ITT Technical Institute

SD2520

Introduction to Database and XML with jQuery

Onsite and Online Course

SYLLABUS

Credit hours: 4.5

Contact/Instructional hours: 56 (34 Theory Hours, 22 Lab Hours)

Prerequisite(s) and/or Corequisite(s):

Prerequisite: PT1420 Introduction to Programming or equivalent

Course Description:

This course introduces fundamental concepts of database technology and applications. Topics include object-oriented relational databases, database management systems, and using SQL, XML and jQuery to build databases that interact with applications.

COURSE SUMMARY

COURSE DESCRIPTION

This course introduces fundamental concepts of database technology and applications. Topics include object-oriented relational databases, database management systems, and using SQL, XML and jQuery to build databases that interact with applications.

MAJOR INSTRUCTIONAL AREAS

1. XML schema and XML document
2. XPath queries
3. Database requirement and information gathering
4. Database normalization
5. Physical designing of a database
6. SQL queries
7. MySQL
8. jQuery

COURSE LEARNING OBJECTIVES

By the end of this course, you should be able to:

1. Create and transform XML documents.
2. Write XPath statements to retrieve data from an XML document.
3. Use XML schemas to define the structure of an XML document.
4. Analyze a given scenario to document database requirements.
5. Create a normalized logical database design using Microsoft Visio.
6. Create a physical design for the database using MySQL.
7. Run database queries using MySQL.
8. Use jQuery to validate and input data from a web page.

COURSE OUTLINE

MODULE 1: WRITING XML AND XSLT

COURSE LEARNING OBJECTIVES COVERED

- Create and transform XML documents.

TOPICS COVERED

- Rules for Writing XML
- Creating and Writing Elements
- Adding Attributes and Comments
- Transforming XML with XSLT
- Outputting Values
- Adding Loops
- Using Conditional Processing
- Sorting Nodes
- Generating Output Attributes

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: *Introduction to Database and XML with jQuery*: • Chapter 8, pp. 151–163 • Chapter 9, pp. 164–183	No	2 hrs.
Lesson: Study the lesson for this module.	No	2 hrs.
Lab: Complete the lab titled "Working on XML."	Yes	N/A
Research: Complete the research titled "Uses of XML and XSLT."	Yes	3 hrs.
Read and Begin Project: Review Project requirements.	No	1 hr.

Total Out-Of-Class Activities: 8 Hours

MODULE 2: CREATING XPATH QUERIES AND XML SCHEMA

COURSE LEARNING OBJECTIVES COVERED

- Write XPath statements to retrieve data from an XML document.
- Use XML schemas to define the structure of an XML document.

TOPICS COVERED

- Selecting and Locating a Node
- Using XPath Functions (Compare, Multiply, Divide, Add, Subtract, Total, Format, Casing)
- Exploring XML Schema and XML Document
- Defining a Simple Type Element and Custom Simple Types
- Deriving List and Union Types
- Defining and Deriving Anonymous and Complex Types

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: *Introduction to Database and XML with jQuery*: • Chapter 10, pp. 184–195 • Chapter 11, pp. 196–206 • Chapter 12, pp. 207–211 • Chapter 13, pp. 212–229 • Chapter 14, pp. 230–253	No	4 hrs.
Lesson: Study the lesson for this module.	No	2.5 hrs.
Lab 1: Complete the lab titled "Writing XPath Queries."	Yes	N/A
Lab 2: Complete the lab titled "Creating and Applying XML Schema."	Yes	N/A
Research: Complete the research titled "Exploring XML Schema."	Yes	3 hrs.
Project: Continue work on Project Part 1.	No	3 hrs.
Quiz: Prepare for Quiz 1.	No	1.5 hrs.
Quiz: Attempt Quiz 1.	Yes	N/A

Total Out-Of-Class Activities: 14 Hours

MODULE 3: DESIGNING A DATABASE

COURSE LEARNING OBJECTIVES COVERED

- Create and transform XML documents.
- Write XPath statements to retrieve data from an XML document.
- Use XML schemas to define the structure of an XML document.
- Analyze a given scenario to document database requirements.

TOPICS COVERED

- Exploring Relational Databases and Database Management Systems
- Interpreting a Statement of Work
- Interviewing, Observing, and Reviewing Documentation to Gather Requirements
- Defining and Listing Database Requirements
- Defining Business Rules, Database Entities, and Attributes
- Creating a Logical Database Design

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: *Introduction to Database and XML with jQuery*: • Chapter 1, pp. 1–16 • Chapter 2, pp. 20–35 • Chapter 3, pp. 44–58 • Chapter 4, pp. 60–76	No	6 hrs.
Lesson: Study the lesson for this module.	No	2 hrs.
Lab 1: Complete the lab titled "Creating an ERD."	Yes	N/A
Analysis 1: Complete the analysis titled "Defining Entities and Relationships."	Yes	3 hrs.
Analysis 2: Complete the analysis titled "Database Requirements and Business Rules."	Yes	3 hrs.
Project: Submit Project Part 1.	Yes	2 hrs.

