SEMESTER-I

Approved Vide Agenda Item No. 03 of Minutes of Meeting of Academic Council held on 11 July 17

Indus University
Institute of Information and Communication Technology

Master of Science (Information Technology)

Teaching Scheme

Subject Code	Subject Name		Teaching Learning			
		Theory Session (Hours)	Tutorial Session (Hours)	Laboratory Session (Hours)	Total (Hours)	Credit
MSC0101	Introduction to Web Technologies	04	00	04	08	06
MSC0102	Relational Database Management System	04	00	04	08	06
MSC0103	Data Communication Network	04	00	04	08	06
MSC0104	Object Oriented Analysis & Design	04	00	00	04	04
MSC0105	Organization Behaviour	03	00	00	03	03
Total		**19**	**00**	**12**	**31**	**25**

Subject: **Introduction to Web Technologies**								
Program: **Master of Science (IT)**				Subject Code:**MSC0101**			Semester: **I**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	4	6	30/60	30/60	20/40	20/40	200

Unit I: **[10]**

1) Internet Basics

Basic Concepts of Internet, Web Server, Web Client/Browser

2) Introduction to HTML

HTML, HTML Commands, Titles and footers, Text formatting, Text styles, other text effects,Lists: Types of Lists, Add graphics to HTML: Border, Width, height, Align, Alt Attribute,Tables & Attributes, Linking documents: External & Internal Document References, Imagesas Hyperlinks, Frames: <Frameset>&<Frame>, Forms

Unit II: **[14]**

3) Introduction to JavaScript

Introduction to Scripting Language, Basics of Java Script, Basics of ProgrammingTechniques, Operators and Expressions, constructs, conditional checking, loops,Functions: Built In & User-Defined, Dialog boxes: Alert, Prompt, Confirm

4) JavaScript Document Object Model

The Java Document Object Model (DOM): introduction, JSSS DOM, UnderstandingObjects in HTML, Browser Objects, Web Page HTML Object hierarchy, Event handling

5) Forms Used by a Website

Forms: form object, Other built in objects, user defined objects

Unit III: [12]

6) Dynamic HTML

Dynamic HTML, Cascading Style sheets: Font, Color & Background, Text, Border,Margin Related, List Attributes, Class, Using <SPAN> tag, External stylesheets, using<DIV > tag, Layers: Layer Attributes, Methods, Event Handlers

7) Introduction to XML

Introduction, Syntax, Document structure, Difference between XML & HTML, Document type definitions, Namespaces, XML schemas, displaying raw XML documents,Displaying XML documents with CSS, XSLT style sheets, XML processors

Unit IV: [12]

8) CGI Concepts & PERL Language

CGI Concepts: How it works, Programming Languages, Why PERL for CGI? The PERLLanguage: Introduction, Installing & setting up PERL, PERL Basics, Strings, Need forthe Data Storage, Environment Variables

9) Operations, Functions, File Handling & Regular Expressions:

Operators: Basic Arithmetic Operators, Operator Shortcuts, Comparison Operators,controlling Program Flow in PERL, Loops, Functions: String, Array, Mathematical, TIMEFunctions, File Handling: STDIN & STDOUT, Understanding Files & directories,Opening & Closing Files, Working with Directories, Testing Files & Directories, RegularExpressions: Learning Basic Regular Expressions, Matching Patterns in any String:Modifying the Pattern- Matching Criteria, Replacing a Pattern

10) Creating Structured Programs, Objects, Database Connectivity:

Subroutines: Packing Code, Passing Arguments to Subroutines, libraries, Implementinga Feedback Form, Objects: Understanding References, Using Objects, Creating&Accessing Objects, Database Connectivity: The Perl Win32: Object Extension, ODBCObject Methods

Text Book(s):

I. Ivan Bayross, "*Web Enabled Commercial Application Development using HTML, DHTML, JavaScript, Perl CGI*", Third revised edition, BPB Publication

Reference Books:

1. Richard York, "*Beginning CSS: Cascading Style sheets for Web Design"*,Wrox Press(Wiley Publishing), 2005.

2. Robert W. Sebesta, "*Programming the World Wide Web*", 4th Edition, Pearson education, 2012

3. Jeffrey C. Jackson," *Web Technologies- A Computer Science Perspective*", Eleventh Impression, PearsonEducation, 2012.

4. Chris Bates,"*Web Programming Building Internet Applications*", 3rd Edition, Wiley India, 2009.

5. "*HTML &CSS : Complete Reference*", 5/e PB.

6. Instructional Software Research andDevelopment(ISRD) Group, **"***Internet Technology and Web Design*", Tata McGraw Hill, 2011.

7.*"Web Technologies Black Book*" ,DreamtechPress, Edition 2010.

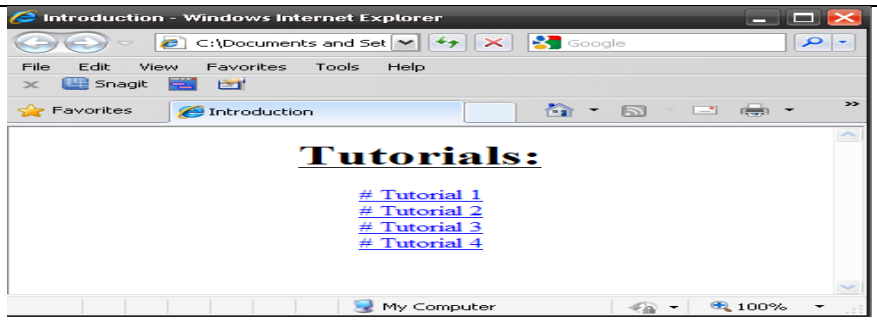
Digital Learning Resources:

I. http://www.tutorialspoint.com/

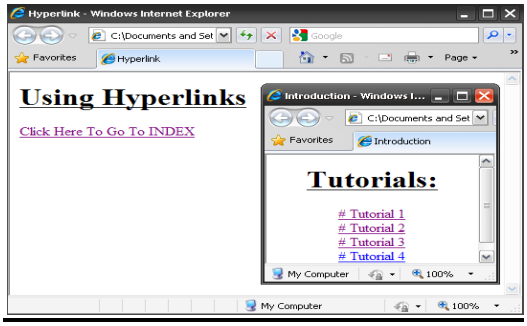
II. www.tizag.com

Practical Lab:

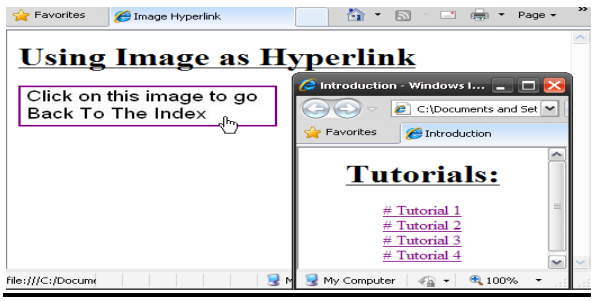
Week	**Topic/Subtopic**
Week 1	1. Create an HTML file which makes use of paragraph and line break. 2. Create an HTML file which is having following Text Formatting: a. Bold b. Strong c. Big d. Italic e. Small f. Subscript g. Superscript h. Underline 3. Create a web page as below:



4. Create a web page as below:



5. Create a web page as :



6. Create an HTML page which displays list as below:
   - Apples
   - Bananas
   - Lemons
   - Oranges
     - Sub1
     - Sub2
       - Sem1
       - Sem2
7. Create a web page as below:

<table>
<tr><td></td><td>

Coffee
Tea

Black tea
Green tea

Milk

</td></tr>
<tr><td>Week 2</td><td>
1. Create a web page which makes use of Numbered, Letters, Lowercase Letters, Roman Numbers, Lowercase Roman numbers List.
2. Create an html file which makes use of Imagemap. Specify two co-ordinates in the image where user clicks another image should get opened.
3. Create web page having table as below:
Student Information:
<table>
<tr><th>Name</th><th>RollNo</th></tr>
<tr><td>cdsfdsg</td><td>77</td></tr>
</table>
Employee Information:
<table>
<tr><td>First Name:</td><td>ABC</td></tr>
<tr><td>Last Name:</td><td>XYZ</td></tr>
</table>
4. Create a specimen of a corporate web page. Divide the Browser Screen into two frames. The frame on the left will be the menu consisting of Hyperlinks. Clicking on any of this link will lead to a new page which must open in the target frame which is on the right side.
5. Create Student Registration form with all form elements.
6. Do the following:
a. Write a text with JavaScript.
b. Write any HTML tag with JavaScript
c. Apply at least 6 different string styles to single text and display them.
</td></tr>
<tr><td>Week 3</td><td>1. Get the name from user on button click & greet him by his name as per the time. (Make proper use of condition Statement)</td></tr>
</table>

	2. Create a Weekend Checker & display the message on web page accordingly (Use Switch only) 3. Calculate the sum of digits and display them on the page for the number provided by user in a textbox. 4. Display a digital clock on your web page (Not in Textbox) 5. Change the background color of your web page according to the button click 6. Display the image and on click of it provide password protected document. 7. Get the username from prompt after 2 seconds display the name in msgbox after 4 seconds.
Week 4	1. Write a JavaScript code block using arrays and generate the current Date in words, this should include the Day, the Month and the Year. O/P should be as: Monday, August 16, 2010 2. Write a code which checks the contents entered in a Form's Text element. If the text entered is in the Lowercase, convert to Upper case. 3. Make a function that squares a number. Test it. 4. Make a function that takes two arguments: a function and an array of numbers. It should apply the function to each entry in the array, add up the results, and return the sum. So if you call your New Function (square, [1, 2, 3]), it should return 14 (the sum of the squares of 1, 2, and 3). 5. Create Scientific Calculator using JavaScript.
Week 5	1. Create a Quiz. The user is given three chances. The Second and third chance to provide an answer can be accepted or rejected, if accepted the program prompts for an answer again. 2. Create a Form in HTML with two fields, minimum and maximum, write JavaScript to validate that only numeric value is entered in both, and the value entered in minimum is less than the value entered in maximum. 3. Create a Web Page using two image files, which switch between one another as the mouse pointer moves over the images. 4. Count the number of elements in a form's element array. Display no of elements residing in a From & display name of each.(Include two Forms in

	your HTML file) Include Radio and Checkbox Button in html file & show their status (i.e., checked or unchecked depending on the user‘s event) in a msgbox.. Also, clears all the selection using Reset. 5. Create a HTML form that has a number of Textboxes. When the form runs in a browser fill the Textboxes with Data. Write JavaScript code that verifies all Textboxes have been filled..& display the data in Pop-UP box. 6. Develop a HTML page which accepts: a. Any Mathematical Expression b. Evaluates the Expression c. Display the Result of the Evaluation
Week 6	1. Display two text boxes and two radio buttons. The first textbox accepts a numeric value. If the first radio button active, double the number entered in the first text field in the second text field. If the second radio button active, square the number entered in the first text field in the second text field. 2. Make use of two Frames. The top frame contains entry fields for the background color, text color, link color, active link color and visited link color and a button to enable users to test their color combinations. When the user presses the Button, the script loads a simple document using specified colors into the lower frame 3. Capture & display at least 10 properties of the browser using the Navigator object 4. Take Two Buttons: New Window and Close New Window and handle them accordingly.
Week 7	1. Develop a page in which you can choose whether to show or hide the headings on this page using the checkboxes selected. 2. Dynamically change the heading at the top of this page. Enter a new title in the Textbox and click the Change button 3. Write a JavaScript to generate two random numbers and find out maximum and minimum out of it.

Week 8	1. Design a WebPage for Cybershop INC, using stylesheets with the following specifications: a. Define a style class .MAX with following attributes {font-size:120%;color :green, Font-weight:bold; Font:family: Cursive} b. Use the defined style class wherever the text appears on the web document c. Use unordered listings(Horizontal) giving the list of the services offered by Cybershop Inc. d. Define three segments using <DIV>…</DIV> tags (In parallel) with background colors Blue, Green and Goldenrod positioned accordingly with the given text.
Week 9	1. Design a web page for Cybershop INC, using layers & Layer attributes with the following specification: a. Layer 1 will display the name CYBERSHOP INC which will be visible. b. Layer 2 will display services provided by Cybershop Inc.This layer will initially not be visible. Layer 3 will contain two buttons Show & Reset, clicking on Show will make layer 1 disappears& show layer2. Clicking on the Reset button will return to Back first layer. 2. Create a Sample Web Application having specified Style.
Week 10	1. Design an XML document to store information about a student in an engineering college affiliated to IU. The information must include Name, Name of the College, Brach, Year of Joining, and e-mail id. Make up sample data for 3 students. Create a CSS style sheet and use it to display the document. 2. Create an XSLT style sheet for one student element of the above document and use it to createa display of that element.

