

**Forest Surveying
FE 208 Syllabus**

Instructor: Jim Kiser
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Course Credits: This course combines approximately 90 hours of instruction and assignments for 4 credits. The course combines approximately 3 hours of lecture time per week with approximately 4 hours per week of laboratory/homework exercises.

Prerequisite: Trigonometry (Math 112), A statistics course is strongly recommended prior to taking this course.

Course Format: Sec 01 Lecture MWF 8-8:50 AM
Sec 02 Lecture MWF 9-9:50 AM
Lab M,T,TH,F 12:00-4:00 PM

Course Website: <http://jimkiser0.wixsite.com/jimkiser>

Required Text: Kiser, J. 2010. **Surveying for Forestry and the Natural Resources. 2nd ed.** This is a field and class text that is focused on surveying practice in the forest environment. This is a hands-on text that will be used in several other forestry classes.

Optional Text: Ghilani, Charles. D. 2017. **Elementary Surveying, An Introduction to Geomatics. 15th ed.** This is a classic surveying text and will be a very useful reference in your professional career. The book is available in hardcover for approximately \$197.37 from Amazon.com.

Additional Reading: Buckner, Ben. 1997. **The Nature of Measurement.** This is a 12 part series that will be made available.

Materials: Hardhat – required (a hardhat will be made available to you if you don't have one)
Handheld scientific calculator – required (bring to all tests). Suggest the TI30XA
Transit style field notebook (1) – required
Level style field notebook (1) – required
FE 208 toolkit (avail. In bookstore) – optional
Field boots - required
Field survey vest - optional

The Sequence of Surveying and Measurements Courses:

FE 208 is one course from an integrated sequence of three courses in Forest Surveying and Measurements (FE 208, FE 209, FE 310). FE 208 is an introduction to the theory and practice of surveying methods and measurements as applied to the specifics of forestry problems and their solutions. FE 208 provides fundamental instruction for surveying and field measurements. FE 208 is also intended to prepare forest engineering students for Forest Route Surveying, Control Surveying (CE 463), Property Surveying (CE469), and Survey Law (CE 465). This sequence of courses is designed to prepare students for the Fundamentals of Land Surveying exam that is necessary to become a Professional Land Surveyor.

Course Goals:

There are two primary goals for this course. The first is to learn and become proficient in basic forest survey techniques including surveying fundamentals, field notes, distance and angle measurements, and leveling techniques. The second goal, which is consistent throughout all Forest Surveying and Measurement courses, is the development and application of good professional practices.

Course Objectives:

The course objectives are built around lecture and lab combinations. Material presented in lecture will focus on the theory of surveying measurements and the application of surveying techniques to forestry related problems. The field labs will focus on the hands-on use of equipment, proper field measurement techniques, proper field note keeping, and the application of classroom material in forest field conditions.

Students who successful complete this course will be able to:

- Understand and apply the theory of measurement errors and be able to calculate uncertainty in survey measurements.
- Successfully solve surveying problems of horizontal distance, vertical distance, and angular measurement.
- Successfully solve Survey problems of adjustments to horizontal and vertical measurements
- Understand the principles of map creation and projection and use maps to successfully solve problems of measurements and legal descriptions.
- Understand the concepts and development of the Public Land Survey System in the United States and Oregon, and use these concepts to successfully analyze and solve problems of division of public lands.
- Become proficient in various field survey techniques and field note-keeping.
- Understand the concept of survey order.

Students with Disabilities

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Oregon State University policy on Student Conduct

<http://oregonstate.edu/studentconduct/code/index.php> Students are expected to uphold the Academic Honor Code published by their respective Academic Unit. The code is based on the assumption that all persons must treat one another with dignity and respect in order for scholarship to thrive, (2) Students are also expected to follow the academic and professional standards of the academic units, and (3) Choosing to join the Oregon State University community obligates each member to a code of responsible behavior.

College of Forestry Code of Professional Conduct

<http://studentservices.forestry.oregonstate.edu/college-forestry-code-professional-conduct> The College of Forestry is a community of faculty, staff, students, and visitors that stretches across all spectrums. Every member of the College community is responsible for conduct that creates, promotes, and maintains a learning and work environment that is open to and welcomes all persons. As a community, we embrace each member through the acknowledgement, honoring, and celebration of our commonalities and our differences.

