Main Campus:
Gateway's CATI Campus
2320 Renaissance Blvd
Sturtevant, WI 53177

Nodal Lab
Gateway's Elkhorn Campus
400 Country Road H
Elkhorn, WI 53121

Nodal Lab
Blackhawk's Janesville Campus
6004 S. County Road G
Janesville, WI 53546

CIVIL ENGINEERING TECH PROGRAM
Architectural-Structural * Public Works * Surveying
www.gtc.edu/civileng

607-173
Land Surveying, Principles of

3 Cr
Fall - 2008

Course Description
This course includes instruction in the use of instruments used in the field of construction surveying, such as the transit, level and chains, and their application in the solving of typical field problems. The student does the field work and office computations required in the solution of these problems.

Jonathan Hardbarger, RLS
Office: CATI 201
Phone: (262) 898-7486
Email: HardbargerJ@gtc.edu
Office Hours: Posted outside CATI 201

Tentative Class Calendar – Subject to change

WK	Date		Material Covered	ASSIGNMENT(S) DUE
1	EDIT		Course Introduction	Basics of Instr. setup
2			History of Surveying, types of surveys, and sources of the positional data for the surveyor, Ch. 1	Quiz / Leveling Lab (Note: Grade on each lab based on tolerances reached.)
3			Units of Meas., Sig.Fig., Field notes.	Quiz
4			Errors in observations, Ch 3. Preview principles of remote elev. for lab.	Quiz / Trig. Height Lab (Top of Building Elevation)
5			Leveling theory & practice, Ch. 4	Quiz
6			Level theory and practice cont. Ch 5 Review Principles of Taping for lab.	Taping Lab (Tape 4 baselines)
7			Other means of Dist meas. Ch. 6; Review of Angles, Azimuths, and bearings, Ch.7.	Quiz
8			The Total Station and Angle measurements, Ch 8. Preview principles of Field Traversing for lab.	Traverse Lab: Traverse around school property and close on starting point.
9			Midterm	Quiz
10			Traversing, and basic traverse computations for accuracy and precision of traverse, Ch. 9	Quiz
11			Topographic surveys, Ch. 16	3-point reference lab (each point of lab must be referenced with sketch.)
12			Mapping, Ch. 17	Quiz
13			Review of lecture and lab points since Midterm.	Topographic Field Survey of part of CATI campus grounds
14			Review of labs and all lectures.	
15			Final Exam	

Class Competencies

1. Demonstrate proficiency in measuring by use of pacing, taping, subtense bar, and total station EDM.
2. Identify various types of errors encountered in surveying.
3. Correct errors in measuring with the steel tape.
4. Compute horizontal lengths from slope distances.
5. Use a hand compass to measure directions.
6. Correct compass readings for magnetic declination.
7. Demonstrate proficiency in quickly setting up a total station.
8. Demonstrate proficiency in operations of measuring horizontal and vertical angles, and procedures for minimizing instrument bias of angle measurement using a total station.
9. Conduct a control traverse using the total station, maintain proper field notes of the traverse, and calculate traverse closure.
10. Plot a traverse by coordinates.
11. Use data collectors for topographic collection of points.
12. Demonstrate proficiency in inversing between points.
13. Explain basic leveling theory and term definitions.
14. Identify the typical errors that occur with leveling and how to minimize them.
15. Demonstrate proficiency in leveling, evaluating strength of level measurements, and distributing error in the loop.
16. Use trigonometric leveling methods to determine remote elevation by measuring vertical angles and horizontal distances.

Textbook & Required Equipment

Elementary Surveying, An Introduction to Geomatics, 11th ed. Paul R. Wolf and Charles D. Ghilani, ISBN #0-13-148189-4.