Week 11	1. Assign String values & Numeric values to Scalar variables. 2. Create an indexed Arrays @week & populate it with the days of the week & print the elements. 3. Create an associative array %expenses for the 3 persons. Print the name & expenses of each element with the help of the function using a)a for loop b) ForEach Loop c) While Loop 4. If $ctr=10 then print the value of: a. $ctr2 where $ctr2=$ctr+1 b. $ctr3 where $ctr3=$ctr++ c. $ctr4 where $ctr4=++$ct 5. If $a=10 & $b=2 then print the value of $a after each of the following operation: a. $a+=$b b. $a-=$b c. $a*=$b d. $a/=$b 6. Write a loop to add numbers from 50 to 75. 7. Use the If..Else statement categorizes the marks of the students else distinction, first, passes or Fail.@numbers=(78,87,34,45,56,23,64,12,32,21,54,43);Write a for each loop to print the lowest number in the Array.
Week 12	1. $line=”Keep your city clean”; Write a program to remove the last character using chop() function & store it in a variable. Print the value of $line & variable. Also , use chomp() to remove the newline character. 2. Write a Perl Program to concatenate 2 Strings with space between them & append the third String using the concatenation operator storing the result in the same String. 3. Use the substr() function to extract first five characters of the String “Play Light Music” & print the same.

	4. Write a program to print total length of the String. then extracts the string & count its length. 5. Write a program to add the elements to the beginning of the Array & sort it.
Week 13	1. Write a Perl program to open the text file. If the file is opened successfully, print the proper message else show an Error Message. 2. Write a text to above opened file. 3. Write a program to create a text file. Write & append to it accepting input from user. 4. Write a program to create a Directory. 5. Write a program which will take in a String & check for the pattern.If found, display an appropriate message for UpperCase, LowerCase,ProperCase& also appropriate message when match not found. 6. Define a variable containing a String. Match the pattern, print the message where there is a a. Case Sensitive Match b. Case Insensitive Match
Week 14	1. Create a subroutine named Message() which will print the greeting "Good Morning" then invoke it. 2. Modify the above subroutine. Pass a name as an argument to the subroutine & print greeting accordingly. 3. Create a subroutine to calculate the tax on income at 30% of income. Pass the income to subroutine. The subroutine should then return the tax liability on that income. 4. Define a scalar variable named $scalarVar where with a value. Create a reference named $scalarRef to $scalarVar then print the content of the reference. 5. Create the array @weeks as follows: @weeks=qw(Sun Mon Tue Wed Thur Fri Sat). 6. Create a Reference to an associative array %week and print out the contents of the array reference.

	7. Create a subroutine, create a reference to that subroutine and then dereference the reference to call subroutine. 8. Create a package with a subroutine. Call a subroutine of that pack+age in a program.
Week 15	Develop a sample application using database connectivity in Perl.

Subject: **Relational Database Management System**								
Program: **Master of Science (IT)**				Subject Code:**MSC0102**			Semester: **I**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	4	6	30/60	30/60	20/40	20/40	200

UNIT - I: **[12]**

Database System: Need, Advantages, Applications, Cost and Risk, DBMS architecture and Data independence, Database Models, Centralized and Client Server Database Systems.

Conceptual Modeling: Concepts of Entity Relationship Model, ER Diagram

The Relational Model and Data Model: Relational Algebra and Calculus, Keys of Relation, Relational

UNIT – II **[12]**

SQL: DDL, DML, DCL, DQL

Procedural Languages, PL/SQL Tables ,PL/SQL Wrapper: PL Bock, Stored Procedures, Functions, Cursors, Exception Handling, Triggers, Packages, PL/SQL Table, Pl/SQL wrapper

UNIT – III **[12]**

Relational Database Design: Functional Dependency, Decomposition, Normalization

Transaction Processing: Transaction Processing, Properties of Transaction, States of Transaction, Concurrent Execution of Transaction, Transaction schedules

Concurrency Control: Locking, Lock Based Techniques, Validation Techniques, Dealing with Deadlock

UNIT – IV **[12]**

Physical storage structure and logical storage structure: Data and temp files, control files, online redo log files, archived redo log files. Tablespace, oracle data blocks, Extents, Segments.

Database recovery System and Security: Database recovery System, Types of failures, Types of Database Recovery, Recovery Techniques, backup techniques.

Object Based Databases and Object Relational Databases

Introduction to Object Oriented Databases, Characteristics, Advantages, Disadvantages, Introduction, Characteristics, Advantages, Disadvantages

Text Book(s):

1. S.K. Singh: "*Database Systems, Concepts, Design and Applications*", Pearson Education

Reference Books:

1. Abraham Silberschatz, Henry F. Korth, *"Database System Concepts"*, Sixth Edition, McGraw Hill Publication.
2. Peter Rob, Carlos Coronel:, "*Database Systems, Design, Implementation and Management*", seventh edition, Cengage Learning, (2007).
3. Elmsasri ,Navathe, "*Fundamentals of Database Systems*", Fifth Edition, Pearson Education, (2008)
4. Ivan Bayross, "*SQL/PLSQL the programming Language of Oracle*", BPB Publication.
5. Rajshekharsundarraman, "*Oracle 10g Programming"*, Pearson Education
6. Kevin Loney , "*Oracle Database 10g : Complete Reference*" , McGraw Hill Publication.

Practical Lab:

Week	Topic/Subtopic
Week 1	**CUST(Custno, cname, state, phone)** **ITEM(itemno, Itemname, Itemprice, Qty_hand)** **INVOICE(Invno, invDate, Custno)** **INVITEM(Invno, Itemno, Qty)** 1. Create four table along with necessary constraints(PK,FK,notnull, Unique and Check constraints) 2. Write a Insert script for insertion of rows with substitution variables. 3. Add a column to the Item table, which will allow us to store Item color field. 4. Write SELECT statement for the given queries. a. Display Item name, Price in sentence form using concatenation b. Find total value of each item based on quantity on hand c. Find customers who are from state of Gujarat. d. Display items with unit price of at least Rs. 100 e. List items whose range lies between Rs. 200 and Rs. 500 f. Which customers are from lalbaug area of Ahmedabad, Baroda and Patan. g. Find all customers whose name start with Letter 'P'. h. Find name of items with 'W' in their name. i. Sort all customers alphabetically j. Sort all items in descending order by their prices. k. Display all customers from M.P alphabetically l. Display invoices dates in 'September 05, 2007' format. m. Find total, average, highest and lowest unit price n. Count number of items ordered in each invoice o. Find invoices in which three or more items are ordered. p. Find all possible combination of customers and items (use Cartesian product) **VEHICLE(vId, Name, Type, Price, Description)** **CUSTOMER(cId, cName, Address, BirthDate, ContactNo)** **VEHICLE_CUSTOMER(vId, cId, PurchaseDate, DeliveryDate)**

	Vehicle type must be '2w' for two wheeler, '3w' for three wheeler and '4w' for four wheeler. ContactNo should be of 10 digits and Price should be default 0. 1. Display details of four wheelers purchased between 14-Jun-2012 to 16-Jun-2012. 2. Find those customers (customer id) who have purchased alteast 3 vehicles. 3. Display vehicles not purchased so far. 4. Display the vehicles of same type. 5. Display the customers who have birthday today. 6. Display the customers who have purchased 4w on same dates. 7. Display the list of vehicles which is not been sold yet. 8. Display top three costliest vehicles. Find the customers whose vehicle is not delivered yet.
Week 2	**FLIGHT(flightId, company_name, flightFrom, flightTo, flightFare, capacity)** **PASSENGER(pId, Name,Address, City, BirthDate, Gender, ContactNo)** **FLIGHT_SCHEDULED(Transid, flightid, departuredate)** **FLIGHT_PASSENGER(Transid, pId)** Passenger Id must start with 'P'. Flightfare cannot be NULL. 1. Display all the flight details which are flying from 12-Jun-2012 to 15-Jun-2012 2. Display all Air India flights which flied carrying more than 30 passengers. 3. Display total males and females travelling in flightid 101 on 12th June 2012. 4. Display all the passengers with starting with name 'm' and flying to Mumbai. 5. List all the Flights having the same company. 6. Change the Flight Date with is flying from Ahmedabad to Mumbai. 7. Display the flights flying after 3 days from today. 8. Find the age of all passengers. 9. Find the number of male and female passengers. 10. Display the flight details who are not flying today. **STUDENT(rollno,name,class,birthdate)**

	COURSE(courseno, coursename, max_marks, pass_marks) **SC(rollno,courseno,marks)** 1. Add constraint that marks entered are between 0 to 100 only. 2. While creating COURSE table, primary key constraint was forgotten. Add the primary key now. 3. Display details of student where course is 'Data Base Management System'. 4. Select student names who have scored more than 70% in Computer Networks and have not failed in any subject. 5. Select names and class of students whose names begin with 'A' or 'B'. 6. Display average marks obtained by each student. 7. Select all course where passing marks are more than 30% of average maximum marks. 8. Select the course where second and third characters are 'AT'. 9. Display details of students born in 1975 or 1976.
Week 3	**HOTEL (HNO, NAME (not null), ADDRESS, TOTAL_ROOM)** **ROOM (HNO, RNO, RTYPE (not null), LOCATION)** **CHARGES (HNO, RTYPE, CHARGES)** 1. Create tables using the above schema along with necessary constraints (Primary OR Composite key, foreign key, not null,Uniqueconstraints). 2. Insert four necessary records in each table. 3. Add a column to the ROOM table, which allow us to store STATUS whether the room is occupied or vacant. 4. Add a check constraint to the room table so that the room type allows the following values only – 's' for single, 'd' for double-seater. 5. Sort all hotels in descending order by their address. 6. Display the total number of rooms that are vacant presently. 7. Display the hotel name and address having total rooms > 50. 8. Display the hotel name having the greatest charges on double-seater room. 9. Display hotels, which are totally occupied to its fullest capacity. **10.** Create a simple view with HOTEL names and their ADDRESS only. **SALESMAN (SNO, SNAME (not null), CITY, COMMISSION)**

	CUSTOMER (<u>CNO</u>, CNAME, CITY, RATING, SNO) **ORDER (<u>ONO</u>, AMOUNT, ODATE, CNO, SNO)** 1. Create tables using the above table schema along with necessary constraints (Primary OR Composite key, foreign key, not null,Uniqueconstraints). 2. Insert four necessary records in each table. 3. Give all the information about the customers with salesman number S001. 4. List all customers whose names begin with letter 'A' or 'B'. 5. Count the no. Of salesmen currently having orders. 6. Create a copy of your order table. Drop the original order table. 7. Create another table London staff having same structure as salesman table where commission is greater than 2 %. 8. Calculate the total of orders for each day. 9. List all customers and salesmen who shared a same city. 10. Double the commission of all salesmen of London.
Week 4	**EMPLOYEE (EMPNO, EMPNAME, STREET, CITY)** **COMPANY (COMPANY_NAME, CITY)** **WORKS (EMPNO, COMPANY_NAME, SALARY)** 1. Create tables using the above table schema along with necessary constraints (Primary OR Composite key, foreign key, not null,Uniqueconstraints). 2. Insert four necessary records in each table. 3. Create a read only view of table Employee where city = “PATANA”. 4. Find the name of all employees who live in the same city as the company for which they work 5. Find all employees whose name start with Letter ‘P’. 6. Copy all PATNA employees to the table with AHMEDABAD employee. 7. Find the Empno with top three salaries. 8. Sort all the employees with their city and name in descending order. 9. Find employee are from C.G.Road area of city AHMEDABAD and BARODA 10. Find the employees who are not in AHMEDABAD or PATNA.

Week 5	**PL/SQL Blocks / Procedures/ Functions** 1) Write a PL Block using simple FOR loop to insert ten rows into a database table showing numbers odd or even. Output: NUM_COL1 NUM_COL2 CHAR_COL -------- -------- --------- 1 100 i is odd 2 200 i is even 2) Write a PL Block to increase the salary of employees by 10% who are making less than 10000. 3) Write a PL Block to display the current date. 4) Write a PL/Block to find the area of a square and insert into the temp table. 5) Create PL/SQL Block report displaying employee details in proper format. 6) Write a procedure which deletes employee records if salary and commission is less than lowest salary range. (pass parameter as deptno and job) 7) Write a procedure that displays list of students with atleast three hobbies, out of which one should be 'Playing Cricket' 8) Write a PL block that in turn calls a procedure and produces output as shown below. List of employees for the project : <name of project> DATE: <current date> EmployeeName Employee JobNameHoursWorkedStartDate 9) Write a function which accepts the name of city & returns the Temperature & Humidity. 10) Create a Function which takes Department name and Course name as an argument and return the total number of students registered in that department for that course
Week 6	**DOCTOR(docId, docName, docSpecialization)** **PATIENT(patientId, patientName, patientAddress, patientCity, patientBloodgroup)** **TRANS(billNo, billdate, docId, patientId, billAmount)**

	Apply the following Constraints. 1. docId must start with 'D'. 2. patientName must be in upper case letters. **Implement the following SQL Queries.** 1. List the patients with A+ blood group treated by Dr.Ramesh. 2. List out the details of doctors and number of patients they are serving. 3. List the details of patients along with the bill amount and arrange the data according to descending order of the bill amount. **Create following PL/SQL Blocks.** Write a PL block that accepts patient code and displays the information in below format. Write a procedure that will be called from the PL block. Report of <patient name> DATE: <current date> Blood group : <blood group of patient> Doctor's Name: <name of doctor> Amount to pay: <bill amount> If any new patient detail is entered in Patient table, then maintain a table named trackPatient(patientId, docName, bloodGroup, admittedDate, isDisharged) where admitted date is current date and isDischarged equals to 'N'. If bill is generated for a particular patient, it signifies that patient is discharged and the isDischarged field in the last entry entered in trackPatient table should be set to 'Y'.
Week 7	**STUDENT(Stud_Id, Stud_Name, Address, Date of Birth)** **STUD_EDU (Stud_Id, Degree Name, Year of Passing, Percentage, Grade)** **Implement the following:** **A)** 1. Display the students whose age is more than 24 years. 2. Display the data of top 3 students in MCA , 2010. **B)** 1. Write a PL/SQL block to display the detail of students who have doneMCA. 2. Write a procedure to accept stud-id as input and handle user-defined exception when no data found.

