

ITT Technical Institute
SD3240T
Creating Websites in the LAMP
Environment
Onsite and Online Course

SYLLABUS

Credit hours: 4.5

Contact/Instructional hours: 67 (41 Theory Hours, 26 Lab Hours)

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

Prerequisites: SD2520T Introduction to Database and XML with jQuery or equivalent, SD3120T Programming in Open Source with LAMP or equivalent, SD3140T Introduction to Web Interface Design or equivalent

Course Description:

This course examines strategies and skills used to develop interactive Websites and applications in the open source environment using Linux, Apache, MySQL and PHP (LAMP) technologies

COURSE SUMMARY

COURSE DESCRIPTION

This course examines strategies and skills used to develop interactive Websites and applications in the open source environment using Linux, Apache, MySQL and PHP (LAMP) technologies.

MAJOR INSTRUCTIONAL AREAS

1. Designs Patterns for Web Applications
2. Model-View-Controller Design
3. Data Encapsulation and Protection in PHP
4. Object-Oriented Database Access
5. Secure Communication Channels
6. Authentication and Authorization Techniques
7. Asynchronous Communication with XML and JSON
8. Creating Web Services with PHP
9. Managing Websites
10. Content Management Systems
11. Search Engines
12. Social Network Integration
13. MVC Frameworks in PHP
14. Alternative Technologies

COURSE LEARNING OBJECTIVES

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

1. Describe effective techniques for building interactive Web applications in a LAMP environment.
2. Differentiate Web page presentation from business logic code and database access.
3. Create components that can be shared across Web pages.
4. Create database details within PHP objects.
5. Enable PHP pages to communicate securely with MySQL.

6. Create application to support asynchronous Web services using XML-SOAP and REST.
7. Manage content of websites using open-source software.
8. Add searching capabilities and social networking features.
9. Use multimedia effectively to enhance Web page presentation.
10. Optimize the website experience for mobile devices.
11. Identify alternate open-source frameworks for developing and implementing functional websites.

COURSE OUTLINE

MODULE 1: WEB APPLICATION DESIGN STANDARDS IN LAMP

COURSE LEARNING OBJECTIVES COVERED

- Describe effective techniques for building interactive Web applications in a LAMP environment.
- Differentiate Web page presentation from business logic code and database access.

TOPICS COVERED

- Web Application Design
- Two Layer Model
- Three Layer Model
- Software Design Patterns
- Data and Domain Patterns
- Dependency Injection
- Model-View-Controller

MODULE LEARNING ACTIVITIES	GRADE D	OUT-OF- CLASS TIME
Reading: Connolly & Hoar, Chapter 14.	No	4 hr
Reading: ITT Tech Virtual Library> Basic Search> Browse> Browse by Format> Books> Books24x7> Pitt, Chris. (2012). <i>Pro PHP MVC. Apress.> Chapters 1 and 2.</i>	No	1.5 hr
Lesson: Study the lesson for this module.	No	1.5 hr
Discussion: Participate in the discussion titled “Web Application Designs Used for LAMP Environment.”	Yes	1 hr
Lab: Complete the lab titled “Adapting Existing PHP Pages.”	Yes	N/A
Project: Read and begin the project.	No	1 hr

Total Out-Of-Class Activities: 9 Hours

MODULE 2: BUILDING SECURE DATA MODELS

COURSE LEARNING OBJECTIVES COVERED

- Create components that can be shared across web pages.
- Create database details within PHP objects.
- Enable PHP pages to communicate securely with MySQL.

TOPICS COVERED

- Data Encapsulation in PHP
- Data Protection in PHP
- Creating Classes for Database Access
- Authentication
- Authorization
- Cryptography
- HTTPS

MODULE LEARNING ACTIVITIES	GRADE D	OUT-OF-CLASS TIME
Reading: Connolly & Hoar, Chapter 10 (Sec. 10.3), Chapter 11, and Chapter 16 (Sec. 16.2–16.4)	No	10 hr
Reading: ITT Tech Virtual Library> Basic Search> Browse> Browse by Format> Books> Books24x7> Pitt, Chris. (2012). <i>Pro PHP MVC. Apress.> Chapters 3, 9, and 10.</i>	No	2 hr
Lesson: Study the lesson for this module.	No	1.5 hr
Exercise: Submit the exercise titled “Identifying Security Principles.”	Yes	2.5 hr
Lab 1: Complete the lab titled “Designing PHP Classes for User Account Information.”	Yes	N/A
Lab 2: Complete the lab titled “Implementing Authentication Strategy.”	Yes	N/A
Project: Continue working on Project Part 1.	No	3 hr

Total Out-Of-Class Activities: 19 Hours

MODULE 3: ASYNCHRONOUS COMMUNICATION AND WEB SERVICES

COURSE LEARNING OBJECTIVES COVERED

- Create application to support asynchronous Web services using XML-SOAP and REST.

