EXPANDED COURSE DESCRIPTION
ELECTRICAL ENGINEERING AND COMPUTER SCIENCE
Lassonde School of Engineering
Electrical Engineering Computer Science
LE / EECS 4413 3.0 SECTION A
BUILDING E-COMMERCE SYSTEMS
FALL 2018 / WINTER 2019

Last Modified Date: 08/20/2018

COURSE CALENDAR DESCRIPTION
A study of the technical infrastructure that underlies Electronic Commerce on the Internet. The foundational concepts are presented through a series of projects that use an industrial-strength framework on the server side, standard-compliant technologies on the client side, and a variety of messaging protocols on the network side. Best practices, security concerns, and performance issues are emphasized throughout. Prerequisite: cumulative GPA of 4.50 or better over all major EECS courses (without second digit "5"); LE/EECS 2030 3.00 or LE/EECS 1030 3.00; LE/EECS 2011 3.00. Previously offered as: LE/CSE 4413 3.00.

INSTRUCTOR(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Section / Format / Term</th>
<th>Contact Email</th>
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<tbody>
<tr>
<td>Roumani, Hamzeh</td>
<td>Sec. A / LECT / F</td>
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ADDITIONAL INFORMATION
This course studies the technical infrastructure that underlies Electronic Commerce on the Internet. The foundational concepts are presented through a series of projects that use industrial-strength frameworks on the server side, standard-compliant technologies on the client side, and a variety of messaging protocols on the network side. Best practices, security concerns, and performance issues are emphasized throughout. A good knowledge of Java is assumed. Familiarity with the upper networking protocols, HTML, JavaScript, and SQL is helpful but not required.

COURSE TOPICS
A. Multi-Tier Architecture
   • TCP and HTTP clients and servers & Stateful and RESTful Web Services (sockets, cookies, NodeJS, Tomcat, publish/subscribe scopes, soap and wsdl).
   • The Data Tier (sql, jdbc, dal/dao; xml and json messaging).
   • Web Analytics (lifetime event listeners, ad-hoc features and filters, tracking)
B. The Client Side
   • Content vs Presentation vs Formatting (xml, html, css)
   • Binding and Templating (Java/TypeScript, Express, Handlebars, Angular or React)
   • Dynamic view generation (SPA, dom, ajax, json)
C. Cross-Cutting Themes
   • Design Patterns and Best Practices (mvc, front controller, annotation)
   • Web Security (authentication, csrf, injection)
   • Scalability and Emerging Trends (threading, clustering, connection pooling; push/pull; cloud computing; other frameworks)

COURSE LEARNING OUTCOMES
1. Create a TCP or HTTP server or client of a given specs and exchange / transform data in various
2. Create a webapp (or critique one) that serves a page, performs a computation (possibly involving a database or a service), and returns the result to the
3. Given a webapp, augment it with analytics and client-side
4. Given a webapp, identify its security vulnerabilities, harden it, and add
5. Given a webapp, turn it into a service and shift its view handling to the client
6. Explain one of the covered frameworks and apply it to a given

RECOMMENDED COURSE RESOURCES
- J2EE at com
- The W3Schools at com
- The Angular Tutorial at io
- TypeScript at com

GRADING SCHEME
- 20% - Programming Test #1
- 20% - Programming Test #2
- 20% - Programming Test #3
- 12% - Subject Test #1
- 12% - Subject Test #2
- 16% - Group Project

WEEKLY SCHEDULE
1. TCP and HTTP Clients and Servers
2. Web Clients and Servers
3. Application Servers
4. Assessment
5. Authentication & Web Security
6. Shopping Cart I: MVC & DAO
7. Shopping Cart II: Analytics & Injection
8. Assessment
9. Client-Side Technologies
10. Single-Page Applications & Ajax
11. Routing, Binding, and Templating Frameworks
12. Assessment

ACADEMIC INTEGRITY LINKS
- Senate Policy on Academic Honesty - http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/
- Academic Integrity - http://lassonde.yorku.caacademic-integrity

STUDENT LINKS
- Student Rights and Responsibilities - http://oscr.students.uit.yorku.ca/student-conduct
- Religious Observance - https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs
- Counselling and Disability Services - http://cds.info.yorku.ca/
- York University’s Policies on Gender/LGBTQ*/Positive Space - http://rights.info.yorku.ca/lgbtq/

LAND ACKNOWLEDGEMENT
• We acknowledge our presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been care taken by the Anishinabek Nation, the Haudenosaunee Confederacy, the Huron-Wendat, and the Métis. It is now home to many Indigenous Peoples. We acknowledge the current treaty holders, the Mississaugas of the New Credit First Nation. This territory is subject of the Dish With One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region.
• The Indigenous Framework for York University: A Guide to Action can be found here: http://indigenous.info.yorku.ca/
• Meaning of a land acknowledgement: http://healthydebate.ca/opinions/indigenous-land-acknowledgements

Many courses utilize Moodle, York University’s course website system. If your course is using Moodle, click here to access it.
Moodle @ York University