	EMPLOYEE (Emp_No, Emp_Name, Basic) **HOLIDAYS (Month, Year, No. of Weekly Off, No. of Holidays)** **EMPTRANS (Emp_No, Month, Year, Presence Days, Loan Amount)** **Note:** 1. HRA is 20% of basic salary 2. DA is 45% of basic salary 2. Medical is 5% of basic salary 3. P.F. is 4% of basic salary 4. Salary is given for (Attendance + Holidays + weekly off) days **Implement the following:** **A)** 1. Add a column Emp_Address to the Empmaster table with the not null constraint. 2. Delete the records of last two years from the current date. **B)** An organization want to print the pay slips in following format for given Employee Name, Month & Year. Month : Issue Date: Year : Days in Month: _____ Employee No: Employee Name: Presence : Holidays : Absence : Salary Days: Earnings Deductions ======= ======== Basic **:** P.F. **:** Medical **:** Loan **:** H.R.A. **:**Prof. Tax **:** 20 Rs. D.A. **:** Total Earning**:** Total Deduction**:** Total Amount to pay: _____
Week 8	**DEPT_MASTER (Dept_Id, Dept_Name)** **COURSE_MASTER (Dept_Id, Course_Id, Course_Name)**

	STRENGTH_MASTER (Dept_Id, Course_Id, Max_Stud_Allow) **STUD_MASTER (Dept_Id, Course_Id, Stud_No, Stud_Name)** **Implement the following:** **A)** 1. Display the department & course where maximum students registered. 2. Select name, department & course of students whose names begin with 'A'. **B)** Create a package which contains the following procedures. 1. Create a Procedure which takes Department name as an argument and returns the courses in that department and Maximum student allow in that course. 2. Create a Function which takes Department name and Course name as an argument and return the total number of students registered in that department for that course
Week 9	**MOVIE(movie_id, movie_name, date_of_release)** **SCREEN (screen_id, location, max_capacity)** **CURRENT (movie_id,screen_id, date_of_arrival, date_of_closure)** **Note:** Value of screen_id must with letter 'S'. Screen location can by any one of 'FF', 'SF', and 'TF'. Date_of_arrival must be less than Date_of_closure. Max_capacity attribute should have a value greater than 0. **Implement the following:** **A)** 1. Movie 'Star wars III'was released in the 7th week of 2005. Find out the date of its release considering that a movie releases only on Friday. 2. Get the details of movie that closed on date 15-January-2010. **B)** 1. Create a trigger that checks the 'screen_id' must start with 'S' whenever an insertion is tried to be done. Raise a user defined exception if the rule is violated. 2. Create a package for the following :

	Create a procedure to print Movie Name where Movie code is been supplied by the user.
Week 10	**PRODUCT (productId, productName, Quantity, ProductPrice)** **SALESMAN(sCode, sName, sAddress, BirthDate, ContactNo)** **SALES_ORDER(sCode, productId, qtySold)** **Apply the following Constraints.** 1. Product price must be less than 500. 2. Salesman Name must be in lowercase and quantity sold must be default 0. **Implement the following SQL Queries.** 1. Display the product details whose price is greater than average price of all products. 2. Display the salesman details who have not received any order. 3. Display the salesman details that have got orders of more than 3 distinct products. **Create following PL/SQL Blocks.** 1. Create a SQL/PLSQL Block that displays all the Salesman details and Product details. Display in proper format: SalesmanNameProductNameQuantitySoldProductPriceTotalPrice NAMAN PEN 20 4 80 2. Write the trigger that keeps a track of birth date of every Salesman. Whenever a Salesman record is inserted and if the birth month is the current month then message should be displayed that 'Naman's birthday is in current Month' and if the birth date is current date than message should be displayed that 'Happy Birthday Naman . You are 22 years old'. Note: Also calculate the age of the passenger and then display it.
Week 11	**SUPPLIER** (sid, sname, contactnum) **PARTS**(pid, pname, color, unit rate) **CATALOG** (sid, pid, qty) **Implement the following:** **A)** 1. Find those suppliers who haven't ordered any Parts..

	2. Create a View that displays the supplier details who have ordered any item having unit rate greater than Rs.500. **B)** Create a PL/ SQL block to prepare invoice in following format. Prepare this report Part information wise. Use parameterized cursor. Part Details ::: Part Id Part Name Quantity (in Hand) Unit Price --- --- Total Parts Available: <Total Count> **COMPETITION (Comp_code, Comp_name (Dancing, Painting, GK, etc.))** **PARTICIPANTS (Part_no, Part_name, DOB, Address, EmailID, Contact_number)** **SCOREBOARD (Part_no, Comp_code, Judge_no [1, 2, 3], Marks)** **Implement the following:** **A)** 1. Create a sequence that allows entering new 'Competition Code' that must start with 'CMP', whenever an insertion is tried to be done. 2. Find the event names which have scored the maximum score by the each judge in total. **B)** 1. Create a parameterized cursor to display the total score scored by each student with the competition details, the competition event name have to be supplied as the parameter. If the given event does not exist, throw an user defined exception with appropriate message. 2. Create a trigger that checks the 'Competition Code' must start with 'CMP' whenever an insertion is tried to be done. Raise an user defined exception if the rule is violated
Week 12	**BOOK(Book_id, Book_title, Publisher, Book_price, edition)** **AUTHOR(Book_id, Author_name, city, gender)** **Apply the following Constraint**

	1. Create the above given tables with all necessary constraints wherever applicable. (Primary key, foreign key, unique key,. not null and check constraints). 2. After creation of above tables, modify marks table by adding a constraint that gender can be only 'F' and 'M'. **Implement the following SQL Queries.** 1. Display list of books which has more than one edition. 2. Display total number of books published by publisher. 3. List details of book with low price. **Create following PL/SQL Blocks.** 1. A. Write a procedure which finds the details of books whose price is more than average price. B. Write a procedure which gives names of authors who havewritten for more than 3 publisher. C. Write a function which counts total number of books writte by a author for 'Nirav' publisher.(pass author name a parameter) **2.** Write a trigger which restrict the record for book price < 50
Week 13	**CUSTOMER (custId, custName, custAddress, custBranch)** **FDDETAIL(fdId, fdPeriod, fdInt)** **ACC_CUST_FD_DETAILS(custId, fdId, fdAmount,fdDate)** **Apply the following Constraints.** 1. custStartDate should be by default a current date. 2. FdAmout should be greater than 5000. **Implement the following SQL Queries.** 1. List the customers with highest FD amount. 2. List the maximum FD amount of each branch. 3. List the name of customers who have never done Fixed deposits of more than 5 years. **Create following PL/SQL Blocks.**

	1. Write a PL block that shows FD details for the given customer. Use procedure to display. Use function to calculate interest on FD which will return amount after calculating interest. Report for the <customer name> DATE: <current date> Branch :< name of branch> FD Start Date: <start date> FD End Date:<end date of FD> FD Maturity value : <Amount calculate as per Rate of Interest > 2. Write a trigger to ensure that no deletion is allowed on accFdCustDetail, and if any updation is performed, an entry should be added in log table, Translog(sysdate, custId, fidid, oldbalance, newbalance)
Week 14	**SUBJECT** (Sub_code, Sub_name) **STUDENT** (Roll_no, Stud_Name, Gender, DOB, Address) **RESULT**(Roll_No, Sub_code, Marks) **Implement the following:** **A)** 1. Find out the average score in percentage for each subject. 2. Find out the students whose birthday falls into leap year. **B)** Create a PL/SQL block to generate the marksheet subject wise according to the following format: 100-90 90-80 80-70 70-60 60-50 <50 --- Sub Code: Sub Name: --- Total (in each group): ---

Week 15	**DEPARTMENT (Dept_Id, Dept_Name)** **COURSE (Dept_Id, Course_Id, Course_Name)** **STRENGTH (Dept_Id, Course_Id, Max_Stud_Allow)** **STUD_DEPT (Dept_Id, Course_Id, Stud_No, Stud_Name)** **Implement the following:** **A)** 1. Display the department & course where maximum students registered. 2. Select name, department & course of students whose names begin with 'A'. **B)** Create a package which contains the following procedures. 1. Create a Procedure which takes Department name as an argument and returns the courses in that department and Maximum student allow in that course. 2. Create a Function which takes Department name and Course name as an argument and return the total number of students registered in that department for that course **BOOK_CATALOG (book_code, title, Publisher_Name, Category_Name, yr_of_release, total_copies)** **MEMBER (member_code, member_name,mem_ship_dt)** **ISSUE (Issue_id, member_code, book_code, issu_ret, issue_date, issue_ret_dt)** **Note:** Add a constraint to Issue table, which will allow only 'I' or 'R' to be entered in theISSUE_RET column, which stores the action whether the book is being issued or returned. **Implement the following:** **A)** 1. Find the book details which are currently issued to the members and have crossed the return date, get details starting with the current date. 2. How many members have registered in the last three months? Display their details. **B)** 1. Create a function which provides the total number of copies available for the issue for a given book. Book Code to be provided by the user.

	2. Create a package for the following. Create a function to print the book title when Book code is been supplied by the user.

Subject: **Data Communication and Networking**								
Program: **Master of Science (IT)**			Subject Code:**MSC0103**				Semester: **I**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	4	6	30/60	30/60	20/40	20/40	200

Unit I: **[12]**

OSI Model and PHYSICAL LAYER

Data Communications – Networks - Networks models – OSI model – Layers in OSI model – TCP / IP protocol suite – Addressing – Guided and Unguided Transmission media. Switching: Circuit switched networks – Data gram Networks – Virtual circuit networks. Cable networks for Data transmission: Dialup modems – DSL –for Data transfer

Unit II: **[12]**

DATA LINK LAYER

Data link control: Framing – Flow and error control –Protocols for Noiseless and Noisy Channels. HDLC.Multiple access: Random access – Controlled access Wired LANS : Ethernet – IEEEstandards – standard Ethernet – changes in the standard – Fast Ethernet – Gigabit Ethernet. Wireless LANS : IEEE 802.11–Bluetooth.Connecting LANS:

Connecting devices - Backbone networks - Virtual LANSVirtual circuit networks: Architecture and Layers of Frame Relay and ATM.

Unit III: [12]

Network Layer

Logical addressing: IPv4, IPv6 addresses. Internet Protocol: Internetworking – IPv4, IPv6 - Address mapping – ARP, RARP,BOOTP, DHCP, ICMP, IGMP, Delivery – Forwarding , Routing – Unicast, Multicast routing protocols.

Unit IV: [12]

Transport Layer and Application Layer

Process-to-Process delivery - User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QoS) – Techniques to improve QoS. Domain Name System (DNS) – E-mail – FTP – WWW – HTTP – Multimedia

Text Book(s):

I. Behrouz A. Foruzan, "*Data communication and Networking*", Tata McGraw-Hill,:

II. Andrew S. Tannenbaum, "*Computer Networks*", Fourth Edition, Pearson Education

Reference Books:

I. Wayne Tomasi, *"Introduction to Data Communication and Networking*", 1/e, Pearson Education.

Practical Lab:

Week 1	• Write a C program for Fibonacci Series ,Complex pyramid and reverse string. • Write a C program to fetch the data from File and do any one operation on that data. • Write a menu driven program to perform Masking (AND, OR, XOR, NOT) using Bit wise operator.
Week 2	• Write a program to read data from a file. Construct the frame and send to the receiver. Use named pipes to send. • Write a program to read multiple data from a file. Construct the frame and send to the receiver. Use named pipes to send. • Write a program to read data from a file. Construct the frame and send to the receiver. Check named pipes is exists or not. If not than create the new one to send.