The foundation for maintaining this environment requires that all persons must treat all others with dignity and respect at all times. The College fully supports the mission and goals of Oregon State University and affirms its support of the University policy against discrimination (<http://oregonstate.edu/dept/affact/policy/discrimination.html>), as well as the University's policies on honesty, ethics, and substance abuse (including alcohol) (<http://oregonstate.edu/admin/stucon/>).

Course Policies

1. All assignments are due by the time and date assigned.
2. To receive credit, assignments must be turned in on time. **Late assignments will not be accepted except by permission of the instructor.**
3. All work must be neat, legible, and complete. All steps should be shown. Sample calculations and a summary table may be used to illustrate repetitive calculations. Use words to explain the computations where necessary. Use sketches and drawings where required or helpful. Incomplete, undocumented work is unacceptable.
4. All figures, drawings, and tables should be titled.
5. There will be no make-up exams or quizzes except by permission of the instructor.

6. Any requests for deviations in the course policies, schedule, or deadlines must be made in writing to the instructor. These requests should be made in the form of a typed business style letter that clearly states and defends your request. E-mail is acceptable but should be confirmed as having been received.

Grading:

Final grades for the course will be based on the planned following:

| Item | Total points | % of total |
|-------------------|--------------|------------|
| Labs (8) | 130 | 23.2 |
| Lab Final | 50 | 8.9 |
| Homework (5) | 80 | 14.3 |
| Midterm Exams (2) | 200 | 35.7 |
| Final Exam | 100 | 17.9 |
| Totals | 560 | 100 |

Letter grades will be based on the following:

| Letter grade | % of total |
|--------------|------------|
| A | 90 |
| B | 80 |
| C | 70 |
| D | 60 |
| F | < 60 |

Plus and minus grades will be given where appropriate.


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| Week 4 | Lecture: | Midterm 1 review - Monday Midterm 1 - Wednesday L10 Angles and Bearings |
| H3 due Wednesday at lecture | | |
| Lab 3 writeup due at beginning of Lab 4 | Homework | H4 Traverse Closure problem (20 pts) |
| | Lab: | Area layout with staff compass (McDonald Forest Rusty Axle Traverse) (20 pts) |
| | EXAM | Midterm 1 - Wednesday |
| 140 points | Reading: | Kiser pages 53-56 review Ghilani & Wolf, pp. 169 - 179 |

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| Week 5 | Lecture: | L11 Angles and bearings continued L12 Leveling L13 Differential leveling |
| H4 due Friday at lecture | | |
| Lab 4 writeup due at beginning of Lab 5 | Lab: | Profile leveling (McDonald Forest) (20 pts) |
| | Reading | Kiser pages 61 - 76 Ghilani & Wolf, pp. 169 – 179 and 73 - 125 |
| 40 points | | |

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| Week 6 | Lecture: | L14 Leveling errors L15 Leveling adjustments L16 Traverse adjustments – Review of L8-9 |
| Lab 5 writeup due at beginning of Lab 6 | Homework | H5 Traverse Closure problem (20 pts) |
| | Lab: | Closed traverse differential leveling (McDonald Forest) (20 pts) |
| 20 points | Reading | Kiser pages 61 - 76 Ghilani & Wolf, pp. 106 - 125 |

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| Week 7 | Lecture: | L17 Area computation L18 Topographic mapping/contours Midterm 2 review - Friday |
| H5 due Friday at lecture | | |
| Lab 6 writeup due at beginning of Lab 7 | Lab: | Putting it all together (20 pts) |
| 40 points | Reading | Ghilani & Wolf, pp. 309 – 328 and 479 – 485 |

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| <p>Week 8</p> <p>Lab 7 writeup due at beginning of Lab 8</p> <p>110 points</p> | <p>Lecture:</p> <p>Lab:</p> <p>Exam:</p> <p>Reading:</p> | <p>Midterm 2 – Monday L19 Public Land Survey System L20 Control Surveys</p> <p>Advanced Survey Equipment, Digital total station (McDonald Forest) (10 pts)</p> <p>Midterm 2 (Monday)</p> <p>Kiser pages 265 - 274 Ghilani & Wolf, pp. 659 – 680 547 - 559</p> |
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| <p>Week 9</p> <p>Lab 8 writeup due Wednesday at lecture</p> <p>10 points</p> | <p>Lecture:</p> <p>Lab:</p> <p>Reading:</p> | <p>L21 Maps and mapping L22 Coordinate systems</p> <p>No Lab this week - Thanksgiving Holiday</p>  <p>Kiser pages 135 - 150 Ghilani & Wolf, pp. 503 – 526 and 589 - 627</p> |
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