COURSE: **C E 2070** ENGINEERING SURVEYING **SEMESTER:** Fall 2015

LECTURE HOURS: 2 **LABORATORY HOURS:** 4 **CREDITS:** 3

CLASS TIME: 1:00 PM - 3:50 PM **DAYS:** T TH **ROOM:** PS 222

INSTRUCTOR'S NAME: ARDELL KNUDSON

INSTRUCTOR'S OFFICE: PS 211 **PHONE:** 268-2248 aknudson@caspercollege.edu

OFFICE HOURS M - Th 10:00 - 11 M & W 11 - 12:00 and 1:00 - 2:00
Other times available by appointment.

COURSE DESCRIPTION:
Principles and theory of land surveying for students in Civil Engineering or any student in the geological and extractive resources areas. The course will cover the use of the chain, level, theodolite, and total station in measuring distances and angles. The concepts will be introduced in the classroom and developed through field practice. Included will be error theory in measurements and the adjustments necessary to balance a traverse. The course will finish with basic use of the hand GPS and this data will be loaded to the AllTopo mapping software in the computer lab.

PREREQUISITES:
Math 1405 Pre Calculus Trigonometry.

GOAL:
This course should give an orientation to the principles of plane land surveying. This will be done using older equipment and practical field exercises. Upon completion of this material a person should be able to work for a surveying firm or engineering office and be familiar with the terminology and the principles of measurement. There will be no attempt to become familiar with all latest equipment and software due to rapid changes and the variety of common usage.

OUTCOMES:
There will be two hour long exams which will cover the terminology and measuring principles. As a final project, students will prepare a summary report of all measurements and calculations done during the semester. These principles will be then tested on the final exam.

GENERAL OBJECTIVES:
An introductory surveying course should prepare the student in techniques used to locate points, determine distances, angles, elevations, and areas. These are used in many applications including construction, route layout, mining, and property surveys to name a few. The field practice should be helpful in preparing students to assist with a survey crew.

SPECIFIC OBJECTIVES:
Upon completion of this course, students should be able to do the following:

- measure distances accurately
- determine the elevation of a point
- measure angles and perform the trigonometric calculations
- determine the area of a bounded plot
- describe that area in terms of the US plane coordinate system

METHODOLOGY:
The class is a mix of lecture, demonstration, and field work. The exams tend to follow the lecture and homework material. The final project in the course will rely on the material from the field work.

EVALUATION CRITERIA:

Homework	- 15%	(approx 350 pts total)
Field books & Quiz	- 10%	
Exams	- 40%	(2 exams, 100 pts ea)
Final	- 25%	(approx 150 pts)
Traverse proj.	- 10%	

REQUIRED TEXTS, READINGS, MATERIALS:
There will be no textbook listed for this class. Students will be given course materials in the class and will need a field book for recording field notes.

LAST DATE TO CHANGE TO AUDIT STATUS OR TO WITHDRAW WITH A "W" GRADE:
The last date to withdraw from the class is Thu, Nov 12, 2015. Late changes will not be allowed. An audit is not appropriate for this course due to the field work.

STUDENT RIGHTS & RESPONSIBILITIES:
Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities.

CHAIN OF COMMAND:
If there are any problems with this class, first contact the instructor and attempt to solve the problem. If not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head, the Dean of the School of Science, and lastly the Vice President for Academic Affairs.

ACADEMIC DISHONESTY:
Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty with the academic process can result in the offending person failing the course in which the offense was committed or may result in expulsion from the school. See the Casper College student Code of Conduct for more information on this topic.

OFFICIAL MEANS OF COMMUNICATION:
Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly.

ADA ACCOMODATIONS POLICY;
If you need academic accommodations because of a disability, please inform the instructor as soon as possible. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, Room 344, ph (307) 268 2557, bheuer@caseprcollege.edu
The Disability Services Counselor is responsible for reviewing documentation provided by the students requesting accommodations. The Counselor will determine eligibility for accommodations and assist students in requesting and using appropriate accommodations.

TENTATIVE SCHEDULE WITH COURSE CONTENT:

PERIOD:	TOPIC:	ASSIGNMENT
Week 1 Aug 25	Introduction, Field Books Ch. 1 & 2	Read Ch 1 & 2 Assigned work
Week 2 Sept 1	Distance Measurement	Field work
Week 3 Sept 8	Math for surveying trigonometry	Assigned work Read Ch 3
Week 4 Sept 15	Vertical Distance Msrmnt Leveling Ch 3 Review and Summary Test I	Field work
Week 5 Sept 22	Use of Theodolite Ch 4 Field work measuring angles	Read Ch 4
Week 6 Sept 29	Azimuth and Bearings Field Books	Field work
Week 7 Oct 6	Traverse Surveys Ch 5 Practical Application	Read Ch 5
Week 8 Oct 13	Field exercise measuring vertical angles and horizontal distances with the EDM.	Field work
	Fall Break Mon & Tue Oct 19 - 20	
Week 9 Oct 22	Property Survey Bearings, Azimuth, Compass	Ch 6
Week 10 Oct 27	Traverse computations Exam II	
Week 11 Nov 3	Intro to GPS GPS Applications	Special Projects
Week 12 Nov 10	Traverse Report Due	
Week 13 Nov 17	G P S Project	Special problems
Week 14 Nov 24	G P S Projects presentations Review Thanksgiving Break Wed Nov 25 thru Fri Nov 27	

Wk 15 Dec 1	Presentations and Guest speaker
Wk 16 Dec 7	Review
	Final Exams Mon Dec 14 thru Thu Dec 17