Week 3	• Write a program for character count. Construct the frame and send to the receiver. Use named pipes to send. • Write a program to read data from a file. Take data from the file as 100 byte fixed packet. Construct the frame and send to the receiver. Use named pipes to send.
Week 4	• Write a program to calculate LRC even / odd parity and send to the server, server check whether there is an error or not. To generate an error make single bit change before sending data.
Week 5	• Write a program calculate VRC method and send data to server, server will check for any error and send error message to client. Use named pipe.
Week 6	• Write a program that read data from the file and perform byte stuffing method at sender side and perform de-stuffing at receiver side to display original string.
Week 7	• Write a program that read string of 50 bytes from the file and then perform bit stuffing method at sender side then receiver will perform de-stuffing to display original string.
Week 8	• Write a program to calculate CRC for any polynomial. Use Named Pipes and bitwise operators to solve problem.
Week 9	• Write a program to perform error detection using Checksum method. The sender should send message in the form of character set which should be read from a file. The sender should perform Checksum on this display whether error has occurred or not. Size of the segment can be 8 or 16.
Week 10	• Write a program in which sender read data from file and send to the server using protocol 1 UTOPIA.
Week 11	• Write a program in which sender read data from file and send to the server using protocol 2.
Week 12	• Write a program to implement simplex protocol for noisy channel (par) protocol 3 in which sender send frame of binary data calculating checksum method and receiver check whether data is correct or not if there is any checksum error in data then sender will retransmit same frame again.
Week 13	• Write a program to implement One-Bit Sliding window protocol.
Week 14	• Write a program to implement Go back N protocol.
Week 15	• Write a program in which sender read data from file and send to the server using protocol 1 UTOPIA.

Subject: **Object Oriented Analysis & Design**								
Program: **Master of Science (IT)**				Subject Code:**MSC0104**			Semester: **I**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	0	4	30/60	0	20/40	0	100

UNIT I: **[12]**

Book 1:-

Chapter: - 1 Introduction: What is Object-Orientation? What is OO Development? OO Themes

Book 2:-

Chapter: - 1 Why we model: The importance of modeling, Principles of modeling, Object-oriented modeling

Chapter: - 2 Introducing the UML: Overview of the UML, Building Blocks of the UML, Rules of the UML, Common mechanism in the UML

Book 1:-

Chapter: - 11 System Conception: Devising a System Concept, Elaborating a Concept, Preparing a Problem Statement,

Book 2:-

Chapter: - 4 Classes: Terms and Concepts, Names, Attributes, Operations, Organizing attributes and operations, responsibilities

UNIT II: **[12]**

Book 2:-

Chapter: - 5 Relationships: Terms and concepts, dependency, generalization, association, modeling structural relationships

Chapter: - 6 Common Mechanism: Notes, Other Adornments, Stereotypes, Tagged Values, Constraints

Book 3:-

Chapter 4 Static view: Overview, Classifier, Relationships, Association, Generalization, Inheritance, Multiple inheritance, Single and multiple classification, Static and dynamic classification, Realization, Dependency, Constraint, Instance, Object diagram

Book 1:-

Chapter: - 12 Domain Analysis: Overview of Analysis, Domain Class Model

UNIT III: **[12]**

Book 3:-

Chapter 6 Use Case View: Overview, Actor, Use case

Chapter 7 State Machine View: Overview, State machine, Event, State, Transition, Composite state

Chapter 8 Activity View: Overview, Activity, Activities and other views, Action

UNIT IV: **[12]**

Book 3:-

Chapter 9 Interaction View: Overview, Interaction, Sequence diagram, Communication diagram

Book 1:-

Chapter: - 13 Application Analysis: Application Interaction Model, Application Class Model, Application State Model

Chapter: - 14 System Design: Overview Of System Design, Estimating Performance, Making a Reuse Plan, Breaking a System into Sub-Systems, Identify Concurrency, Allocation

of Sub-Systems, Management Of Data Storage, Handling Global Resources, Choosing a Software Control Strategy, Handling Boundary Conditions, Setting Trade-Off Priorities

Text Book(s):

1. Michael Blaha, James Rumbaugh, *"Object-Oriented Modeling and Design with UML"*, 2nd Edition, Pearson Education Publication,
2. Grady Booch, James Rumbaugh, Ivar Jacobson, *"The Unified Modeling Language User Guide"*, Publisher: Addison Wesley
3. James Rumbaugh, Ivar Jacobson, Grady Booch, "*The UnifiedModeling LanguageReference Manual"*, 2nd ed., Pearson Education, Inc. p. cm. ISBN 0-321-24562-8

Reference Books:

1. David William Brown, "*An Introduction to Object-Oriented Analysis – Objects and UML in Plain English*", 2nd Edition, John Wiley & Sons Publication.
2. Hassan Gomaa,*"Software Modeling and Design UML, Use Cases, Patterns, and Software Architectures*", Cambridge Univesrsity Press, ISBN:9780521764148

Subject: **Organization Behaviour**								
Program: **Master of Science (IT)**				Subject Code:**MSC0105**			Semester: **I**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
3	0	0	3	30/60	00	20/40	00	100

Unit-I **[07]**

Classical Theories of organization: Functional approach, classical theories of organization, division of labour, levels of authority, span of control, authority &responsibility, efficiency of management.

Unit- II **[07]**

Behavioral theories of organization, limitations of formal organization, human relation, group behaviour, committee and group making, motivation and morale.

Unit- III **[07]**

Decision process approach: Parts of organization system, development of corporate strategy, dynamics of decision, role of system, types of models, mathematical planning models, deterministic and probabilistic models.

Unit- IV **[08]**

Personnel Function: Evaluation, objectives, principles, philosophies and policies, duties & responsibilities of the manager, position of the personnel department in the organization, line and staff relationship & the changing concept of personnel management in India. Manpower planning: Uses benefits problems and limitations, manpower, inventory, manpower forecasting, job description, recruitment, job specification and job selection interviewing techniques, transfers, promotion and its policies.

Unit- V **[07]**

Communication: Importance of communication, interpersonal communication barriers of communication, communication in organizations, using communication skills to manage conflicts, Culture

Text Book(s):

1. Arun Kumar N Meenakshi, *"Organizational Behaviour*", Latest Edition, Vikas Publication
2. K.Aswathappa, "*Human Resource Management*",Latest Edition , Tata McGraw-Hill
3. Stephan Robbins, "*Organizational Behavior*", Pearson Education(Latest Edition).

Reference Books:

1. K. Aswathappa, "*Organizational Behaviour*", Latest Edition, Himalaya
2. Tripathy PC And Reddy PN, "*Principles of Management",* Latest edition, Tata McGraw-Hill
3. Debra L. Nelson & James C. Quick, PreetamKhandelwal, "*Organizational Behaviour",* Cengage Learning
4. Micheal Butler & Edward Rose, "*Organizational Behaviour",*Jaico Publication
5. P.Subba Rao, "*Management & Organizational Behavior*", Himalaya

SEMESTER-II

Approved Vide Agenda Item No. 03 of Minutes of Meeting of Academic Council held on 11 July 17

Indus University
Institute of Information and Communication Technology

Master of Science (Information Technology)

Teaching Scheme

Subject Code	Subject Name		Teaching Learning			
		Theory Session (Hours)	Tutorial Session (Hours)	Laboratory Session (Hours)	Total (Hours)	Credit
MSC0201	Enterprise Java Technologies	04	00	04	08	06
MSC0202	Cryptography and Network Security	04	00	04	08	06
MSC0203	Software Engineering	04	00	04	08	06
MSC0204	Web Searching Technology and Search Engine Optimization	03	00	00	03	03
	Elective-I					
MSC0205(A)	Data Warehousing and Data Mining	03	02	00	05	04
MSC0205(B)	Soft Computing	03	02	00	04	04
MSC0205(C)	M-Commerce	03	02	00	04	04
MSC0205(D)	Cyber Law	03	02	00	04	04
MSC0205(E)	Advance Networking	03	02	00	04	04
Total		**18**	**02**	**12**	**32**	**25**

Program: **Master of Science (IT)**			Subject Code:**MSC0201**				Semester: **II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	4	6	30/60	30/60	20/40	20/40	200

UNIT I: **[10]**

JSP:

JSP Basic Syntax, HTML Text, HTML comments, Template Text, JSP Comment, JSPExpression, JSP Scriptlet, JSP Declaration, JSP Directives, JSP Action, JSP Expression Language Element, Custom Tag (Custom Action), Escaped Template Text, Using JSP Scripting Elements, Using Predefined Variables, XML syntax for Expressions, Scriptlets, Declarations and Directives, Using Scriptlets, Using Declarations, Using Page Directive, Using Standard Actions Tags – <jsp:plugin>, <jsp:forward>, <jsp:include>

Custom Tag:JSTL

Using JSTL – c:out, c:forEach, c:forTokens, c:if, c:choose, c:set, c:remove,c:import, c:url, c:param, c:redirect and c:catch Tags.

Unit II: **[14]**

Servlet Basics

Servlet Basics, Basic Servlet structure, Servlets Generating text/html content, Packaging Servlets, The servlet life-cycle

Handling Request & Responses

Handling Client Request Form Data, Reading Form Data from Servlets, Handling ClientRequest, Reading Request Headers, Understanding HTTP/1.1 Request Headers, Changing the page according to how the user got there, Generating the Server Response, HTTP Status Codes, Specifying Status Codes, HTTP / 1.1 Status Codes, Using Redirections, HTTP Response Headers, Setting Response Headers from Servlets, Understanding HTTP / 1.1 Response Headers.

Unit III: **[14]**

Cookies

Handling Cookies, Remembering Usernames and Passwords, Deleting Cookies, Sending and Receiving Cookies, Using Cookie Attributes, Differentiating Session Cookies from Persistent Cookies, Using Cookies to Remember User Preferences

Session

Session Tracking, Need for Session Tracking, Session Tracking API, Encoding URLs Sent to the Client

Beans

Using JavaBeans in JSP pages – <jsp:useBean>, <jsp:getProperty>, <jsp:setProperty>, Sharing Beans, Use of Scopes and their Attributes

Unit IV: **[10]**

MVC

Integrating Servlets and JSP in a Web Application (MVC Architecture for Web Applications), Implementing MVC with Request Dispatcher, Understanding Data Sharing Between Servlets and JSP

JDBC

Accessing Databases with JDBC, Loading JDBC Driver, Establishing Connection, Creating Statements, Executing SQL and Processing Results of a Query, Using Prepared Statement, Using CallableStatement, Using Database Transactions,

Struts

Introduction to Struts 2.0 and its Architecture, Struts Flow of Control

Text Book(s):

1. Marty Hall, Larry Brown, "*Core Servlets and JavaServer Pages Volume – 1*", 2nd ed.(2004), Pearson Education.
2. Marty Hall, Larry Brown, Yaakov Chaikin, "*Core Servlets and JavaServerPages Volume – 2*",2nd ed.(2004), Pearson Education.

Reference Books:

1. RFC 2616 HTTP/1.1 Protocol
2. "*Web Technologies Black Book*", Dreamtech Press, Edition 2010
3. Chuck Cavaness , "*Programming Jakarta Struts*", 2nd Edition, O'Reilly Publication

Practical Lab:

Week	Topic/Subtopic
Week 1	• Create a JSP file which will display current date and time. • Take at least three parameters from user. • Create a JSP file which will take user name from parameter passed. If No parameter passed then print "Hello World". • Create a JSP file which will take bgcolor as parameter from user and if none is passed then bgcolor will be set as RED. • Write a JSP snippet which prints the number of times the current page has been requested since the server was booted. • Create a Method which will show the addition of two numbers .(Numbers are static in code) • Allow the user to enter the name in the textbox and when he click on submit button, print the user name and send the data using GET method. If user click on submit without UserName then ask the user to enter it. • Execute the same above program using POST method and list the difference.
Week 2	• Make a JSP page that lets the user supply a request parameter indicating the back- ground color. If no parameter is supplied, a background color should be selected at random. • Write a JSP file which will greet the day on random basis. • Create an application which will show any random number between 1 and 10 (Make proper use of import tag) • Generate a simple Excel Spreadsheet from JSP. • Generate a simple PowerPoint Presentation from JSP. • Display the comparison between apples and oranges for last 3 years. If user passes Excel as a parameter then only display the page in excel format

<table>
<tr><td>Week 3</td><td>

Make a JSP page that randomly selects a background color for each request. Just choose at random among a small set of predefined colors.
Use JSP to make an Excel spreadsheet where the first row says “Year,” “Apples,” and “Oranges.” It should then have two rows of data (2008, 2009, 2010), where each entry is a random number between 0 and 10. I.e. the result should look something like this:
<table>
<tr><td>Year</td><td>Apples</td><td>Oranges</td></tr>
<tr><td>2008</td><td>9.23456</td><td>3.98765</td></tr>
<tr><td>2009</td><td>4.45678</td><td>2.223344</td></tr>
<tr><td>2010</td><td>7.33544</td><td>8.453543</td></tr>
</table>

Create a JSP which will make an Excel spreadsheet with a random number of rows each time.
Create a JSP file which will make Proper use of Expression language to display all basic arithmetic operations.
Create a JSP file which will make Proper use of Expression language to display all basic comparison operations.
Create a JSP file which will take number from the user in textbox and divide the number by 5.If any error occurs while performing divisions, display the ErrorPage for the same

</td></tr>
<tr><td>Week 4</td><td>

Prepare an application which will display of news summary (dynamic).
Make an HTML “signature” block with your name and email address. Include it in two JSP pages.
Make a JSP page that includes a “good news” message or a “bad news” message at random. (Make proper use of <jsp: include page="<%= Variable %>"/>)
Take two different JSP pages that do two different things. However, for both pages you want to let the user supply a bgColor attribute to set the background color of the page. Implement this, but use an include mechanism to avoid repeating code.

