EXPANDED COURSE DESCRIPTION
EARTH, SPACE SCIENCE AND ENGINEERING
Lassonde School of Engineering
Earth and Space Science and Engineering
LE / ESSE 2620 3.0 SECTION A
FUNDAMENTALS OF SURVEYING
FALL 2019 / WINTER 2020

Last Modified Date: 07/18/2019

COURSE CALENDAR DESCRIPTION
Coordinate systems, conventions and transformations. First and second geodetic problems: trig sections, traverses, areas, volumes. Basics of random error theory and error propagation. Basics of map projection. Distance measurements, angular measurements, and heights. Topographic mapping and property surveys. Route surveying. Construction surveying. Introduction to other surveys: alignment surveys for buildings, bridges, dams, tunnels, and pipelines. Prerequisites: LE/ESSE 1012 3.00; SC/MATH 1014 3.00; SC/MATH 1025 3.00 OR SC/MATH 1021 3.00;

INSTRUCTOR(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Section / Format / Term</th>
<th>Contact Email</th>
<th>Contact Phone</th>
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<tbody>
<tr>
<td>Wang, Jianguo</td>
<td>Sec. A / LECT / F</td>
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ADDITIONAL INFORMATION

GRADING
Lab Assignments - 40%
Mid-term test - 15%
Participation - 5%
Final Exam - 40%

Any student, who misses maximum three (3) weekly lab sessions for any reason, will automatically prevent from passing this course without exception.
The weight of the missed mid-term exam will be shifted to the final exam if you have an officially valid excuse such as a medical doctor’s note.

COURSE LEARNING OUTCOMES
• Develop knowledge and understanding of the fundamental concepts of surveying and mapping.
• Develop knowledge, understanding and capability of handling, taking care and testing of survey equipment both in laboratory and field environments
• Develop knowledge, understanding, and skills in measurement collection, processing, and analysis via calculations, computer programming and technical drawing
• Develop knowledge and understanding of surveying methods, techniques, measurement errors and accuracies, and apply them in practice
• Gain field and office experience, and develop practical skills on use of surveying instruments and on key survey operations (e.g., topographic mapping, ordinary leveling, basic control surveys, route surveying).
• Extend and apply fundamental surveying knowledge to specific surveying applications

FORMAT
Since every individual responds to different stimuli in his or her learning process, the presentation of the material will be done in a variety of ways. All of them will require work on your part to be effective. We will take a participative approach to learning. This means that faculty and students learn together by doing. We will learn with each other and from each other. Therefore, we are all responsible for being prepared for class:

- Lectures will be conducted in form of teaching, discussion and participation. Students are required to participate actively, and design and solve problems by synthesizing knowledge, experience and skills from previous courses.
- Each session will normally commence with a brief review of the concepts treated previously. New subject(s) will be presented immediately after the review, according to the tentative lecture schedule provided in this handout. Participation is an essential element of learning: It will be encouraged and assessed.
- Examples and instrument demos will always be given to understand the concepts.
- All sessions will be based on, but not limited to the textbook. Additional materials may also be supplied by the instructor for further studies upon the potential needs. The students will be required to actively search relevant literature to further their knowledge.
- Students may be required to visit selected industrial companies in Geomatics Engineering. The appointments will be arranged separately.

LABORATORY ASSIGNMENTS & EXERCISES

- Laboratory assignments are most essential for the development of skills and experience. They will comprise a variety of activities that are usually required in the design, planning, execution, analysis and interpretation of data, and preparation of comprehensive reports.
- Laboratory exercises will be conducted in the lab or outside infield.
- Laboratory reports will have clear due dates. You are expected to describe your labs against the lab’s objectives in details, and to summarize the results in reports.
- Participation in all laboratory exercises is mandatory.
- Grades for late laboratory reports will be decreased by 20% per day for each day overdue. Late lab reports must be handed in personally to your TA or INSTRUCTOR.

GETTING FEEDBACK ON YOUR PROGRESS

Feedback on your progress will be provided in four different ways:

- Each class session should give you a fair idea how well you have understood the relevant material.
- Laboratory exercises: You will be asked to execute mandatory laboratory assignments, to solve specific problems and to write reports. Your participation is essential and will be assessed.
- Mid-term test
- Final exam

ANNOUNCEMENTS

Announcements and information related to the course, such as special lectures, class cancellations, change of due dates, professional activities, Internet links, and others will be emailed to the students or announced in class. Please check regularly for up-to-date announcements and information.

ACADEMIC INTEGRITY

All students should take the time to acquaint themselves with the university’s policy concerning academic integrity in courses. Cheating, plagiarising and making unauthorized multiple submissions of academic assignments are not allowed. You are all advised to read about this at http://www.yorku.ca/academicintegrity (‘For students’ session), and to complete the Academic integrity tutorial at http://www.yorku.ca/tutorial/academic_integrity/. You should print the results page of your successful quiz and keep it for verification if asked.

Ethical behaviour must be observed at all times.
SAFETY IN LAB AND FIELD

No job is so important and no service so urgent that we cannot take time to perform our work safely. The following is not intended to be an all-inclusive capsule of safety requirements.
• Students comply with all safety regulations, policies of Lassonde School of Engineering and York University at
• Wear personal protective and safety equipment in all designated areas or when otherwise directed to do
• Immediately report to TA or course Director if any safety incident occurs or may
• Do not work on any street/road to avoid any
• Each individual in lab or in field has the responsibility and obligation to the other group members to work safely. If one sees another one perform an unsafe act, they should call this to the other person’s attention, whether the unsafe act affects only the individual or the whole
• The equipment used has the potential to become very hazardous objects and must be properly secured for
• The survey instruments should be protected from any potential

COURSE OUTLINE
1. Surveying and mapping
2. Field and office work
3. Concepts of error analysis
4. Distance measurements
5. Levelling
6. Angle and direction measurements
7. Survey operations
8. Basic control surveys
9. Topographical Mapping, control and topographic surveys
10. Route surveying
11. Construction surveying

TEXT BOOKS

SUGGESTED REFERENCES

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**