TOPICS COVERED

- JavaScript and jQuery
- AJAX
- Asynchronous File Transmission
- Animation
- XML Processing
- JSON
- Interacting Asynchronously with Web Services
- Creating Web Services in PHP

MODULE LEARNING ACTIVITIES	GRADE D	OUT-OF- CLASS TIME
Reading: Connolly & Hoar, Chapter 15 (Sec. 15.1–15.5, 15.7) and Chapter 17	No	10 hr
Reading: ITT Tech Virtual Library> Basic Search> Browse> Browse by Format> Books> Books24x7> MacIntyre, P., Danchilla B., & Gogala, M. (2011). <i>Pro PHP programming. Apress.> Chapters 14 and 15.</i>	No	2 hr
Lesson: Study the lesson for this module.	No	2 hr
Exercise: Submit the exercise titled “Understanding XML and Web Services.”	Yes	2 hr
Lab: Complete the lab titled “PHP and AJAX Application.”	Yes	N/A
Project: Submit Project Part 1.	Yes	4 hr

Total Out-Of-Class Activities: 20 Hours

MODULE 4: ADVANCED WEBSITE INTEGRATION

COURSE LEARNING OBJECTIVES COVERED

- Manage content of websites using open-source software.
- Add searching capabilities and social networking features.

TOPICS COVERED

- Content Management Systems
- Word Press
- Search Engines
- Indexing and Reverse Indexing
- Search Optimization
- Social Network Integration

MODULE LEARNING ACTIVITIES	GRADE D	OUT-OF- CLASS TIME
Reading: Connolly & Hoar, Chapters 18, 20, and 21.	No	11 hr
Discussion: Participate in the discussion titled “Content Management”	Yes	N/A
Exercise: Submit the exercise titled “Understanding Search Engines.”	Yes	3 hr
Lab 1: Complete the lab titled “Optimizing a Site for Search Engines.”	Yes	N/A
Lab 2: Complete the lab titled “Integrating Social Network Widgets in a Website.”	Yes	N/A
Project: Continue work on Project Part 2.	No	3 hr

Total Out-Of-Class Activities: 17 Hours

MODULE 5: MULTIMEDIA AND MOBILE DEVICE PRESENTATION

COURSE LEARNING OBJECTIVES COVERED

- Use multimedia effectively to enhance Web page presentation.
- Optimize the website experience for mobile devices.

TOPICS COVERED

- Web Media
- Digital Representation of Images
- Image File Formats
- Audio Video
- HTML5 on Mobile Devices
- Web Services from Mobile Devices
- QR Codes

MODULE LEARNING ACTIVITIES	GRADE D	OUT-OF- CLASS TIME
Reading: Connolly & Hoar, Chapter 7	No	4 hr
Reading: ITT Tech Virtual Library> Basic Search> Browse> Browse by Format> Books> Books24x7> <ul style="list-style-type: none"> • Campesato, Oswald. (2013). <i>jQuery, CSS3, and HTML5 for mobile and desktop devices. Mercury Learning.> Chapters 8, 9, 11, and 12.</i> • <i>Beginning smartphone web development: building Javascripts, CSS, HTML and Ajax-based applications for iPhone, Android, Palm Pre, Blackberry, Windows Mobile and Nokia s60.> Chapters 4 and 11.</i> • MacIntyre, P., Danchilla, B., & Gogala, M. (2011)> <i>Pro PHP Programming. Apress.> Chapter 3.</i> 	No	5 hr
Exercise: Submit the exercise titled “Conceptualizing Multimedia.”	Yes	1 hr
Lab 1: Complete the lab titled “Apache Mobile Filter.”	Yes	N/A
Lab 2: Complete the lab titled “Generating QR Codes from PHP.”	Yes	N/A
Project: Continue work on Project Part 2.	Yes	3 hr

