

FUNDAMENTALS OF SURVEYING/SURE 110

Spring, 2006/07 (4 Credit Hours)

Instructor:	Prof. Robert Burtch
Office (room number/building):	Johnson Hall 304
Office Phone:	591-2634
Office Hours:	T 3:00-3:50, W 9:00-9:50, R 3:00-3:50, F 10:00-10:50
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PREREQUISITE COURSES/SPECIAL SKILLS: Knowledge of fundamental trigonometry and algebra

COURSE DESCRIPTION:

Orientation and introduction in proper field surveying theory and techniques. Subject areas include taping, tape corrections, leveling, angle measurements, traversing, traverse adjustments, contouring, fundamentals of mapping, and proper use and care of surveying instruments.

COURSE OBJECTIVE/FOCUS:

- a) Demonstrate the ability to work within a team environment
- b) Demonstrate an ability to solve surveying problems using mathematics
- c) Learn how to design a traverse, take observations, perform computations, and analyze and interpret the data
- d) Recognize the importance of surveying in other disciplines and consequences of dishonesty during observation, computation, and reporting of survey data
- e) Plot the map and write a report

REQUIRED COURSE MATERIALS:

Textbook:	Surveying: Principles and Application, 7 th edition, by B. Kavanagh, Pearson/Prentice Hall
Reference:	Surveying: Theory and Practice, 7 th edition, by J. Anderson and E. Mikhail, McGraw-Hill
Supplies:	Field book, straight edge, engineer's scale, triangle (at least one, either a 30°-60°-90° or 45°-45°-90°). It would also be beneficial to have a curve template

COURSE SCHEDULE:

Lecture: T, R 4:00-4:50, SWN 211; Laboratory: W, F 12:00-2:50, SWN 211

Week 1 Jan 8 – 12	Introduction: understand course objectives, attendance, and grading policy; understand the history of surveying; know the types of surveying; be able to identify the different types of measurement; know the requirements of good field notes.	Chapter 1 and Appendix H.1
Week 2 Jan 15 - 19 (No class Jan 15)	Distance measurement: know the types of distance measurement; be able to perform taping over different types of terrain; be able to perform taping corrections including slope, standard length, temperature, and sag; be able to identify random, systematic and blunders in taping; know the different units of length and be able to convert from one unit to another.	Chapter 2
Week 3 Jan 22 - 26	Distance Measurement	Chapter 2
Week 4 Jan 29 – Feb 2	Leveling: be able to define: level line, horizontal line, level surface, plane surface; understand the theory of differential leveling; know the effects of curvature and refraction and how to deal with them; know the theory of level instrumentation; be able to determine the sensitivity of the level bubble; be able to perform a two peg test; be able to perform simple level loop adjustments; understand the sources of mistakes and errors in leveling; know the principles of trigonometric, and barometric leveling and profile and cross sectioning.	Chapter 3
Week 5 Feb 5 - 9	Mid-Term Exam, Feb 8 Leveling	Chapter 3
Week 6 Feb 12 - 16	Leveling	Chapter 3
Week 7 Feb 19 - 23	Horizontal angle measurement: be able to define meridian, azimuth, bearing; be able to compute bearings and azimuths from angles and vice versa; be able to identify the functions of the various parts of engineering transits; be able to read various types of verniers; know how to measure angles by repetition and double centering.	Chapters 4 and 5
Week 8 Feb 26 – Mar 2	Horizontal angle measurement	Chapters 4 and 5
Mar 5 - 9	Spring Recess – No classes	
Week 9 Mar 12 - 16	Horizontal angle measurement	Chapters 4 and 5

Week 10 Mar 19 - 23	Mid-term Exam Mar 22 Traversing and traverse adjustment: understand the different types of traverses: open and closed; be able to adjust for angular error within a traverse; know how to compute latitudes and departures; be able to compute linear and relative error of closure; know how to perform traverse adjustment by Compass Rule and Transit Rule; understand how to find the final adjusted traverse values and coordinates; know how to compute area by DMD and coordinates.	Chapter 6
Week 11 Mar 26 - 30	Traversing and traverse adjustment	Chapter 6
Week 12 Apr 2 – 6 (No classes Apr 5-6)	Tacheometry principles and application: understand the principles of tacheometric surveys, be able to perform detail surveys using tacheometric principles	Appendix H.4
Week 13 Apr 9 - 13	Tacheometry principles and applications	Appendix H.4
Week 14 Apr 16 - 20	Topographic Surveys: be able to perform surveys using stadia measure; understand the concepts of the subtense bar.	Chapter 8
Week 15 Apr 23 - 27	Topographic Surveys	Chapter 8
Week 16	Final Exam: Tuesday, May 1, 4:00 – 5:40	

LAB AND HOMEWORK ASSIGNMENTS:

All work will be due on the date specified. Late assignments will be assessed a penalty of 5% per day or fraction thereof. All work must be completed to receive a passing grade for this course. No assignments will be accepted after the unit exam in which the assignment was given. Each assignment will be submitted in a report folder. A cover sheet will be included with each assignment identifying the assignment, student name, and class. Unless otherwise stated, only one assignment per folder will be accepted. Assignments will be typed, unless the work requires numerical solutions. It is assumed that you can put together a correctly structured assignment, free of technical and spelling errors. Assignments with more than 4 combined spelling or grammar errors will be returned to be rewritten. I will require any student that is found to have significant deficiencies in their writing to use the services of the University Writing Center in an effort to improve such deficiencies to a satisfactory level. When graphical output is required from an assignment, the output should be properly identified and located in the appropriate part of the lab report. Periodically through the semester there may be outside reading assignments that require an overview report.

