EXPANDED COURSE DESCRIPTION
EARTH, SPACE SCIENCE AND ENGINEERING
Lassonde School of Engineering
Earth and Space Science and Engineering
LE / ESSE 4640 3.0 SECTION A
DIGITAL TERRAIN MODELING
FALL 2017 / WINTER 2018

Last Modified Date: 08/23/2017

COURSE CALENDAR DESCRIPTION

Digital Terrain Modeling concepts. Mathematical techniques in data acquisition, processing, storage, manipulation and applications. DTM. Surface representation using moving averages, linear projection and Kriging techniques. Grid resampling methods and search algorithms. DTM derivatives and applications. LIDAR systems and applications. Two lecture hours and three hours of laboratory exercises per week. One term. Three credits. Prerequisites: LE/ESSE 2620 3.00; LE/ESSE 3620 3.00. Prior to Fall 2014: Prerequisites: LE/EATS 2620 4.00 or LE/ENG 2110 2.00; LE/EATS 3620 4.00 or LE/ENG 3110 4.00. Prior to Summer 2013: Prerequisites: SC/EATS 2620 4.00 or SC/ENG 2110 2.00; SC/EATS 3620 4.00 or SC/ENG 3110 4.00.

INSTRUCTOR(S)

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TOPICS AND CONCEPTS

Content:
- Introduction and definitions.
- Surface representation
- Terrain analysis, slope, aspect, volumes and watershed
- TIN generation, Delauney triangulation, Voronoi diagrams.
- Global interpolation methods; Trend surface analysis (TSA).
- Local interpolation methods.
- Geostatistical methods; Kriging interpolation method.
- Lidar systems and lidar data acquisition
- Photogrammetric, cartographic and radar acquisition methods for elevation data
- Applications

Evaluation:
Assignments 20%
Group Project 15%
Mid-term Test 20%
Final Exam 45%

Required Text:
Suggested bibliography:

Course Policies:
Further course information is available on Moodle. This course is also offered in blended mode. Access to the course via Moodle at: learn.lassonde.yorku.ca

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/

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