</td></tr>
</table>

	• Include any applet in a jsp page and make proper use of all elements available.
Week 5	• Simply Display the data with the help of the tag “forEach” and “forTokens” tags.Develop a JSTL application that check whether the entered no is less or greater than our stored no. Note : Make proper use of if,choose,when and otherwise tags • Develop a JSTL application for showing the collection of item with the help of set and remove tags.
Week 6	• Write a Servlet to display “Hello World” on browser using o plain Text o HTML • Create a servlet that makes a bulleted list of four random numbers. • Create a servlet that uses a loop to output an HTML table with 10 rows and 10 columns. • Create a servlet which read Three Parameters provided by user in html file. • Develop a Servlet application that match user no with the number which are randomly generated by the Servlet. If both number matches, it should be displayed in BOLD. (Use Init() Method of Servlet to generate Random Number)
Week 7	• Create a servlet that prints three components of the main request line. • Create a servlet that simply creates a table of all the headers it receives, along with their associated values. • Create two pages. The first page should be a normal HTML page with a link to the second page which should be a servlet. If a user accesses the first page and then follows the link to the second page, it works normally. But, if the user directly types in the address of the second page (or follows a link from a page with a different name than the first page), they should get sent back to the first page automatically (Hint: Use response.sendRedirect to send users back to first page) • Create a servlet that send Internet Explorer users to the Netscape home page,

	and all other users to the Microsoft home page. • Write a servlet that sends about half the users to http://www.google.com and about half to http://www.yahoo.com. Choose at random
Week 8	• Develop a Servlet application that redirect the page based on the username & password provided by the user. If password and user-id match with the user-id & password stored in the text file, display the welcome user page or display error page. • Develop a Servlet application that passes the control to the page that user passed in the parameter in the html file. • Develop a Servlet application that passes the control to the page that user passed in the parameter in the html file. • Write a servlet that instructs the browser to reconnect every five seconds. Display the time on each connection. • Write a servlet that returns a page to Internet Explorer users saying they will be sent to http://www.microsoft.com after 10 seconds. Send them there after that timeout. Send Firefox users to http://www.mozilla.org after the same delay.
Week 9	• Develop a servlet application that checks whether the user is new or not. If he is a new user than he must show first an instruction page and a link through which he can go to the login page otherwise a direct login page should be displayed to the user. That login page asks the user to enter his name & password and the name of the file whose content he wants to see. If the file name that user enter exist then its data should be displayed in the word file or simply on the page.(Make use of Cookies and cookies should be valid upto 1 day only) • Develop a Servlet application which sets 3 Cookies.1 Session & remaining Persistent. Test for the same accordingly. • Develop a servlet application that counts the no of times user has visited the page.

Week 10	• Create a JSP page which will take itemid, no. of items and discount code from user and will show the total price accordingly. Create an instance of a class which is having properties: itemID (a String), a numItems (an int), a discountCode (a double), and two read-only properties, itemCost and totalCost.
Week 11	• Develop a servlet application that display the list of item available with the company from the file if the user is new and give one link on that page that let the user go to the order page otherwise direct order page will be displayed. The user can enter the item in the textbox and maintain the session of the user. Whatever item user enters in the textbox, all should be displayed. • Develop a servlet application that allows the students to enter his roll no and based on that roll no, the marks of the subject of those particular students should be displayed. Use static Database collection for storing the details of the student like name, roll no, marks of 3 sub. Display the mark sheets with the total of the sub marks and percentage also. • Develop a servlet application that displays the welcome jsp page to the new user with his session-id otherwise a regular jsp page should be displayed. User session should be valid for 15 minutes only.
Week 12	• Define a java object that represents a food item with two properties: level and goeswith. Share the beans for each type. • Make a “color preference” form that collects the user’s preferred foreground and background colors. Send the data to a JSP page that displays some message using those colors. This JSP page should use a default value for any form value that the user fails to supply • Redo the color preference example, but if the user fails to supply either of the colors, use whatever value they gave last time. If you have no previous value, use a default.

Week 13	• Develop MVC architecture of a bank application that displays the balance of the account of a particular customer based on the account number passed in the parameters. (Use static collection of Data of the customers) • Develop MVC architecture which simply displays whether the passed number in the parameter is a prime number or not.
Week 14	• Develop MVC architecture that wish the user good morning, good afternoon, good evening etc… based on the time. • Develop a currency conversion MVC architecture which converts the rupees into equivalent dollar or pound or euro as per your wish.
Week 15	Create a Student Database with the fields: StudentRollNo, Name, Contact No Discipline Semester • Create an application which shows the detail of all the students. • Create an application which Inserts the detail in the Table • Create an application which shows the detail of the students according to RollNo passed. • Create an application which Updates the Database according to the roll no, and the name of column for which user required the change with the specification of new Value. • Create an application which deletes the detail of the students according to RollNo passed. • Redo the first program using JSP • Make an application which makes use of ExecuteBatch.

Subject: **Cryptography & Network Security**								
Program: **Master of Science (IT)**				Subject Code:**MSC0202**			Semester: **II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	4	6	30/60	30/60	20/40	20/40	200

UNIT I: **[12]**

INTRODUCTION: OSI Security Architecture - Classical Encryption techniques – Cipher Principles – Data Encryption Standard – Block Cipher Design Principles and Modes of Operation - Evaluation criteria for AES – AES Cipher – Triple DES – Placement of Encryption Function – Traffic Confidentiality

Unit II: **[12]**

PUBLIC KEY CRYPTOGRAPHY: Key Management - Diffie-Hellman key Exchange – Elliptic Curve Architecture and Cryptography - Introduction to Number Theory – Confidentiality using Symmetric Encryption – Public Key Cryptography and RSA.

Unit III: **[12]**

AUTHENTICATION AND HASH FUNCTION: Authentication requirements – Authentication functions – Message Authentication Codes – Hash Functions – Security of Hash Functions and MACs – MD5 message Digest algorithm – Secure Hash Algorithm – RIPEMD – HMAC Digital Signatures – Authentication Protocols – Digital Signature Standard

Unit IV: **[12]**

NETWORK SECURITY & Intrusion Detection: Authentication Applications: Kerberos – X.509 Authentication Service – Electronic Mail Security – PGP – S/MIME - IP Security – Web Security. Intrusion detection

Text Book(s):

1. Behrouz A. Fourcuzan ," *Cryptography and Network security*" Tata McGraw- Hill, 2008
2. William Stallings,"*Cryptography and Network security: principles and practice*",4thEdition,Prentice Hall of India,New Delhi,2002

Reference Books:

1. AtulKahate, "*Cryptography and Network Security*", Tata McGraw-Hill, 2003.
2. Bruce Schneier, "*Applied Cryptography*", John Wiley & Sons Inc, 2001.
3. Charles B. Pfleeger, Shari Lawrence Pfleeger, "*Security in Computing*", Third Edition, Pearson Education, 2003.

Practical Lab:

Week	Topic/Subtopic
1.	PROGRAM USING TCP SOCKETS TO implement date and time display from local host to server using TCP
2.	PROGRAM USING UDP SOCKET To write a client-server application for chat using UDP
3	Using JAVA socket programming demonstrate implementation of Ceaser cipher. Sender side reads data from file and then encrypts it using ceaser cipher method and sends it to the receiver. Receiver side must able to decrypt and display original message received via socket. JAVA security packages are not to be used.
4	Using JAVA socket programming demonstrate implementation of Transposition cipher technique. Sender side reads data from file and then encrypts it using transposition cipher method and sends it to the receiver. Receiver side must able

	to decrypt and display original message received via socket. JAVA security packages are not to be used.
5.	Using Java Socket Programming demonstrate implementation of Mono-alphabetic cipher. Sender side reads data from file and then encrypts it using mono – alphabetic substitution cipher method and sends it to the receiver. Receiver side must able to decrypt and display original message received via socket. JAVA security packages are not to be used.
6.	Using Java Socket Programming demonstrate implementation of One-time Pad. Sender side reads data and pad from file and then encrypts the data using one – time pad method and sends both data and the pad to the receiver. Receiver side must able to decrypt and display original message received via socket. JAVA security packages are not to be used.
7.	Using Java Socket Programming demonstrate implementation of S-Box. Sender side reads data from file and then encrypts the data using S – Box method and sends it to the receiver. Receiver should decrypt the data and store data in output file. JAVA security packages are not to be used.
8.	Using JAVA security package APIs and socket programming demonstrate implementation of AES with CFM mode. Sender side reads data from file and sends both, the encrypted data and the key used, to the receiver. Receiver side must able to decrypt and display original message received via socket. Cryptography and Security related Java packages like java.security, java.security.interfaces, java.security.spec, etc. should be used.
9.	Using JAVA security package APIs and socket programming demonstrate implementation of RSA. Sender side reads data from file and sends both, the encrypted data and the key used, to the receiver. Receiver side must able to decrypt and display original message received via socket. Cryptography and Security related Java packages like java.security, java.security.interfaces, java.security.spec, etc. should be used.
10.	Using JAVA security package APIs and socket programming demonstrate implementation of Diffeiehelman algorithms. Cryptography and Security related

	Java packages like java.security, java.security.interfaces, java.security.spec, etc. should be used.
11.	Using JAVA security package APIs and socket programming demonstrate implementation of Stream Cipher implementation of DES with CFB mode. Sender side reads data from file and sends both, the encrypted data and the key used, to the receiver. Receiver side must able to decrypt and display original message received via socket. Cryptography and Security related Java packages like java.security, java.security.interfaces, java.security.spec, etc. should be used.
12	Using JAVA security package APIs and socket programming demonstrate implementation of Stream Cipher implementation of Triple DES with CBC mode. Sender side reads data from file and sends both, the encrypted data and the key used, to the receiver. Receiver side must able to decrypt and display original message received via socket. Cryptography and Security related Java packages like java.security, java.security.interfaces, java.security.spec, etc. should be used.
13	Using JAVA security package APIs and socket programming demonstrate implementation of Hashing algorithm to find Message Digest using MD5 algorithm.
14	Using JAVA security package APIs and socket programming demonstrate implementation of Hashing algorithm to find Message Digest using SHA1 algorithm.

Subject: **Software Engineering**								
Program: **Master of Science (IT)**				Subject Code:**MSC0203**			Semester: **II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	4	6	30/60	30/60	20/40	20/40	200

UNIT I: **[10]**

Introduction to Software Engineering and Processes: What is software? – Evolving role of software – Types of software – Software Myths – Process Framework –CMM – Process Assessment – Various Process Models

Unit II: **[14]**

Software Engineering Practice and System Engineering: SE practice – Core Principles – Detailed Practices Communication, Planning, Modeling, Construction and Deployment – System Engineering – System Engineering Hierarchy – Business Process Engineering – Product Engineering-- Introduction to Agile methodologies for software development

Unit III: **[14]**

Requirements Engineering, Analysis and Design Modeling, Creating Architectural Design: Requirements Engineering Tasks Inception, Elicitation, Elaboration, Negotiation, Specification , Validation , Management - Requirements Analysis - Analysis Modeling Approaches Conventional , Object Oriented – Data Modeling Concepts – Flow OrientedModeling - Design Process and Design Quality – Design Concepts Abstraction , Architecture , Modularity – Information Hiding – Functional Independence – Design

Model – Software Architecture – Taxonomy of Architectural Styles – Architectural Design.

Unit IV: [10]

Component and User Interface design, Testing strategies and tactics, Metrics for Product and Process: Conventional view of component – Designing Conventional Components – Golden Rules for User Interface Design – User Interface Analysis and Design – User Interface Design Issues – UI Design Evaluation – Software Testing Fundamentals – Black Box , White Box Testing – Basis Path Testing – Strategic Approachto Software Testing – Test Strategies for Conventional Software Unit , integration, System , Acceptance – The Art of Debugging , Software Quality and Metrics– A Framework For Product Metrics – Metrics for Analysis model , design model , Source Code , Testing , Maintenance.

