EXPANDED COURSE DESCRIPTION
EARTH, SPACE SCIENCE AND ENGINEERING
Lassonde School of Engineering
Earth and Space Science and Engineering
LE / ESSE 3600 3.0 SECTION A
GEOGRAPHICAL INFORMATION SYSTEMS (GIS)
FALL 2019 / WINTER 2020

Last Modified Date: 08/07/2019

COURSE CALENDAR DESCRIPTION

Fundamentals of geographic information systems (GIS) and spatial analysis. Functional requirements of GIS. Geopositioning, map projections, coordinate systems and transformations. Data sources. Modelling of real world, spatial and attribute data. Vector and raster data models and structures. Data conversion and integration. Topological relationships and structures. Data processing and spatial analysis. Editing and data quality. Data management and spatial database structures. Visualization of spatial data. Introduction to GIS modelling. Prerequisites: LE/ESSE 1010 3.00 or LE/ESSE 1012 3.00; LE/EECS 1011 3.00 or LE/EECS 1541 3.00; SC/MATH 1014 3.00; SC/MATH 1025 3.00; SC/MATH 2930 3.00 or SC/MATH 2565 3.00 or SC/GEOG 2420 3.00;

INSTRUCTOR(S)

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<tr>
<th>Name</th>
<th>Section / Format / Term</th>
<th>Contact Email</th>
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<tr>
<td>Jadidi Mardkheh, Amaneh</td>
<td>Sec. A / LECT / F</td>
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ADDITIONAL INFORMATION

COURSE LEARNING OUTCOMES
1. Describe the principles of geographic information systems (GIS) and explain their applications.
2. Describe and explain spatial modelling using vector and raster data models, data structures and topology.
3. Define geopositioning and describe sources of spatial data.
4. Describe structures of spatial databases.
5. Explain spatial analysis and GIS modelling and identify, explain and apply related GIS methods.
6. Demonstrate the use of GIS through hands-on labs and group projects using GIS software for various applications.

REQUIRED TEXTS AND MATERIALS

SUGGESTED TEXTS AND MATERIALS

**Web sites**
• GIS tutor (http://www.gistutor.com/)
• ArcGIS resources (http://resources.arcgis.com/en/Tutorials/)
• The NCGIA Core Curriculum in GIScience (http://www.ncgia.ucsb.edu/giscc/)
• The Geographer’s Craft (http://www.colorado.edu/geography/gcraft/notes/notes.html)
• The GIS Primer: An introduction to GIS (http://www.innovativegis.com/basis/primer/primer.html)
• Canadian Geospatial Data Infrastructure (CGDI) (www.geoconnections.ca)
• GeoBase (http://www.geobase.ca/)
• GeoGratis (http://www.geogratis.org/)
• GIS Café (www.giscafe.com)
• Canadian Institute of Geomatics (CIG) (http://www.cig-acsg.ca)

**Journals**
• Geomatica
• ISPRS International Journal of Geo-Information
• International Journal of Geographic Information Science
• Journal of Geographical Systems
• Photogrammetric Engineering and Remote Sensing
• Geocarto International
• GIM International
• GeoConnexion
• GEO Informatics

**Questions Bank**
• C5 and E1: https://cbeps-cceag.ca/previous-years-exams

**GRADING SCHEME**

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<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Laboratory assignments and Group Project</td>
<td>30%</td>
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<tr>
<td>Participation</td>
<td>5%</td>
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<td>Midterm examination(s)</td>
<td>25%</td>
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<td>Final examination</td>
<td>40%</td>
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**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
• Academic Accommodation for Students with Disabilities - http://secretariat-policies.info.yorku.ca/policies/academic-accommodation-for-students-with-disabilities-policy/
• Student Accessibility Services (SAS) - https://accessibility.students.yorku.ca/
• York University’s Policies on Sexual Violence - http://secretariat-policies.info.yorku.ca/policies/sexual-violence-policy-on/
• 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