

**Western Illinois University - Department of Agriculture**  
**AGTM 461: Surveying & Soil & Water Conservation Engineering (4)**  
**Course Syllabus - Fall 2009**

**COURSE MEETS:** Lecture: MWTh 12:00 to 12:50 in KH 307  
 Lab: T 1:00 to 2:50 in KH 307 or KH B1

**TEXT:**

1. Soil and Water Management Systems by Schwab, Fangmeier, & Elliot, 4<sup>th</sup> Ed.
2. Field Notebook
3. Course Notes (provided during class sessions)

**LAB FEE:** \$10.00

**INSTRUCTOR:** Dr. Buck Tillotson E-mail: RJ-Tillotson@wiu.edu  
**OFFICE:** B-22 Knoblauch Hall. Office Telephone: 298 -2395  
 Home Telephone: 776 -3584

**OFFICE HOURS:** MTWTh 10:00-11:00 or by appointment

**Dr. Tillotson's Fall Semester 2009 Class Schedule:**

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 to 8:50		AGTM 360			
9:00 to 9:50	AGTM 360	Lab	AGTM 360	AGTM 360	
10:00 to 10:50	Office hour	Office hour	Office hour	Office hour	
11:00 to 11:50					
12:00 to 12:50	AGTM 461		AGTM 461	AGTM 461	
1:00 to 1:50		AGTM 461			
2:00 to 2:50		Lab			
3:00 to 3:50	AGTM 464		AGTM 464	AGTM 464	
4:00 to 4:50			Lab Sec. 31	Lab Sec. 32	
5:00 to 5:50		Ag Mech Club: 2 <sup>nd</sup> & 4 <sup>th</sup> Tues.			
6:00 to 6:50					

**Catalog Course Description:** Development of surveying skills using a self-level, transit, total station, GPS receiver and related software. Study of the principles of water and wind erosion. Design of erosion control structures.

**Overall Course Objectives:**

- A) Develop knowledge of and skill in using basic and advanced types of surveying equipment and common survey data recording methods.
- B) Develop an understanding of soil conservation practices and the design of soil erosion

control structures.

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**Weekly Schedule - Fall 2009**

**Week 1**

- Mon. Aug. 24 Course orientation, surveying accuracy  
Tues. Aug. 25 Lab: Taping (chaining) & pacing (Read Ch 2: 2.1 through 2.7 and 2.16 through 2.19)  
Wed. Aug. 26 History of Surveying; Types of Surveying  
Th. Aug. 27 Allowable error in surveying; taping errors and taping error problems

**Week 2**

- Mon. Aug. 31 Taping along sloping ground, slope estimating, slope correction problems  
Tues. Sept. 1 Lab: Taping along sloping ground, slope estimating, height estimating (Read Ch 2: 2.3 and Ch 3: 3.1,3.6)  
Wed. Sept. 2 Horizontal distance measurement correction problems; differential leveling terms & procedures (Read Ch 3: 3.8)  
Th. Sept. 3 Laser level; differential leveling procedures; recording differential leveling field notes

**Week 3**

- Mon. Sept. 7 LABOR DAY, NO CLASSES  
Tues. Sept. 8 Lab: Differential leveling survey exercise (Read Ch 3: 3.2 to 3.4, 3.5, 3.7 to 3.9 & 3.10 through 3.12)  
Wed. Sept. 9 Calculating land area (Read Ch 2: 2.13 through 2.15)  
Th. Sept. 10 Drainage ditch profile class exercise (Read Ch 3: 3.9)

**Week 4**

- Mon. Sept. 14 Profile exercise continued  
Tues. Sept. 15 Lab: Profile and cross-section surveying exercise  
Wed. Sept. 16 Profile and cross-section surveying field notes; Azimuths & bearings  
Th. Sept. 17 Azimuths & bearings continued

**Week 5**

- Mon. Sept. 21 Measuring horizontal angles; using a vernier scale  
Tues. Sept. 22 Lab: Measuring horizontal angles to the right  
Wed. Sept. 23 Traversing computations  
Th. Sept. 24 Traversing computations continued

**Week 6**

- Mon. Sept. 28 Calculation of latitude & departures; traversing software applications  
Tues. Sept. 29 Lab: **Exam I**  
Wed. Sept. 30 Compass angle corrections  
Th. Oct. 1 Compass angle corrections continued