Text Book(s):

1. Roger Pressman ,"*Software Engineering – A Practitioner's Approach"*, 7th Edition, TMH

Reference Books:

1. Sommerville, "*Software Engineering*", 8th Edition, Pearson Education
2. Pankaj Jalote, "*Software Engineering – A Precise Approach*", Wiley India

Practical:

Week No	Topics to be covered
01	Introduction to MS Project, Demonstration of MS Project Menus, toolbars
02	Practical on MS Project – Gantt Chart, Adding Tasks and Milestones, Grouping and Relationships between tasks, Assigning resources
03	Practical on MS Project - Adding Constraints, Find Critical Path, Slack Time,
04	Practical on MS Project - Total costs of the project by tasks and resources, Record progress on a ms project, Earned value and schedule variance
05	Introduction to MS VISIO, Demonstration of MS VISIO Menus, toolbars

06	Starting a new Visio, Drawing Flowchart, Drawing E-R Diagrams
07	Drawing UML Diagrams
08	Case study on SRS
09	Case study on CASE Tools
10	Case study on Software Review
11	Case study on Inspection Checklist
12	Case study on Types of Testing – Black Box Testing
13	White Box Testing
14	Case study on Levels of Testing
15	Case study on Automated Testing Tools (CAST Tools)

Subject: **Web Searching Technology & Search Engine Optimization**								
Program: **Master of Science (IT)**				Subject Code:**MSC0205**			Semester: **II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
3	0	0	3	30/60	00	20/40	00	100

UNIT-I: **[08]**

The Search Engines: Reflecting Consciousness and Connecting Commerce: TheMission of Search Engines, the Market Share of Search Engines, the Human Goals ofSearching, Determining Searcher Intent: A Challenge for Both Marketers and SearchEngines How People Search, How Search Engines Drive Commerce on the Web, EyeTracking: How Users Scan Results Pages, Click Tracking: How Users Click on Results,Natural versus Paid

Search Engine Basics: Understanding Search Engine Results, Algorithm-Based Ranking Systems:

Crawling, Indexing, and Ranking, Determining Searcher Intent and Delivering RelevantFresh Content, Analyzing Ranking Factors, Using Advanced Search Techniques, VerticalSearch Engines, Country-Specific Search Engines

UNIT-II: **[10]**

Determining Your SEO Objectives and Defining Your Site s Audience: Setting SEOGoals and Objectives, Developing an SEO Plan Prior to Site Development, UnderstandingYour Audience and Finding Your Niche, SEO for Raw Traffic, SEO for E-Commerce Sales,SEO for Mindshare/Branding, SEO for Lead Generation and Direct Marketing, SEO forReputation Management, SEO for Ideological Influence

First Stages of SEO:

The Major Elements of Planning, Identifying the Site Development Process and Players,Defining Your Site s Information Architecture, Auditing an Existing Site to Identify SEOProblems, Identifying Current Server Statistics Software and Gaining Access, Determining
Top Competitors, Assessing Historical Progress, Benchmarking Current Indexing StatusBenchmarking Current Rankings, Benchmarking Current Traffic Sources and Volume, leveraging Business Assets for SEO, Combining Business Assets and Historical Data toConduct SEO/Website SWOT Analysis

UNIT-III: [10]

Keyword Research: The Theory Behind Keyword Research, Traditional Approaches:Domain Expertise, Site Content Analysis, Keyword Research Tools, Determining KeywordValue/Potential ROI, Leveraging the Long Tail of Keyword Demand, Trending, Seasonality,
and Seasonal Fluctuations in Keyword Demand

Developing an SEO-Friendly Website: Making Your Site Accessible to Search Engines,Creating an Optimal Information Architecture, Root Domains, Sub domains, and Microsites, Optimization of Domain Names/URLs, Keyword Targeting, Content Optimization,Duplicate Content Issues Controlling Content with Cookies and Session IDs, ContentDelivery and Search Spider Control, Redirects, Content Management System (CMS)Issues, Optimizing Flash, Best Practices for Multilanguage/Country Targeting.

UNIT-IV: [08]

Optimizing for Vertical Search: The Opportunities in Vertical Search, Optimizing for Local Search, Optimizing for Image Search, Optimizing for Product Search, Optimizing for News,Blog, and Feed Search, Others: Mobile, Video/Multimedia Search

Tracking Results and Measuring Success: Why Measuring Success Is Essential to theSEO Process, Measuring Search Traffic, Tying SEO to Conversion and ROI, Competitiveand Diagnostic search Metrics, Key Performance, Indicators for Long Tail SEO

Text Book(s):

1. Eric Enge, Stephan Spencer, Rand Fishkin, Jessie C Stricchiola, "*The Art of SEO : Mastering Search Engine Optimization"* , O'Reilly Media, October, 2009

Reference Books:

1. Jerri L. Ledford, "*SEO: Search Engine Optimization*",Bible , 2nd Edition, Wiley India, April, 2009

2. John I Jerkovic," *SEO Warrior: Essential Techniques for Increasing Web Visibility*" , O'Reilly Media, November, 2009

Subject: **Data Warehousing and Data Mining**								
Program: **Master of Science (IT)**				Subject Code:**MSC0205(A)**			Semester: **II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	0	4	30/60	0	20/40	0	100

UNIT I: [12]

Data Warehouse & OLAP Technology for Data Mining: definition of data warehouse,Multidimensional data modal, data warehouse Architecture & implementation, Query & Reporting

Data Preprocessing: Data Cleaning integration and transformation, data reduction,discretization, Concept hierarchy generation.

UNITII: [12]

Data Mining Primitive, Language & System Architecture: Data Mining primitives like TaskRelevant Data, the kind of knowledge to be mined, concept hierarchies, interesting measures, presentation & Visualization of discovered patterns.

Concept Description: Characterization and comparison: What is concept description, datageneralization and summarization based characterization, analytical characterization, mining class comparison, mining descriptive statistical measures in large databases..

UNIT III: [12]

Mining Association rules in large database: Association rule mining, mining single dimensionalBoolean association rule from transactional database, mining multilevel association rule from transactional database.

Classification & Prediction: Definition of Classification & Prediction, issue regardingClassification & Prediction, Classification by decision tree induction, Bayesian Classification by Back propagation, Classification based on concept from Association rule mining, prediction, classifier accuracy

UNIT IV: [12]

Cluster analysis: Definition of cluster analysis, types of data in cluster analysis, a categorizationof major clustering methods. Accumulation of data from Legacy database, OLTP systems, external sources, departmental systems, decision support systems etc; Building Data Warehouse - purpose, Data cleaning, determining database package to be used; locating data sources and data loading; Hardware and Software requirements for building data warehouses; Differences of Data warehouse and Data mart.

Building Blocks: Warehouse Architecture- Foundation, Federated and Tiered; serverArchitecture single SMP and MPP, and the DBMS- Relational, Super Relational, Multidimensional and Object Relational. Intelligent functionalities of warehouse - Querying and Reporting, Online Analytical Processing, Data mining and Executive information systems (EIS).

Text Book(s):

I. Jiahei Han & Micheline Kamber, "*Data mining concepts and Techniques*"

Reference Books:

I. Joseph Fong ,"*Information Systems Reengineering and Integration*", Second edition, Springer Verlag, 2006, ISBN 978-1-84628-382-6.

II. Sam Anahory& Dennis Murray, *"Data Warehousing In the Real World*", 1997, Pearson.

III. Alex Berson, "*Data Warehousing, Data Mining and OLTP*", 1997, Mc Graw Hill.

Digital Learning Resources:

https://www.tutorialspoint.com/data_mining/index.htm

For data mining software: http://www.cs.waikato.ac.nz/ml/weka/

Subject: **Soft Computing**								
Program: **Master of Science (IT)**				Subject Code:**MSC0205(B)**			Semester: **II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	0	4	30/60	0	20/40	0	100

UNIT I: **[12]**

Neural Networks-1(Introduction & Architecture)

Neuron, Nerve structure and synapse, Artificial Neuron and its model, activation functions, neural network architecture: single layer and multilayer feed forward networks, recurrent networks. Various learning techniques; perception and convergence rule, Auto-associative and hetro-associative memory.

UNIT II: **[12]**

Neural Networks-II (Back propagation networks) Architecture:

Perception model, solution, single layer artificial neural network, multilayer perception model; back propagation learning methods, effect of learning rule co-efficient ;back propagation algorithm, factors affecting back propagation training, applications

UNIT III: **[12]**

Fuzzy Logic-I (Introduction)

Basic concepts of fuzzy logic, Fuzzy sets and Crisp sets, Fuzzy set theory and operations, Properties of fuzzy sets, Fuzzy and Crisp relations, Fuzzy to Crisp conversion.

Fuzzy Logic –II (Fuzzy Membership, Rules)

Membership functions, interference in fuzzy logic, fuzzy if-then rules, Fuzzy implications and Fuzzy algorithms, Fuzzy-fications&Defuzzi-ficataions, Fuzzy Controller, Industrial applications

UNIT IV: **[12]**

Genetic Algorithm (GA)

Basic concepts, working principle, procedures of GA, flow chart of GA, Genetic representations, (encoding) Initialization and selection, Genetic operators, Mutation, Generational Cycle, applications

Text Book(s):

I. S. Rajasekaran and G.A. VijayalakshmiPai, "*Neural Networks, Fuzzy Logic, and Genetic Algorithms (Synthesis and Applications)*", PHI Education.

II. S.N. Sivanandam and S.N. Deepa, "*Principles of Soft Computing*", Wiley India (P) Ltd.

III. N.P.Padhy, "*Artificial Intelligence and Intelligent Systems*" Oxford University Press

Reference Books:

I. D.K. Pratihar, "*Soft Computing*", Narosa Publishing House.

II. Sudarshan K. Valluru and T. Nageswara Rao, "*Introduction to Neural Networks, Fuzzy Logic and Genetic Algorithms*", JAICO Publishing House.

III. PinakiMazumder and Elizabeth M. Rudnick, "*Genetic Algorithms for VLSI Design, Layout & Test Automation*", Addison Wesley Ltd

Subject: **M-Commerce**								
Program: **Master of Science (IT)**				Subject Code:**MSC0205(C)**			Semester: **II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	0	4	30/60	0	20/40	0	100

UNIT-I: **[12]**

Introduction to m-commerce

Emerging applications, wireless service providers, middleware, wireless infrastructure, different players in m-commerce, and m-commerce life cycle

Requirements and multi-layer frameworks

Wireless and networking requirements, quality of service, location-management, security, dependability, Mobile financial services, mobile entertainment services, and proactive service management.

UNIT -II: **[12]**

Location-based m-commerce services

Location, context and user-oriented services, location management in heterogeneous wireless and mobile networks, push/pull services, role of middleware in location-based services, location-enabled devices

Group-oriented mobile commerce services: Part I

Mobile auctions, mobile entertainment services, multi-party games

UNIT –III: **[12]**

Group-oriented mobile commerce services: Part II

Wireless multicast and broadcast, multicast in wireless LANs, satellites, and cellular systems, multicast in wireless Internet

Transactions in mobile commerce services: part I

Group communications, membership management, transaction support, dis-connection and multi-stage transactions

Transactions in mobile commerce services: part II

Impact of failures on transactions, security and reliability of transactions

UNIT-IV: **[12]**

Management of mobile commerce services

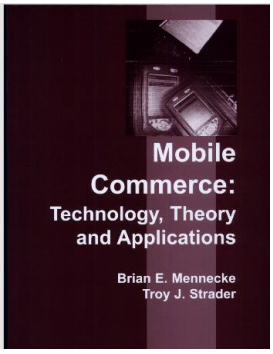
Content development and distribution to hand-held devices, content caching, pricing of mobile commerce services

The emerging issues in mobile commerce

The role of emerging wireless LANs and 3G/4G wireless networks, personalized content management, implementation challenges in m-commerce, futuristic m-commerce services

Text Book(s):

I. Brian Mennecke and Troy J. Strader, *"Mobile Commerce: Technology, Theory and Applications* ", Idea Group Publishing



Subject: **Cyber Law**								
Program: **Master of Science (IT)**				Subject Code:**MSC0205(D)**			Semester: **II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	0	4	30/60	0	20/40	0	100

