

York University
Faculty of Science and Engineering

SC/EATS 2620 4.0 and SC/ENG 2120 4.0

Fundamentals of Surveying

Winter 2008

Course Director

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Lectures

Thursdays, 15:00 – 18:00 (3:00p.m. – 6:00p.m.)
Room: FS020

Laboratory exercises

Fridays, 12:30-15:30 (0:30p.m. – 3:30p.m.)
Room: PSE 020

Office Hours

Tuesday, 10:00 – 13:00 (10:00a.m. – 1:00p.m.)
And per appointment

Assessment

Lab Assignments	45%
Mid-term test	15%
Participation	5%
Final Exam	35%

Attention: Students, who miss maximum 3 lab assignments for any reason, will automatically prevent from passing this course without exception.

Grade System

=90%	A+
80-89%	A
75-79%	B+
70-74%	B
65-69%	C+
60-64%	C
55-59%	D+
50-54%	D
40-49%	E
<39%	F

Final marks from weighted averages will be converted to letter grades according to the University's regulations

GENERAL COURSE INFORMATION

1. Objectives

- Familiarization with the fundamental concepts of surveying and mapping.
- Understanding of surveying methods, techniques, measurement errors and accuracies.
- Handling, taking care and testing of survey equipment both, in laboratory and field environments.
- Acquiring field experience and developing skills on instrument use and on key survey operations.
- Developing skills in data collection, processing, and analysis via calculations, computer programming and technical drawing.
- Being capable of performing fundamental surveys in practice.

2. 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.

3. Laboratory Assignments and 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 in the field.
- 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

4. 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.

5. 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/](http://www.yorku.ca/tutorial/academic%20integrity/). 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 York University.
- Wear personal protective equipment in all designated areas or when otherwise directed to do so.
- Immediately report to TA or course Director if any safety incident occurs or may occur.
- 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 team.

- The equipment used has the potential to become very hazardous objects and must be properly secured for travel.
- The survey instruments used should be protected from any potential damage.

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. Control and topographic surveying.
9. Route surveying.
10. Construction surveying.

TEXT BOOKS

Anderson, MJ., and E.M. Mikhail (1998): Surveying – Theory and preactice. McGraw-Hill, (7th edition), 1998. **Required**

Wang, Jian-Guo (2007): Fundamentals of Surveying, Lecture slides, Geomatics Engineering, York University, 2007.

SUGGESTED REFERENCES

1. Wolf, P.R., and C.D. Ghilani, (2002). Elementary Surveying. An Introduction to Geomatics. Prentice Hall, New Jersey (10th Edition).
2. Kavanagh, Barry F. (2007): Surveying with Construction Applications, 6th Edition, Prentice Hall, 2007.
3. Schofield, W. (2001): Engineering Surveying, 5th Edition, Elsevier Butterworth-Heinemann, New York, 2001.
4. Leick, A, (1995). GPS Satellite Surveying. John Wiley, New York (2nd Edition).
5. Ghilani, C.D. and Wolf, P.R. (2006), Adjustment Computations: - Spatial Data Analysis, John Wiley & Sons (4th edition), 2006.
6. Cole, G.M. and Harbin, A.L.(2006): Surveyor Reference Manual, 4th Edition, Professional Publications, INC, Belmont CA, 2006.