This course deals with the elicitation, specification and analysis of software requirements and provides a critical description of available methods and tools, and practical exercises on applying these methods and tools to realistic problems. Three lecture hours per week. One laboratory hour per week. One term. Three credits. Prerequisites: 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 3311 3.00. Course credit exclusions: LE/CSE 4312 3.00, AK/AS/SC/CSE 4312 3.00.

### INSTRUCTOR(S)

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<th>Name</th>
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<td>Ostroff, Jonathan</td>
<td>Sec. E / LECT / F</td>
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### ADDITIONAL INFORMATION

Software requirement engineers are experts at eliciting the needs of their customers, translating customer needs into a precise requirements documents (that describes what – not how – customer needs shall be satisfied), and providing systematic evidence-based methods to validate the requirements and verify that the final software product satisfies the requirements. Precise software requirements documents are especially needed in safety critical cyber-physical systems (e.g. nuclear reactors, medical devices and transportation systems) and mission critical business systems (e.g. banking systems, health provision and cloud systems). At the end of the course, students will be able to:

1. Elicit customer requirements by analyzing customer goals and needs
2. Write precise requirements documents. To do this students will be able to:
   - Develop the system overview, identify the system boundary and draw a context diagram
   - Identify the monitored variables and events and controlled variables
   - Identify the environmental assumptions and constraints
   - Describe the functional requirements using tabular expressions (function tables) that specify the mathematical relation between the monitored variables and events and the controlled variables
   - Describe the non-functional requirements
   - Prove that the functional requirements are complete, disjoint and well-defined
   - Provide a complete set of use cases and corresponding acceptance tests so that each requirement is a verifiable contract of customer needs
   - Validate the functional requirements by proving that they preserve safety properties (derived from such methods as hazards analysis) and prove that the use cases satisfy the function tables

A work-intensive project will allow students to apply their knowledge to a small but non-trivial example.

### 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

**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.ca/academic-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/

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

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