Total Out-Of-Class Activities: 16 Hours

MODULE 4: NORMALIZATION AND PHYSICAL DESIGN

COURSE LEARNING OBJECTIVES COVERED

- Create a normalized logical database design using Microsoft Visio.
- Create a physical design for the database using MySQL.

TOPICS COVERED

- Database Normalization
- First, Second, and Third Normal Form
- Creating a Database Using MySQL
- Establishing Relationships
- Entering Data

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: *Introduction to Database and XML with jQuery*: • Chapter 5, pp. 80-98 • Chapter 6, pp. 100-119	No	4.5 hrs.
Lesson: Study the lesson for this module.	No	2.5 hrs.
Analysis: Complete the analysis titled "Reviewing an ERD."	Yes	4 hrs.
Lab 1: Complete the lab titled "Normalizing an ERD."	Yes	N/A
Lab 2: Complete the lab titled "Creating a Database."	Yes	N/A
Project: Initiate work on Project Part 2.	No	3 hrs.
Quiz: Prepare for Quiz 2.	No	2 hrs.
Quiz: Attempt Quiz 2.	Yes	N/A

Total Out-Of-Class Activities: 16 Hours

MODULE 5: INTRODUCING SQL QUERIES AND JQUERY

COURSE LEARNING OBJECTIVES COVERED

- Run database queries using MySQL.
- Use jQuery to validate and input data from a web page.

TOPICS COVERED

- Running Queries in MySQL
- Testing a Database
- jQuery Selectors
- Working with the DOM
- Working with jQuery Code
- Progressive Enhancement

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: *Introduction to Database and XML with jQuery*: • Chapter 7, pp. 123-149 • Chapter 15, pp. 254-268	No	5.5 hrs.
Lesson: Study the lesson for this module.	No	2.5 hrs.
Analysis: Complete the analysis titled "Writing Data Retrieval Queries."	Yes	4 hrs.
Lab 1: Complete the lab titled "Working with SQL Queries."	Yes	N/A
Lab 2: Complete the lab titled "Using jQuery."	Yes	N/A
Research: Complete the research titled "Comparing DBMSs."	Yes	4 hrs.
Project: Continue work on Project Part 2.	No	1 hr.

Total Out-Of-Class Activities: 17 Hours

MODULE 6: CREATING AND VALIDATING A FORM

COURSE LEARNING OBJECTIVES COVERED

- Create a normalized logical database design using Microsoft Visio.
- Create a physical design for the database using MySQL.
- Run database queries using MySQL.
- Use jQuery to validate and input data from a web page.

TOPICS COVERED

- Leveraging Form Events
- Using jQuery to Upload Files
- Server-side Data Validation
- Using AJAX for Data Validation
- Updating Content with AJAX
- Securing AJAX Requests

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: *Introduction to Database and XML with jQuery*: • Chapter 16, pp. 269-288 • Chapter 17, pp. 289-324	No	5 hrs.
Lesson: Study the lesson for this module.	No	2 hrs.
Lab: Complete the lab titled "Creating and Validating a Form."	Yes	N/A
Project: Submit Project Part 2.	Yes	2 hrs.

Total Out-Of-Class Activities: 9 Hours

EVALUATION AND GRADING

EVALUATION CRITERIA

The graded assignments will be evaluated using the following weighted categories:

CATEGORY	WEIGHT
Project	25%
Quiz	10%
Lab	35%
Research	15%
Analysis	15%
TOTAL	100%

GRADE CONVERSION

The final grades will be calculated from the percentages earned in the course, as follows:

GRADE	PERCENTAGE
A (4.0)	90–100%
B+ (3.5)	85–89%
B (3.0)	80–84%
C+ (2.5)	75–79%
C (2.0)	70–74%
D+ (1.5)	65–69%
D (1.0	60–64%

)	
F (0.0)	<60%

LEARNING MATERIALS AND REFERENCES

REQUIRED RESOURCES

COMPLETE TEXTBOOK PACKAGE

- Conger, S., Blanchard, J., Goldberg, K. H. (2014). *Introduction to Database and XML with jQuery* (Custom Edition). Boston, MA: Pearson Custom.

