## CEGR 2104 Surveying and Site Design Fall 2011

(Information is subject to change)

**Instructor:** Dr. John L. Daniels, P.E.

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**Normal** Monday: 9:15 – 10:15 AM, 2:00 – 3:30 PM

**Office Hours:** Wednesday: 9:15 – 10:15 AM, 2:00 – 3:30 PM

 And by appointment.

**Teaching** David Yarbrough, P.E. – Office: Cameron 278 – Email: dyarbro1@uncc.edu

**Assistant:** Normal office hours: Monday and Wednesday, 9:15 – 10:30 AM

 Tuesday and Thursday, 1:00 – 2:00 PM

 And by appointment

**Class Time &** *Lecture:* Mondays and Wednesdays, 8:00 AM – 9:15 AM, Cameron 101

**Location:** *Laboratory:*

Tuesday (13192) L01 – 2:00 – 4:45 PM, Cameron 148F

Thursday (13195) L03 – 2:00 – 4:45 PM, Cameron 148F

## Prerequisites: ENGR 1202

#### Required Text: Elementary Surveying, An Introduction to Geomatics, 12th Edition, Wolf, P.R and Ghilani, C.D.

**Course Objectives:** The objectives of this course are to provide students with an understanding of plane surveying as it relates to civil engineering. Students will be able to collect, analyze, and utilize surveying data as relevant to basic site design.

**Class Topics:** Units, Field Notes, Errors, Distances, Angles, Azimuths and Bearings, Total Station, Global Positioning Systems, Leveling, Traversing, Area, Mapping, Horizontal Curves, Vertical Curves, Volume

**Outcomes:** Of the 14 CE Program Outcomes, this class will help students develop (1)   an ability to apply knowledge of mathematics, science, and engineering (2)   an ability to design and conduct experiments, as well as to analyze and interpret data (3)   an ability to design a system, component, or process (4)   an ability to function on multi-disciplinary teams (5)   an ability to identify, formulate, and solve engineering problems (6)   an understanding of professional and ethical responsibility (7)   an ability to communicate effectively (8)   an understanding of the impact of engineering solutions in a global and societal context and (9)  an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

**Grading:** Homework 10%

Participation 10%

Laboratory Work 15%

 Exam 1 (9/28/11) 15%

 Exam 2 (11/2/11) 15%

 Exam 3 (11/30/11) 15%

Final Exam (12/12/11) 20%

**Class Attendance and Participation:**

Attendance is encouraged and participation will be monitored through the use of “Clickers.” Students may attend only the lab section for which they are registered, unless very special (e.g., documented medical emergency) circumstances require otherwise. Advance permission by the instructor is required for a make-up laboratory session. Full participation in the laboratory is required to receive a grade for the course.

 Students are advised to bring their book, a pencil and a calculator to each class, as in-class exercises are common.

 For exams, please note that your calculator must be able to perform trigonometric identities (sin, cos, tan, etc.), however it cannot be a programmable or a graphing calculator. The list of approved calculators can be found here:

 <http://www.ncees.org/Exams/Exam-day_policies/Calculator_policy.php>

 I encourage classroom behavior that is professional. Arriving late, leaving early, overt talking, reading the newspaper, doing homework for your next class, having your cell phone ring, using your laptop/phone/mobile PC, listening to an iPod/iPhone or similar device, etc. is not recommended to maximize your grade. Kindly consider how you would conduct yourself in front of a prospective employer or future reference.

**Homework:**

 All homework must be completed on **engineering paper**. Calculations must be neat and clear (particularly for homework), otherwise points will be deducted.

 **NOTE:** The assigned problems are from the **12th EDITION of the textbook.** While much of the textbook material is the same as prior editions, **the problems are different.** If you are using an older edition of the book you MUST get the correct problems from the 12th edition. **NO CREDIT WILL BE GIVEN FOR SOLVING THE PROBLEMS FROM PREVIOUS EDITIONS!**

**Academic Integrity:**

Students are expected to know and observe the requirements of the UNC Charlotte Code of Student Academic Integrity (latest revision). A brief summary of the code is available from the instructor or the Dean of Students office. The full code is available online at <http://www.legal.uncc.edu/policies/ps-105.html>. This instructor has a history of enforcing the code.

**Tentative Schedule:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | Morning Lecture Topic | Afternoon Laboratory Exercise | Lecture Text Chapter |
| 8/22-8/26 | Introduction, Units, Field Notes, Errors | No lab | 1,2,3 |
| 8/29-9/2 | Errors continued, Distance Measurement  | No lab | 3 |
| 9/5-9/9  | Distance (No Class 9/5-Labor Day)  | No lab | 6 |
| 9/12-9/16 | Angles, Azimuths and Bearings  | Lab 1 – Compass, Pacing | 7 |
| 9/19-9/23 | Leveling | Lab 2 – Intro to Total Station / Bell Tower | 4,5 |
| 9/26-9/30 | **Exam 1 – 9/28**  | Lab 3 – Profile with Total Station |  |
| 10/3-10/7 | GPS (Tim Rudolph, Dewberry) | Lab 4 – Control Loop - Quad | 13,14,15 |
| 10/10-10/14 | Traversing (No Class 10/10-Student Recess) | No lab | 9,10 |
| 10/17-10/21 | Area | Introduction to GPS | 12 |
| 10/24-10/28 | Mapping | Lab 5 – Control Loop - Field | 17,18 |
| 10/31-11/4 | **Exam 2 – 11/2** | Lab 6 – Topo map Field Work |  |
| 11/7-11/11 | Horizontal Curves | Lab 6 – Topo map Field Work | 24 |
| 11/14-11/18 | Horizontal and Vertical Curves | Lab 6 – Topo map Office Work | 24,25 |
| 11/21-11/25 | Vertical Curves (No Class 11/23-Thanksgiving) | No labs – Teams work independently | 25 |
| 11/28-12/2 | **Exam 3 – 11/30**  Volume, Alternate Coordinate Systems | Lab 7 – Stakeout  | 26, 20 |
| 12/5-12/9 | Last Class 12/7 – Final Review  | **MAPS DUE AT END OF LAB PERIOD FOR EACH SECTION** |  |
| 12/12- 12/16 | **Final Exam 12/12 - 8:00 AM – 10:30 AM** |