Class Delivery and Procedures

1. (edit per instructor preferences)
2. This course is being delivered via the NODAL Distance Delivery method, a multi-engineered delivery method utilizing accelerated/brain-based learning techniques. There will be traditional lecture/lab presentations and information delivered and evaluated through various multimedia formats including, but not limited to, VoIP, Camtasia, BlackBoard, and the internet.
3. Internet access is required.
4. Extensive work outside of class is required.
5. Group discussion and class participation is required. The objective is to stir interaction, expand views, and develop a broader understanding of the subject material. In the process, focus will be given to developing the student's communication skills.
6. Homework Format for turned in work
    a. Cover Page
        i. Engineering Tech Wing Logo
        ii. Class name
        iii. Student name
        iv. Homework ID
        v. Date
        vi. Description
    b. All 2d work shall be printed to scale.
    c. All 3d work should be printed to fit the page.
    d. All hand written work shall be in block lettering.
    e. All homework shall be submitted via pdf format in Blackboard, unless otherwise required by the instructor. It is the responsibility of the student to scan or produce the homework in a pdf format.
7. All preps and homework shall be completed and submitted prior to the start of the respective classes when due. Any prep quizzes associated with a given prep are also to be finished prior to the start of class. When class begins, the prep quizzes due that day will no longer be available.

Course Grading

- Breakdown (edit per instructor)
    - 100% - Class Participation
    - 100% - Final
    - 100% - Projects

- Final Grade Percentages
    - A 90%-100%
    - B 80%-89.99%
    - C 70%-79.99%
    - D 60%-69.99%

Class Rules and Regulations

1. Students shall conduct themselves in a professional way that is respectful to everyone. This includes being present in the classroom before the start of class.
2. Communication, including written, verbal and email, shall be conducted in a professional matter.
3. Students shall not interrupt class in any way with cell phones, pagers, music players, laptops and other devices. Such devices shall be tuned off. Students are not permitted to work on assignments during lectures or presentations.
4. Class attendance is mandatory and part of your participation grade. If you are going to be absent from class you must call or email the instructor before the start of the scheduled class time to be considered excused. It is the students responsibility to obtain from fellow students any notes, information, assignments, and anything else provided during the missed class(es).
5. Late work will not be accepted (projects, homework, quizzes, in-class assignments). Major exams (mid-terms, finals) will be available for three business days following the original exam date for make-up. After three business days, the grade will be marked as a 0.
6. Plagiarism in any way shape or form is not acceptable and will not be tolerated.

Special Needs

If you have any special educational needs or concerns, please contact your classroom instructor or the Special Needs Instructor:

CATI

Peggy Jude judep@gtc.edu or 619-6500
Linda Mahoney mahoneyl@gtc.edu or 619-6500
Leslie Utech (Deaf/Hard of Hearing Services)
utechl@gtc.edu or 564-2564 Voice / 564.2206 TTY

Elkhorn

Pat Harkness harknessp@gtc.edu or 741-8348
Sue Stokes-Nelson
stokes-nelsons@gtc.edu or 741-8420
Alyson EU Sanchez (Deaf/Hard of Hearing Services)
sancheza@gtc.edu or 741-8492 TTY/VP

Blackhawk

608•757•7796 – ask for a special needs counselor.
• A wide range of support services and accommodations are available, including academic and technical program adaptations, which can help you to reach your goals.
• Included among the services offered are assistance developing educational plans and various physical equipment that can assist in the learning process

Student Handbook

If you have any questions regarding potential disputes and the dispute resolution process, please consult the student handbook for details.

Class Core Abilities

Gateway believes students need both technical knowledge and skills and core abilities in order to succeed in a career and in life. The following nine core abilities are the general attitudes and skills promoted and assessed in all Gateway programs; those followed by an asterisk are promoted and assessed in this course:

a. Act responsibly
b. Communicate clearly and effectively
c. Demonstrate essential computer skills
d. Demonstrate essential mathematical skills
e. Develop job-seeking skills
f. Respect self and others as members of a diverse society
g. Think critically and creatively
h. Work cooperatively
i. Value learning