NEW YORK CITY COLLEGE OF TECHNOLOGY/CUNY
Computer Systems Technology Department

CST3519 – Advanced Web Client Technologies

(3 credits, 2 class hours, 2 lab hours)

INSTRUCTOR:	OFFICE:
E-MAIL:	PHONE:
OFFICE HOURS:	

Course Description:
This course focuses on advanced Web client technologies such as XML (eXtensible Markup Language), javascript frameworks: Ajax, jQuery, AngularJS, and the development of simple Web applications with these technologies. Students will learn the tools and standards related to XML, XML tree structures, and technologies used to transform XML documents. These technologies include XPath, DTD (Document Type Definition), XML Schema, and XSLT (eXtensible Stylesheet Language Transformation). Students will work on practical applications that apply Ajax, jQuery, AngularJS to speed up the interaction between Web browsers and Web servers.

Course Objectives:

Upon successful completion of the course, students should be able to:

1. Demonstrate an understanding of the limitations of HTML (HyperText Markup Language) for the creation of Web documents
2. Demonstrate an understanding of the importance of XML in creating documents
3. Demonstrate an understanding of structure of an XML document and its data organization
4. Design XML content models using DTDs and schemas
5. Create XML documents using a content model
6. Validate XML documents using DTDs and schemas
7. Transform XML documents using CSS (Cascade Style Sheet), XSLT, and XPath
8. Develop practical applications using the DOM
9. Employ Javascript language to handle the interchange of information between Web browsers and Web servers, packaging the data received in XML documents.

Prerequisites:

CST2309 – WEB PROGRAMMING I

Required text:

Patrick Carey & Sasha Vodnik “New Perspectives on XML, Comprehensive”, 3rd Ed., Cengage, 2015, ISBN: 978-128-507-582-2

Academic Integrity Policy:

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

Grade:

Final Exam	35%
Midterm Exam	35%
Project	20%
Participation & Tests	10%

Course Outline:

Week	**Topics**	**Reading**
1	Creating an XML Document	Ch 1
2	Working with Namespaces, Validating XML documents	Ch 2, 3
3, 4	DTD and Schema, Cascade Style Sheets	Ch 4, 5, Appendix D & E
5, 6	Working with XSLT and XPATH	Ch 6
7, 8	Creating a Computational Style Sheet	Ch 7Review & Midterm Exam
9	Review & Midterm Exam	
10, 11	Using Ajax, jQuery, and AngularJS	Creating Element GroupsCh 8Using XML as a Data Source
12, 13, 14	Ajax/jQuery/Angular with HTML, Javascript, PHP, MySQL, Apache in Web applications	
15	Review & Final Exam	

Assessment Criteria:

For the successful completion of this course a student should be able to:	**Evaluation methods and criteria**

1. Build a basic XML document	1. Students will use a standard text editor, either Notepad or KomodoEdit (open source), to create basic XML documents.
2. Demonstrate an understanding of Namespaces	2. Students will create XML documents that employ Namespaces to avoid element (tags) conflicts.
3. Specify allowable structure for classes of XML documents using DTDs and Schemas.	3. Students will write a DTD and an XML schema for simple XML based languages.
4. Build valid XML documents based on DTDs and Schemas.	4. Students will validate XML documents based on DTDs and Schemas.
5. Learn how to use XSLT and XPath.	5. Students will create style sheets for processing and manipulating XML documents.
6. Use XSLT to create a formatted document using CSS.	6. Students will continue to build XML documents using XSLT and will be tested on it.
7. Create XML schema incorporating Element Groups	7. Students will create XML schema incorporating Element Groups. Students will be tested through quizzes and exams.
8. Demonstrate an understanding of how XML can be used as storage for Data Sources	8. Students will write programs to demonstrate the advantages of using XML for storing data.
9. Use the Document Object Model to process XML documents	9. Students will develop XML applications using the DOM.
10. Use Javascript to handle communication between Web browsers and Web servers	10. Students will verify how effective Ajax is in updating a Web page while allowing the user to interact freely with the rest of the browser client as the Ajax engine works in the background.

Bibliography:1. I. Williams, "*Beginning XSLT and XPATH: Transforming XML Documents and Data",* John Wiley & Sons, 2009

2. D. Hunter et.al., "Beginning XML", 4th Ed., John Wiley & Sons (Wrox), 2007

3. A. Moller & M. Schwartzbach, "*An Introduction to XML and Web Technologies*", Addison-Wesley, 2006

4. Grauer & Barber, "*Exploring XML*", 1st Ed., Prentice-Hall, 2005

5. M. Knobloch & M. Kopp, "*Web Design with XML",* John Wiley & Sons, 2003

6. D. Peltzer, "*XML: Language Mechanics and Applications*", Addison-Wesley, 2003

7. Edmond Woychowsky, *"*AJAX: Creating Web Pages with Asynchronous JavaScript and XML: Creating Web Pages with Asynchronous JavaScript and XML*"*, Prentice Hall, 2007