UNIT-I: **[12]**

Chapter 1 Introduction

1.1. History of Internet and World Wide Web

1.2. Need for cyber law

1.3. Cyber crime on the rise

1.4. Important terms related to cyber law

Chapter 2 Cyber law in India

2.1. Need for cyber law in India

2.2. History of cyber law in India

2.3. Information Technology Act, 2000

2.4. Overview of other laws amended by the IT Act, 2000

2.5. National Policy on Information Technology 2012

Chapter 3 Overview of the Information Technology Act, 2000

UNIT-II: **[12]**

Chapter 4 Overview of Rules issued under the IT Act, 2000

Chapter 5 Electronic commerce

Chapter 6 Electronic contracts

Chapter 7 Cyber crimes / Cyber Frauds - I

7.1. Definition of cyber crime

7.2. First Cyber crime

7.3. Types of cyber frauds

7.4. Cyber frauds in India 2

UNIT-III: **[12]**

Chapter 7 Cyber crimes / Cyber Frauds - II

7.5 Preventive measures

7.6. Cyber crimes

7.7. Who commits cyber crimes?

7.8. Penalties and offences under the IT Act, 2000

7.9. Offences under other legislations

7.10. Investigation of cyber crimes in India

Chapter 8 Regulatory Authorities

Chapter 9 Cloud computing

Chapter 10 Case laws

UNIT-IV: **[12]**

Cyber Crimes & Legal Framework

Cyber Crimes against Individuals, Institution and State, Hacking, Digital Forgery, Cyber Stalking/Harassment, Cyber Pornography, Identity Theft & Fraud, Cyber terrorism, Cyber Defamation, Different offences under IT Act, 2000

Intellectual Property Issues in Cyber Space

Interface with Copyright Law, Interface with Patent Law, Trademarks & Domain Names Related issues

Text Book(s):

I. Sood,"*Cyber Laws Simplified*", Mc Graw Hill

II. OVERVIEW OF CYBER LAWS IN INDIA [Pdf version of E-book only]

Reference Books:

1. Chris Reed & John Angel, "*Computer Law*", OUP, New York, (2007).

2. Justice Yatindra Singh, "*Cyber Laws"*, Universal Law Publishing Co, New Delhi, (2012).

3. Verma S, K, Mittal Raman, "*Legal Dimensions of Cyber Space*", Indian Law Institute, New Delhi, (2004)
4. JonthanRosenoer, "*Cyber Law*", Springer, New York, (1997).
5. Sudhir Naib, "*The Information Technology Act, 2005: A Handbook*", OUP, New York, (2011)
6. S. R. Bhansali, "*Information Technology Act, 2000*, "University Book House Pvt. Ltd., Jaipur (2003).
7. Vasu Deva, "*Cyber Crimes and Law Enforcement*", Commonwealth Publishers, New Delhi, (2003).

Subject: **Advance Networking**								
Program: **Master of Science (IT)**				Subject Code:**MSC0205(E)**			Semester: **II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	0	4	30/60	0	20/40	0	100

UNIT-I: **[12]**

Classful Internet Addresses, Mapping Internet Addresses to Physical Addresses (ARP), Internet Protocol: Connectionless Datagram Delivery (IPv4): Introduction, Universal identifiers, IP addresses and network connections, original classful addressing scheme, special purpose IP addresses like directed broadcast and network broadcast, Limited broadcast, Loopback address, Subnet and Classless extensions, Weaknesses in Internet addressing, Dotted decimal notation, Network byte order, Special address conventions. Concept of physical address, Address resolution problem, Relationship between network address and physical address, Two types of physical addresses, Resolution through direct mapping, Resolution through dynamic binding, ARP cache Timeout, ARP refinements, Relationship with other protocols, ARP implementation, ARP Encapsulation and identification, ARP protocol format, Automatic ARP cache revalidation Concept and reason for connectionless and best effort delivery system at network layer, purpose of Internet protocol, IPv4 datagram format , interpretation and significance of each header fields, IP options

UNIT-II: **[12]**

Internet Protocol: Forwarding IP Datagrams, Error And Control Messages (ICMP), Classless And Subnet Address Extensions (CIDR), User Datagram Protocol (UDP):

Introduction, Forwarding in the Internet, Indirect and Direct delivery, Table driven IP forwarding, Next hop forwarding, Default routes, Host specific routes, IP forwarding algorithm, Forwarding with IP addresses, Handling incoming datagrams, Establishing routing tables. Introduction of ICMP, Need for a controlling protocol, Error Reporting versus Error Correction, ICMP message delivery, ICMP message format, Ping, Formats of different type of messages like Echo(Request and Reply), Congestion , nreachable Destinations, Source Quench, Router advertisement and Solicitation, etc.. Introduction of CIDR, Minimizing Network Numbers, Proxy ARP, Subnet Addressing, Flexibility in subnetting, Variable length subnets, Subnet masks, Unified Forwarding Algorithm, Broadcasting to Subnets, Anonymous point to point networks, Classless Addressing and Supernetting, CIDR address blocks and Bit masks, Data Structures and Algorithms for classless lookup, Searching by mask length, Binary trie structures, Longest match and mixture of route types, PATRICIA and level compressed tries. Introduction of UDP, Need for UDP, UDP message format, UDP Pseudo header, UDP encapsulation and protocol layering, Layering and UDP Checksum computation, UDP multiplexing, demultiplexing, and role of ports in multiplexing and demultiplexing, UDP applications, port numbers of well known UDP based applications

UNIT-III: [12]

Reliable Stream Transport Service (TCP), Private Network Interconnection (NAT, VPN),Bootstrap And Auto configuration (DHCP): Introduction, Need for stream delivery, Properties of reliable delivery service, Providing reliability, Concept of sliding windows, Ports, connections and endpoints, Active and Passive opens, Segments, Streams and sequence numbers, Variable window size and flow control, TCP segment format, Out of band data, TCP options, Acknowledgment, Retransmission and timeouts, Accurate measurement of RTT, Karn's algorithm and timer backoff, Explicit feedback mechanism, Congestion control, TCP connection establishment and termination, Dealing with silly window syndrome. Introduction to VPN, Private and hybrid networks, VPN addressing and routing, Extending VPN technology to individual hosts, VPN with private addresses, Introduction to NAT, NAT translation table creation, multi-address NAT, port mapped NAT, Interaction between NAT and ICMP, Interaction between NAT and Applications,

NAT in presence of fragmentation, Conceptual address domains, Introduction to slirp and IPtables. Introduction to DHCP, History of bootstrapping, Using IP to find IP Address, DHCP Retransmission Policy, DHCP Message format, Need for dynamic configuration, DHCP Lease concept, Multiple addresses and Relays, Lease renewal States, Address acquisition states, Early lease termination, DHCP options and message type, Options overload, DHCP and DNS.

UNIT-IV: **[12]**

The Domain Name System (DNS), Remote Login And Desktop (TELNET, SSH), File Transfer And Access (FTP, TFTP, NFS), Electronic Mail (SMTP, POP, IMAP, MIME): Need for DNS, Flat versus hierarchical namespace, Centralized versus distributed Names database, Delegation of authority for names, Subset authority, Internet domain Names, Top-level domains, Mapping domain names to addresses, Domain Name Resolution, Efficient translation, Caching, DNS message format, Compression, Inverse mappings, Pointer queries, DNS resource records, Dynamic DNS, DNSSec. Introduction, Remote interactive computing, Telnet protocol, Accommodating Heterogeneity, Client side and server side control commands, Telnet options and option negotiation, SSH. Different ways of sharing a file, Features, Process model, TCP Port numbers, Data connection and control connection, User's view of FTP, Anonymous FTP, Secure FTP, TFTP, NFS, RPC, XDR. Introduction to E-mail protocols., Mailboxes, Names and Aliases, Alias expansion and mail forwarding, SMTP, POP, IMAP, MIME Extensions for non ASCII data, MIME Multipart messages. World Wide Web (HTTP), Internet Security And Firewall Design (IPsec, SSL), A Next Generation IP (IPv6)

Data Centers: Driving factors, features, evolution of tools, Data center as a Service (DCaaS),Data Replication between DC and DR including terms like Recovery Time Objective (RTO), Recovery Point Objectives (RPO),Type of Data centers (Tier 1, Tier 2, etc...) High Availability ,Failover / Switchover between DC-DR

Text Book(s):

I. Douglas E. Comer, "*Internetworking with TCP/IP - (Vol. 1) Principles, Protocols, and Architecture*", 5th Edition, Prentice Hall of India (PHI) Publishers]

Reference Books:

1. Behrouz A. Forouzan, "*TCP/IP Protocol Suite*", 4th Edition, McGraw-Hill

2. W. Richard Stevens, G. Gabrani, "*TCP/IP- Illustrated, Vol. 1 (The Protocols)*", Pearson Publishers

Digital Learning Resources:

http://nptel.ac.in/courses/106105081/

SEMESTER-III

Approved Vide Agenda Item No. 03 of Minutes of Meeting of Academic Council held on 11 July 17

Indus University
Institute of Information and Communication Technology

Master of Science (Information Technology)

Teaching Scheme

Subject Code	Subject Name		Teaching Learning			
		Theory Session (Hours)	Tutorial Session (Hours)	Laboratory Session (Hours)	Total (Hours)	Credit
MSC0301	Mobile Computing	04	00	04	08	06
MSC0302	.NET Technology using C#	04	00	04	08	06
MSC0303	Software Testing and Quality Assurance	04	02	00	06	05
MSC0304	Fundamental of Cloud Computing	04	02	00	06	05
MSC0305	Mini Project	00	00	04	04	04
Total		**16**	**04**	**12**	**32**	**26**

Subject: **Mobile Computing**								
Program: **Master of Science (IT)**				Subject Code:**MSC0301**			Semester: **III**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	4	6	30/60	30/60	20/40	20/40	200

UNIT I: **[12]**

History of Wireless Communications: Types, propagation modes Wireless network architecture, Applications, Benefits, Future. What mobile users need, Architecture for mobile computing, The cellular concept system design, Wireless LAN advantages, Introduction IEEE802.11 standardsm, GSM, CDMA, Mobile network layer: Mobile IP

UNIT II: **[12]**

Android Application Development Launch: What is SDK and SDK Emulator? Configurations of android, Use of AVD's with the use of ADB and DDMS, Architecture of android, filtering system log, Examining device processes, virtual machines and threads.

Drawing Graphics: Essential components of the 2D library using all component, Creating 3D animations using rotation and translation When and how to use a separate thread for high performance graphics.

Inter Process Communication: Creating both Activities and Services. Using explicit and implicit Intents, both within applications and across applications. Returning results and bundling Extras in Intents.Creating broadcast Receivers, listening for system broadcasts as well as sending your own broadcasts.

UNIT III: **[12]**

Database and Content Providers: Data security rules in Android. Reading and writing locally accessible files and SDcard files. Reading and writing Preferences. Setting up a SQLite database and sharing data as a Content Provider. Accessing other applications' data through Content Providers, Data Binding.

Threading: The use of threading in Android. The UI thread and guidance on when to spawn separate threads. Android's Looper, Async and Handler classes. How to manage worker threads from component lifecycle methods.

UNIT IV: **[12]**

Media: Playing and recording video and audio. Using the camera. Adding sound and video to applications.

Services: Starting, stopping Services and Binding to Services. An overview of how to use Remote Methods and Android Interface Description Language.

Notifications: Broadcast Receivers, Services and notifications, Toast & Alarms

Text Book(s):

I. Mobile Computing ,Asoke K Telukder, Roopa R Yavagal, TMH.
II. Pro Android by Sayed Y. Hashimi and Satya Komatineni, Springer, New York, 2009.
III. Android Wireless Application Development - Second Edition (Lauren Darcey& Shane Conder)

Reference Books:

I. Nicolas Gramlich, "*Android Programming"*
II. Wei-Meng Lee, "*Beginning Android Application Development*"
III. Donn Felker, "*Android Application Development for Dummies"*

Practical:

Week	**Topic/Subtopic**

1	1. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the red color with white background. 2. To understand Activity, Intent A. Create sample application with login module.(Check username and password) B. On successful login, go to next screen. And on failing login, alert user using Toast. Also pass username to next screen
2	1. Create login application where you will have to validate Email ID (Username). Till the username and password is not validated, login button should remain disabled 2. Create and Login application as above. On successful login, open browser with any URL.
3	1. Create an application that will pass some number to the next screen and on the next screen that number of items should be display in the list. 2. Understand resource folders : A. Create spinner with strings taken from resource folder (res >> value folder). B. On changing spinner value, change image.
4	1. Understand Menu option. A. Create an application that will change color of the screen, based on selected options from the menu. 2. Create an application that will display toast (Message) on specific interval of time.
5	1. Create a background application that will open activity on specific time. 2. Create an application that will have spinner with list of animation names. On selecting animation name, that animation should effect on the images displayed below

6	1. Understanding of UI : A. Create an UI such that, one screen have list of all the types of cars. B. On selecting of any car name, next screen should show Car details like: name, launched date, company name, images (using gallery) if available, show different colors in which it is available 2. Understanding content providers and permissions: Read phonebook contacts using content providers and display in list
7	1. Read messages from the mobile and display it on the screen. 2. Create an application to call specific entered number by user in the EditText
8	1. Create an application that will create database with table of User credential. 2. Create an application to read file from asset folder and copy it in memory card.
9	1. Create an application that will play a media file from the memory card 2. Create an application to make Insert, update, Delete and retrieve operation on the database.
10	Create an application to read file from the sdcard and display that file content to the screen.
11	Create an application to draw line on the screen as user drag his finger.
12	Create an application to send message between two emulators
13	Create an application to take picture using native application
14	Create an application to pick up any image from the native application gallery and display it on the screen
15	Create an application to open any URL inside the application and clicking on any link from that URl should not open Native browser but that URL should open the same screen

