Server Side Scripting : definition, importance, examples: CGI, Servlet, JSP, J2EE etc 1.5 Web services : definition, importance, examples
Unit – II Introduction to Google apps	2a. Operate Gmail account and it's functionality 2b. Utilize various Google apps	2.1 Creating mail account 2.2 Gmail compose and reply : streamlined compose pane, check your mail while typing, formatting options appear only when you need them, new keyboard shortcuts, drag and drop addresses, drag and drop files, compose two messages at once, draft, create signatures, labels, filters, contacts (create groups and mailing lists, import contacts, contacts picker 2.3 Chat 2.4 Calendar (scheduling and other calendar basics, set up reminders, sharing and more), 2.5 Working with Documents: Word, Excel, creating form 2.6 Drive (Set up Google drive, (Organize, find, share files), open and preview files) 2.7 Working with Groups 2.8 Google printer 2.9 Working with Drop box

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – III Working with Wordpress	3. Use Wordpress for creating Web pages including themes, posts and menus	<p>3.1 Introduction to wordpress : make a website or a blog using a wordpress, Downloading and Installing wordpress on XAMPP SERVER</p> <p>3.2 All menus on the Administration Screen</p> <p>3.3 Dashboard: website management functions of WordPress</p> <p>3.4 Themes: Installing and handling themes, Editing the appearance of themes, theme configurations, adjusting different elements of installed themes like slideshow, post, pages</p> <p>3.5 Posts: Adding new post, Modifying existing posts, placing images, videos to the posts, adding categories to publishing the posts on the websites</p> <p>3.6 Pages: Adding New webpages , Modifying pages, Editing pages,Placing images ,videos,mp3 to the pages, publishing the pages on the websites, creating static home pages.</p> <p>3.7 Menus: Creating Custom Menus, modifying themes default menu.</p>

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – IV Working with Wordpress	4. Use Wordpress for Adding media, links and plugins to web pages	4.1 Media: Uploading pictures, videos, editing images, publishing them on the websites, embedding videos from Youtube to your website. 4.2 Links : Adding New links , Editing the links, Adding categories to the links, Managing Categories 4.3 Widgets: Adding, Editing widgets to the theme. 4.4 Plugins : Introduction to plugins , Installing plugins , Editing plugins. 4.5 Social Media Plugins: Floating social networking, social media widget, social media tabs, social media mashup, social networking icons 4.6 Users: Managing the accessibility to the website/blog. 4.7 Slider: Adding Custom Slider to the themes.
Unit – V Using Aliceto create animations.	5. create an animation for telling a story, playing an interactive game, or a video to share on the web	5.1 Code Editor , methods panel , control panel/tiles, scene editor,galleries 5.2 Camera Navigation control: turn camera left/right, forward/backward, Move camera 5.3 Creating first animation : open, save and run the project, add and position objects 5.4 Example using Do in order, on together , Move up, down, forward, backward, right, left 5.5 Examples using control structures 5.6 Using memory variables

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
		5.7 Using user-define procedures 5.8 Add rotation and randomization : Examples of human objects walk, sit, run 5.9 Use keyboard controls 5.10Develop small animation

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

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

7. SUGGESTED LIST OF EXERCISES/PRACTICALS

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.

S. No.	Unit No.	Practical Exercises (Outcomes' in Psychomotor Domain)	Hrs. required
1	I	Write various web terminologies.	02
2	I	Create one sample XML document using different XML technologies.	03
3	II	Create Gmail Account and contacts. Test various mail utilities such as write mail, send mail, forward mail, reply mail, attach a file, creating signature, draft etc.	02
4	II	Test advanced feature of gmail and Test calendar functionality.	02
5	II	Test Google docs. Test Google drives and printer.	02
6	II	Create group, sharing information, sending messages to a group etc. Test DropBox.	02
7	III	Download and install wordpress on Xampp server.	02
8	III	Work with administration menu and Dashboard: Logging in and looking around	02
9	III	Understand the different features themes and what a theme is.	02

		Installing themes. Pick a theme that works for what you want to create. Switch your theme, if you change your mind. Make your theme beautiful on computers, phones, and tablets.	
10	III	Add personal touches to your blog, like as a custom header or background. Access more options to personalize your blog, such as unique fonts and colors.	03
11	III	Add and configure widgets (and what widgets are).	02
12	III	Create a post or a page. Publish a post with text and images. Use different post formats depending on what you want to publish. Publish a page with text and images.	04
13	III	Create a menu to help visitors navigate your pages and posts.	02
14	IV	Install plugins and edit plugins.	02
15	IV	Manage users to access your website	02
16	IV	Add custom slider.	02
17	V	Install Alice and understand code editor, scene editor, methods panel, control panel and galleries.	03
18	V	Add and position objects and use camera navigation control.	02
19	V	Write, code, debug and test simple programs on Alice.	02
20	V	Write, code, debug and test control statement based programs.	03
21	V	Write, code, debug and test animations using sub procedures.	04
22	V	Develop and test small animation applications.	06
Total			56

8. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like:

- i. Develop small website for some commercial or educational or personal purpose using tools covered in the course
- ii. Presentation of website developed

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

Students should be encouraged to give hands-on on each tool to create a professional looking web site under close guidance of teacher

10. SUGGESTED LEARNING RESOURCES

A) List of Books

Sr. No.	Title of Book	Author	Publication
1.	Learning to Program with Alice, 3rd Edition	Dann, Cooper and Pausch	Prentice Hall (Pearson Education), ISBN 0-13-212247-2, 2012

2.	Sams Teach Yourself WordPress 3 in 10 Minutes	Chuck Tomasi, Kreg Steppe	SAMS
3.	Web Technologies	Uttam Kumar Roy, Debarshi Kumar Sanyal	Oxford University Press

B) List of Major Equipment/ Instrument with Broad Specifications

- a. Internet Connection for Google apps
- b. Computer with latest configuration

C) List of Software/Learning Websites

- a. Softwares
 - i. Latest version of Wordpress
 - ii. Xampp server
 - iii. Latest version of Alice
- b. Learning websites
 - i. <http://www.andrew.cmu.edu/user/dslater/screenscasts/index.html> (Video tutorial for Alice)
 - ii. <http://www.w3schools.com/>
 - iii. http://www.alice.org/3.1/materials_videos (Video tutorial for Alice)
 - iv. http://www.alice.org/3.1/materials_download (Lab exercises for Alice)
 - v. <http://learn.wordpress.com>
 - vi. <http://learn.googleapps.com/training-videos>
 - vii. <http://www.1stwebdesigner.com/wordpress/wordpress-step-by-step-beginners-guide/>
 - viii. <http://www.free-ebooks.net/ebook/WordPress-for-Beginners-Easy-as-1-2-3/pdf?dl&preview>
 - ix. <http://www.graphicrating.com/2009/07/31/wordpress-tutorials-and-resources-for-designers-and-developers/>
 - x. <http://www.bgsu.edu/downloads/cio/file9350.pdf>
 - xi. <http://www.amazon.com/Sams-Teach-Yourself-WordPress-Minutes/dp/0672335468/>

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **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. Manisha P Mehta**, Sr. Lecturer in Computer Technology, K. D Polytechnic, Patan
- **Prof. R. M. Shah**, Sr. Lecturer in Computer Technology, Government Polytechnic, Ahmedabad

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- **Dr. Sanjay Agrawal**, Professor, Dept. of Computer Engineering and Applications
- **Dr. R. K. Kapoor**, Associate Professor, Dept. of Computer Engineering and Applications