MODULE LEARNING ACTIVITIES	GRADE D	OUT-OF- CLASS TIME
Final Exam: Prepare for the final exam.	No	5 hr

Total Out-Of-Class Activities: 18 Hours

MODULE 6: FRAMEWORKS AND ALTERNATIVE TECHNOLOGIES

COURSE LEARNING OBJECTIVES COVERED

- Describe effective techniques for building interactive Web applications in a LAMP environment.
- Differentiate Web page presentation from business logic code and database access.
- Create components that can be shared across Web pages.
- Create database details within PHP objects.
- Enable PHP pages to communicate securely with MySQL.
- Create application to support asynchronous web services using XML-SOAP and REST.
- Manage content of websites using open-source software.
- Add searching capabilities and social networking features.
- Use multimedia effectively to enhance Web page presentation.
- Optimize the website experience for mobile devices.
- Identify alternate open-source frameworks for developing and implementing functional websites.

TOPICS COVERED

- Backbone
- Bootstrapping
- CodeIgnitor
- Zend Framework
- CakePHP
- PHP Alternatives

MODULE LEARNING ACTIVITIES	GRADE D	OUT-OF-CLASS TIME
Reading: Connolly & Hoar, Chapter 15, (Section 15.6)	No	1 hr
Reading: ITT Tech Virtual Library> Basic Search> Browse> Browse by Format> Books> Books24x7> Pitt, Chris. (2012). <i>Pro PHP MVC. Apress.> Chapters 22, 23, 26, 27, 30, and 31.</i>	No	3 hr
Reading: ITT Tech Virtual Library> Basic Search> Browse> Browse by	No	1.5 hr

MODULE LEARNING ACTIVITIES	GRADE D	OUT-OF- CLASS TIME
Format> Books> Books 24x7> Smith, E., & Nicholas, R. (2007). <i>Ruby on rails enterprise application development: plan, program, extend: building a complete ruby on rails business application from start to finish</i> . Packt Publishing.> Chapter 1.		
Discussion: Participate in the discussion titled “Advantages and Disadvantages of MVC Framework.”	Yes	N/A
Project: Submit Project Part 2.	Yes	4 hr
Final Exam: Take the final exam.	Yes	N/A

Total Out-Of-Class Activities: 9.5 Hours

EVALUATION AND GRADING

EVALUATION CRITERIA

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

Grading Categories	Grading Weight
Discussion	10%
Lab	35%
Exercise	20%
Project	25%
Final Exam	10%
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

- Connolly, R., & Hoar, R. (2015). *Fundamentals of web development (1st ed.)*. Upper Saddle River, NJ: Pearson.

OTHER ITEMS

- Windows XP (or later)
- VMWare Player 5.2 (or later)
- Fedora 20
- Apache 2.0
- MySQL on Windows

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

<http://dev.mysql.com/downloads/windows/>

- Eclipse IDE for Java EE Developers
- Eclipse PHP Development Tools (PDT)

RECOMMENDED RESOURCES

- ITT Tech Virtual Library (accessed via Student Portal | <https://studentportal.itt-tech.edu>)
 - Basic Search> Browse> Browse by Format> Books> Books24x7>
 - Campesato, Oswald. (2013). *jQuery, CSS3, and HTML5 for mobile and desktop devices*. Mercury Learning.
 - MacIntyre, P., Danchilla B., & Gogala, M. (2011). *Pro PHP programming*. Apress.
 - Pitt, Chris. (2012). *Pro PHP MVC*. Apress.
 - Porebski, B., & Przystalski, K., & Nowak, L. (2011). *Building PHP applications with Symfony, CakePHP, and Zend framework*. Ind: Wiley Publishing.
 - Smith, Elliot & Nichols, Rob. (2007). *Ruby on rails enterprise application development: plan, program, extend: building a complete ruby on rails business application from start to finish*. Packt Publishing.

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 hands-on labs and lessons. Your progress will be regularly assessed through a variety of assessment tools including discussion, exercise, lab, project, and a final exam.

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.

SD3240 Creating Websites in the LAMP Environment

Syllabus

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)