Work that is submitted in hand-written form must be prepared on engineering paper in pencil. Corrections will be erased or placed above the incorrect values that will be stuck out with a single line through the error. Use only the front side of the sheet. Always include units in the answer and highlight the answer by either underlining it, placing a box around the answer, or by using a highlighter. When you have answers that are less than 1, always begin the number with a zero. For example, .471 shall be

written as 0.471. When writing angles, minutes and seconds must always have two units, excluding any decimal portion. If a minute or second contains only single units, i.e., 4 minutes, 7 seconds, the number shall be preceded by a zero. In this case, 04' 07". Unless otherwise stated, all angles will be presented in degrees, minutes and seconds format. Use common sense in portrayal of significant figures.

Lab reports will consist of a least 3 main parts:

1. Purpose of the lab written in your own words.
2. Procedure. In this section succinctly identify the procedures employed in the lab and your results.
3. Conclusion. This section will consist of a discussion of the lab in general and upon your results in particular. Such items of importance might be the validity of the lab, limitations of the results, possible sources of errors that might affect the results, items you might have done differently, special problems encountered, etc.

ATTENDANCE POLICY

I understand that each student may upon occasion need to be away from class due to illness or other important matters. The following policy recognizes these life issues but at the same time reflects the real world need to be present in class in order to learn and share your learning with others in the class.

Each student will be allowed to miss up to 4 classes, either lectures or lab, without penalty. These absences may be for any reason and do not require giving me an excuse. A student who is absent a fifth time will be required to withdraw from the course if this absence occurs during the withdrawal period of the semester. If this absence occurs after the withdrawal period the student will receive a failing (F) grade in the course. The four absences a student may have represents nearly 10% of the meeting dates and far exceed any absence policy that would exist in business, industry or other professional areas. Please note, being absent is not an acceptable excuse for not being prepared when you return to class. All laboratory absences must be made up during the semester. It is your responsibility to check with you classmates to obtain the information that was covered during lecture and lab periods.

Exceptions to the Attendance Policy (Verification of all exceptions is necessary):

1. A University-sponsored event in which an excused absence from the Vice President for Academic Affairs office is given.
2. Death of a family member or close personal relation (friends, neighbors).
3. Extended hospitalization to yourself or child (this does not apply to a visit to the health center because of a cold or other illness).
4. Jury duty or being subpoenaed to testify in a court case.
5. Dangerous weather conditions in which driving is considered by local authorities to be unsafe (for commuter students).

Note that exceptions must be discussed with me at the time they occur to be considered an excused absence. What is not likely to be considered an exception includes:

1. Day care problems
2. Employment commitments
3. Being in jail
4. Transportation problems

CLASS CONDUCT

It is essential that everyone in this class establish a mutual respect amongst each other in this class. Therefore, there are a few simple rules that you will be asked to adhere to; most of these can be defined as good manners. These rules are:

- Class starts on the hour so please make every effort to arrive on time by planning ahead for any contingencies.
- Class lasts for 50 minutes so do not begin to pack up your books and other items early. This is very distracting to me and your fellow students. You are expected to participate throughout the entire class period.
- Turn off all cell phones, pagers, pda's and other electronic devices before class. If there are extenuating reasons, please see me.
- During the lecture, feel free to ask questions, but refrain from conducting personal conversations. Again, this is very disruptive.
- Sleeping, eating and reading newspapers are not allowed in class. While in class the student is expected to pay attention and participate in this class and not finish work for another class during this class periods.
- Come to class prepared. Instructional material students should not be without include, as a minimum, writing material, computer disks and calculators.
- Students are expected to check the web page for this course weekly and students are responsible for all material on this web page along with textbook and other readings.
- When you leave the classroom, please pick up after yourself. Try to leave the room cleaner than when you found it.

PERFORMANCE CRITERIA:

50% from exams and quizzes
50% from laboratory and other assignments
100% TOTAL

Students absent from class for a test must make arrangements to take the exam prior to the next class meeting. Failing to do so will result in a grade of 0%. It is the student's responsibility to call me to set up a time to make up the test. Missing quizzes will not be made up outside of class. This course will have a cumulative final exam.

GRADING POLICIES:

90 - 100% - A Range
80 - 89% - B Range
70 - 79% - C Range
60 - 69% - D Range
0 - 59% - F Range

ADDITIONAL COMMENTS:

This class represents a commitment of time and energy for both the faculty and student. It is expected that the student put in an additional 2-3 hours of work for every credit hour of this course. This number represents an average and not an absolute maximum threshold. This means that some students will have to put in even more time to learn the material presented in this course. Work schedules or other responsibilities do not represent acceptable exceptions to this obligation.

Office hours have been listed above. Other hours can be arranged if necessary. If you have problems, please see me as soon as possible. Waiting until the end of the semester may be too late.

Final examination schedule guidelines from the Registration and Academic Guide:

In the event that three or more final examinations are scheduled on the same day during the examination week a student may elect to take only the first and last of those regularly scheduled on that day. Such election by the student to the affected instructor must be made no later than two weeks prior to the exam date. It will be the responsibility of the student to present authentication to the instructor of the course affected. The rescheduled exam will then be taken on another day during the examination week as arranged by the course instructor and the student.

Makeup examinations are to be scheduled on Wednesday, May 2 at 10:00 a.m. and on Friday, May 4 at 10:00 a.m., or at 2:00 p.m.

FINAL NOTE:

I reserve the right to make needed and appropriate adjustments in this syllabus