Subject: **.Net Technology using C#**								
Program: **Master of Science (IT)**				Subject Code:**MSC0302**			Semester: **III**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	0	4	6	30/60	30/60	20/40	20/40	200

UNIT I: **[12]**

.NET Framework: Review of.NET frameworks, Introduction to C#, Variables and expressions, flow controls, functions, debugging and error handling, OOPs with C#, Defining class and class members, Assembly, Components of Assembly, Private and Shared Assembly, Garbage Collector, JIT compiler, Namespaces, Collections, Comparisons and Conversions, Delegates and Events, Windows programming. Controls (Button, Label, Link, label, radio button, check box, text box, rich textbox, list box, checked list box, list view, forms, Menus and toolbars, SDI and MDI applications, Building MDI applications

UNIT II: **[12]**

Introduction to ASP .NET 4: Microsoft .Net framework, ASP .Net page lifecycle, Themes, **CSS:** Need of CSS, Working with CSS with visual developers

ASP.NET server controls, Types of control, ASP.NET state management engine, Web.config andglobal.asax files

UNIT III: **[12]**

Programming ASP.NET web pages: Introduction, data types and variables, statements, organizing code, object oriented basics. MasterPages, Caching, Using navigation controls, programmatic redirection, Introduction to user controls, **Validating User Controls**

UNIT IV: **[12]**

Database Programming:

Introduction, Using SQL to work with database, retrieving and manipulating data with SQL, workingwith ADO.NET, ADO.NET, ADO.NET architecture, GridView, ASP.NET data control, data source control,deploying the web site. Crystal reports, **LINQ :** Operators, implementations, LINQ to objects, XML, ADO.NET, Query Syntax

Text Book(s):

1. J. Kanjilal, "*ASP.NET 4.0 programming",* Tata McGraw-Hill (Unit III to VI).

Reference Books:

1. D.Esposito, "*Programming ASP.NET*", Microsoft Press (Dreamtech), Reprint 2011.
2. Vijay Nicoel, "*ASP.NET Visual C#.NET"*, TMH
3. Patel, "*Advanced .NET Technology*", Dreamtech

Practical:

Week	Topic/Subtopic
1	1 Write a Program in C# to Check whether a number is Palindrome or not. 2 Write a Program in C# to demonstrate Command line arguments Processing 3 Write a Program in C# to implement Stack operations.
2	4 Write a program to demonstrate Operator overloading 5 Write a Program in C# to find the second largest element in array 6 Write a Program in C# to multiply to matrices using Rectangular arrays
3	7 Create a login page user control that allows the user to enter user id and password. 8 Creating and Using a menu Control In this exercise, you will create a menu selection control that passes the selected item back to the calling page, in the URL query string. The control displays information categories in a menu control.It gets the categories and populates the menu dynamically from a data source. The first step involves creating the user control. Then

	you will expose the properties of the user control and embed the control in a Web Forms page. You finally view it in a Web browser.
4	9 Create a Calculator 10 Create an application in which you are required to get the user profile information with help of standard asp.net server controls
5	11 Study of the Grid View Control. Binding the data to the control with the Access Data Source 12 Create an application in which user has to display records in the Grid View Control from Table created in access data base
6	13 Create an application which displays the advertisement through Ad rotator Server Control 14 Write a program to display three images in a line. When any one of the images is clicked, it must be displayed below. On clicking the displayed image it must be cleared.
7	15 Write a program to get a user input such as the boiling point of water and test it to the appropriate value using CompareValidator
8	16 Write a program containing the following controls: • A ListBox • A Button • An Image • A Label The listbox is used to list items available in a store. When the user clicks on an item in the listbox, its image is displayed in the image control. When the user clicks the button, the cost of the selected item is displayed in the control. 17 Extend the above program to add the following controls: • Two labels • A TextBox • A Button

	One of the labels is displayed adjacent to the textbox , displaying the message "Enter the quantity:". When the user enters the quantity in the textbox and clicks the button, the total cost is evaluated and displayed in another label.
9	18 Write a prgoram that gets user input such as the user name, mode of payment, appropriate credit card. After the user enters the appropriate values the Validation button validates the values entered.
10	19 Create a Form that receives the user name, address, date, nationality, country preferred for working and skill sets from the user and stores the user name in the client using cookies. The country preferred data should appear in a dropdownlist whereas, others should be entered in a textbox. Validate all the controls. The Form is named "formexp.aspx". The date should appear between "1/1/1900" and "1/1/2090"
11	20 Write a program to connect to the master database in SQL Server, in the Page_Load event. When the connection is established, the message "Connection has been established" should be displayed in a label in the form.
12	21 Create a Table, which displays two columns and three rows. The first row displays eno, the second displays enameand the third displays esal, all of these being retrieved from the empstable. Each of the above is displayed as a drop-down list, containing all the values of the corresponding column in the table.
13	22 Write a program that binds the properties ID, Name, Price and Qtyof a page to the following values: ID: 10 Name: Wheat Price: 14.25 Qty: 1000

14	23 Create a RadioButtonList that displays the names of some flowers in two columns. Bind a label to the RadioButtonList so that when the user selects an option from the list and clicks on a button, the label displays the flower selected by the user.
15	24 Bind a CheckBoxList to the pnamefield of the product table in the master database so that all the name of the product are displayed as a series of checkboxes.

Subject: **Software Testing and Quality Assurance**								
Program: **Master of Science (IT)**				Subject Code:**MSC0303**			Semester: **III**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	2	0	5	30/60	00	20/40	00	100

Unit I: **[12]**

Software Quality Assurance Fundamentals: Definition of Quality, QA, QC, SQA, SQA Planning & Standards, SQA Activities, Building blocks of SQA, Quality factors, Software Quality Metrics, Process Improvement- Process and Product Quality - CMM, Six Sigma, Software Reliability, Reliability Measures, Reliability models

Unit II: **[12]**

Software Verification & Validation Activities: Verification & Validation Concepts, Verification & Validation Planning, Software inspections, Automated static Analysis, Clean room Software Development

Software Testing Fundamentals: Definition & Objectives, Types of software bugs, Bug life cycle, Testing lifecycle, Test Plan, Test Cases – Definition, Test Case Designing

Unit III: **[12]**

Types and Levels of Testing: Functional Testing (Black Box) Equivalence partitioning, BVA, Cause-Effect graphing, Syntax testing, Structural Testing (White Box) Coverage testing, Statement coverage, Branch & decision coverage, Path coverage, Domain Testing, Non functional testing techniques: Localization, Internationalization Testing, Black box vs. White Box Unit Testing, Integration Testing, Validation Testing, System Testing –

Performance, Load, Stress, Security, Recoverability, compatibility testing, Regression Testing, Installation Testing, Usability Testing, Acceptance Testing- Alpha testing & Beta testing, Static vs. Dynamic testing, Testers workbench, Manual vs. Automatic testing

Unit IV: **[12]**

Static Testing Techniques, Review types: Informal Review, Technical or peer review, Walkthrough and Review Meeting, Review Reporting & Record keeping, Review guidelines, Data flow analysis, Control flow analysis, Cyclomatic Analysis, Testing object oriented software, Testing Web based Applications, Computer Aided Software testing tools (CAST) (only type & their purpose should be covered)

Text Book(s):

I. R. Pressmen, "*Software Engineering*",7th Ed, TMH

Reference Books:

I. Sommerville, "*Software Engineering*",8th Ed,Pearson

II. Louise Tamres, "*Introducing Software Testing*"

III. William Perry,, "*Effective Methods for software Testing*", 3rd Ed., Wiley Pub.

IV. Edward Kit, "*Software Testing in Real World",* Pearson Pub.

V. Boris Beizer, "*Software Testing Techniques*",2nd Ed., DreamTech Publication

VI. Ron Patton, "*Software Testing*",TechMedia Pub.

Subject: **Fundamental of Cloud Computing**								
Program: **Master of Science (IT)**				Subject Code:**MSC0304**			Semester: **III**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
4	2	0	5	30/60	0	20/40	0	100

Unit I: **[14]**

Introduction to cloud computing - roots of cloud computing, layers and types of cloud, desiredfeature of cloud, cloud infrastructure management, challenges and risks.

Migrating into a cloud -introduction, broad approaches, and seven step models.

The enterprise cloud computing paradigm -issues for enterprise applications on the cloud,transition challenge, enterprise cloud technology and market evolution

Unit II: **[14]**

Infrastructure as a Service (IAAS) – Virtual machine provisioning and migration services-introduction and inspiration, Management of virtual machine for cloud infrastructure secure distributed data storage in cloud computing

Unit III: **[10]**

Platform and software as a service (PAAS, SAAS) – Aneka-integration of public and privatecloud and cometcloud-an autonomic search engine, T-system cloud based solution for business application

Unit IV: **[10]**

Organizational readiness and change management in the cloud age, Data security in cloud, legal issues in cloud (with case studies)

Text Book(s):

I. RajkumarBuyya,JamesBroberg, Andrzej Goscinski, *"Cloud Computing-Principals and paradigms",* A John Wiley & Sons Publications

Reference Books:

I. John Writtinghouse and James F ransom, "*Cloud Computing-Implementation, management and security*", CEC press publication.

Subject: **Mini Project**								
Program: **Master of Science (IT)**				Subject Code:**MSC0305**			Semester: **III**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
0	0	4	4	00	30/60	00	20/40	100

Guidelines for Mini Project:

- Allow **minimum 2 to maximum 3** students per mini project group

- Take the topic from students in **first 15 days** from the start of the semester.

- Follow Software Development Life Cycle Phase for mini project development.

Mini Project shall follow the steps below:

1. Define the problem with specifications
2. Define the functionality of the project
3. Design a solution for the project
4. Implement the solution.

(Also keep a record of total number of man hours spent for the miniproject.)

5. Present and evaluate the project.

The report of this Mini project is to be submitted in typed form with Spiral Binding. The report should have all the necessary diagrams, charts, printouts and source code. The work has to be done in groups.

SEMESTER-IV

Approved Vide Agenda Item No. 03 of Minutes of Meeting of Academic Council held on 11 July 17

Indus University
Institute of Information and Communication Technology

Master of Science (Information Technology)

Teaching Scheme

Subject Code	Subject Name		Teaching Learning			
		Theory Session (Hours)	Tutorial Session (Hours)	Laboratory Session (Hours)	Total (Hours)	Credit
MSC0401	Software Development Project	00	00	00	00	24
Total		**00**	**00**	**00**	**00**	**24**

Subject: **Software Development Project**								
Program: **Master of Science (IT)**				Subject Code:**MSC0401**			Semester: **IV**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**University Theory Examination**	**University Practical Examination**	**Continuous Internal Evaluation (CIE)- Theory**	**Continuous Internal Evaluation (CIE)- Practical**	**Total**
00	00	00	00	00	300/600	00	50/100	700

Technical Guidelines

COMMUNICATION OF APPROVAL

Communication regarding the Approval / Non-approval of the project will be sent to you within four weeks after the receipt of the project proposal by the Faculty/Supervisor/Guide of Indus University concerned.

PROJECT REPORT FORMULATION

The project report should contain the following:

1. Original copy of the Approved Synopsis.

2. Certificate of Originality.

3. The Project Report documentation may be about 70 to100 pages (excluding coding) which should include the following topics (as per the project requirements).

Table of Contents / Index with page numbering

- Introduction / Objectives
- System Analysis
- Identification of Need
- Preliminary Investigation
- Feasibility Study
- Technical Feasibility
- Economical Feasibility
- Operational Feasibility

- Software Engineering Paradigm applied
- Software and Hardware Requirement Specifications
- System Design
- Coding
- Code Efficiency
- Optimisation of code
- Validation checks
- Implementation and Maintenance
- Testing (Testing techniques and Testing strategies used along with the test data and the errors listed for each test case).
- System Security measures (Implementation of security for the s/w developed)
- Cost Estimation of the Project
- Reports
- PERT Chart, Gantt Chart
- Future scope and further enhancement of the Project
- Bibliography
- Appendices (if any)
- Glossary.

General Guidelines

1. It is recommended that the team should be of 2-3 students.

2. Coding standards should be followed meticulously. At the minimum, the code should be self documented, modular, and should use the meaningful naming convention.

3. If a student is compelled to follow certain instructions (by the external, i.e. organization's guide) which he/she does not agree to, such a student must prepare a supplementary report to document his/her version and present it to the examiners if such a need arises.

4. Internal guides (i.e. the faculty members) must devote the time allocated as per the time table to guide the students for the project. The time allocation will be in accordance with the scheme for 4th semester project as given.