OTHER ITEMS

- Windows XP (or later)
- MySQL on Windows

  You can download MySQL 5.1 or later from the following website:

  http://dev.mysql.com/downloads/windows/
- Visual Studio 2010 (or other XML editor)
- Internet Information Services -IIS 5.1
- PHP on Windows http://php.iis.net/ PHP 5.5 or later
- jQuery 1.10.1 or later

  You can download jQuery 1.10.1 or later from the following website:

  http://jquery.com/download/
- VMware Player 5.2 (or later)
- Microsoft Visio 2003 (or later)

Note: You can download Windows XP, Visual Studio 2010, VMware Player, and Microsoft Visio 2003 from the DreamSpark website. Refer to the DreamSpark Installation Guide for download instructions.

RECOMMENDED RESOURCES

- ITT Tech Virtual Library (accessed via Student Portal | https://studentportal.itt-tech.edu)

  Tutorials:

  - School of Study> School of Information Technology> Tutorial Links>
    - SQLCourse
    - Tech Recipes

  Books:

  - Basic Search>

- Rutter, J. (2011). *Smashing jQuery. Hoboken, N.J. John Wiley & Sons.*
- Otero, C. & Larsen, R. (2012). *Professional jQuery (1st ed.). Hoboken, N.J. John Wiley & Sons.*
- Evjen, B. (2007). *Professional XML. Hoboken, N.J. John Wiley & Sons.*
- Hunter, D. (2007). *Beginning XML (4th ed.). Hoboken, N.J. John Wiley & Sons.*
- Fawcett, J., Quin, L., & Ayers, D. (2012). *Beginning XML (5th ed.). Hoboken, N.J. John Wiley & Sons.*
- Tarr, A. & Mostrey, W. (2012). *PHP and MySQL 24-hour trainer. Hoboken, N.J. John Wiley & Sons.*
- *Querying XML XQuery, XPath, and SQL/XML in context by Jim Melton and Stephen Buxton*
- *Beginning jQuery by Jack Franklin and Ian Devlin*
- *Pro jQuery by Adam Freeman and Fabio Claudio Ferracchiati*
- Suehring, S. & Valade, J. (2013). *PHP, MySQL, JavaScript & HTML5 all-in-one for dummies. Hoboken, N.J. John Wiley & Sons.*
- McLaughin, M. & Mikolaitis, S. (2013). *MySQL workbench data modeling & development. NY: McGraw-Hill Education*
- Valade, J. (2013). *PHP and MySQL for dummies (4th ed.). Hoboken, N.J. John Wiley & Sons.*

Articles:

- ITT Tech Virtual Library> Basic Search>
  - XML fever

INSTRUCTIONAL METHODS AND TEACHING STRATEGIES

The curriculum employs a variety of instructional methods that support the course objectives while fostering higher cognitive skills. These methods are designed to encourage and engage you in the learning process in order to maximize learning opportunities. The instructional methods include but are not limited to lectures, collaborative learning options, use of technology, and hands-on activities.

To implement the above-mentioned instructional methods, this course uses several teaching strategies, such as online lessons, research, and hand-on labs. Your progress will be regularly assessed through a variety of assessment tools including labs, research, analysis, quiz, and project.

OUT-OF-CLASS WORK

For purposes of defining an academic credit hour for Title IV funding purposes, ITT Technical Institute considers a quarter credit hour to be the equivalent of: (a) at least 10 clock hours of classroom activities and at least 20 clock hours of outside preparation; (b) at least 20 clock hours of laboratory activities; or (c) at least 30 clock hours of externship, practicum or clinical activities. ITT Technical Institute utilizes a “time-based option” for establishing out-of-class activities which would equate to two hours of out-of-class activities for every one hour of classroom time. The procedure for determining credit hours for Title IV funding purposes is to divide the total number of classroom, laboratory, externship, practicum and clinical hours by the conversion ratios specified above. A clock hour is 50 minutes.

A credit hour is an artificial measurement of the amount of learning that can occur in a program course based on a specified amount of time spent on class activities and student preparation during the program course. In conformity with commonly accepted practice in higher education, ITT Technical Institute has institutionally established and determined that credit hours awarded for coursework in this program course (including out-of-class assignments and learning activities described in the “Course Outline” section of this syllabus) are in accordance with the time-based option for awarding academic credit described in the immediately preceding paragraph.

ACADEMIC INTEGRITY

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct. For more information on the academic honesty policies, refer to the Student Handbook and the School Catalog.

INSTRUCTOR DETAILS

Instructor Name	
Office Hours	
Contact Details	

(End of Syllabus)