### **Week 7**

- Mon. Oct. 5 Total Station setup and use
- Tues. Oct. 6 Lab: Use of a Total Station and Laser Level (Read Ch 3: 3.3 through 3.4)
- Wed. Oct. 7 Legal land description (Read Ch 4: 4.0 through 4.2)
- Th. Oct. 8 Legal land description continued

### **Week 8**

- Mon. Oct. 12 Legal land description continued
- Tues. Oct. 13 Lab: Total Station surveying
- Wed. Oct. 14 Coordinate Systems
- Th. Oct. 15 Coordinate systems continued

### **Week 9**

- Mon. Oct. 19 G.P.S. and G.I.S. (Read Ch 4: 4.9 through 4.11)
- Tues. Oct. 20 Lab: Land surveying with G.P.S.
- Wed. Oct. 21 G.P.S./ G.I.S. software applications
- Th. Oct. 22 G.P.S. differential correction post-processing

### **Week 10**

- Mon. Oct. 26 **Exam II**
- Tues. Oct. 27 Lab: Coordinate location with G.P.S.
- Wed. Oct. 28 Conservation choices (Read Ch 5: 5.0 through 5.6)
- Th. Oct. 29 Quiz - conservation choices; Midwest soil & water conservation priorities (Read Ch 1)

### **Week 11**

- Mon. Nov. 2 Rainfall and runoff determination (Read Ch 5: 5.7 through 5.11)
- Tues. Nov. 3 Runoff volume determination
- Wed. Nov. 4 Water erosion
- Th. Nov. 5 Universal Soil Loss Equation (Read Ch 6)

### **Week 12**

- Mon. Nov. 9 USLE problems
- Tues. Nov. 10 Lab: GIS watershed mapping (**Make sure that you have an e-com login and password that you have used in the last month**)
- Wed. Nov. 11 Use and establishment of strip cropping and contours (Read Ch 7)
- Th. Nov. 12 Contour strip design

### **Week 13**

- Mon. Nov. 16 Terrace designs
- Tues. Nov. 17 Lab: USDA-NRCS guest speaker
- Wed. Nov. 18 Dry dam design
- Th. Nov. 19 Dry dam design continued

**THANKSGIVING BREAK: Nov. 23 - 27**

### **Week 14**

Mon. Nov. 30 Wind erosion (Read Ch 9)

Tues. Dec. 1 Lab: Tour of water control structures

Wed. Dec. 2 Structures used to control water flow channels.  
(Read Ch 7 pp.139 through 142)

Th. Dec. 3 Structures used to control water flow channels cont.

### **Week 15**

Mon. Dec. 7 Water reservoirs

Tues. Dec. 8 Lab: Subsurface drainage design (Read Ch 13)

Wed. Dec. 9 Subsurface drainage continued

Th. Dec. 10 Final review

**Final Exam: Monday Dec. 14, from 1:00 to 2:50 PM in room KH 307**

### **COURSE EVALUATION**

Hour Exams, quizzes, laboratories, assignments, and final exam.

Grading Scale: 90% - 100% = A

80% - 89% = B

70% - 79% = C

60% - 69% = D

<60% = F

Use of unauthorized notes or aids during quizzes and tests will be dealt with according to University regulations. Student's rights and responsibilities can be found by going to the WIU home page, Personnel, Provost Page, Student Rights and Responsibilities.

I encourage you to obtain help if you do not understand how to do a "take home" assignment. I am available at most any time to assist you, but if this is not convenient, you may get someone else from the class to explain or demonstrate the task at hand.

I do, however, strongly suggest that you do your own work. That is, you must mentally and physically work through the assignment so that you can demonstrate, when required, that you have the required competency (ies).

Assignments are due on the day specified. Assignments turned in after the graded assignment is returned to the rest of the class will be scored ZERO.

### **ABSENCE POLICY**

One hundred percent class attendance is expected. If because of illness or other unavoidable event a class or laboratory is missed, it is the student's responsibility to make arrangements with Dr. Tillotson to make up the work missed. Arrangements should be

made ahead of time if the student knows that he/she is going to have to miss a class.

### **ADA COMPLIANCE**

In accordance with University policy and the Americans with Disabilities Act (ADA), accommodations in the area of test or note taking may be made for any student who notifies me of the need for an accommodation. It is imperative that you take the initiative to bring such needs to my attention, as I am legally not permitted to inquire about the particular disability needs of students. Furthermore, I would like also to request that student who may require special assistance in emergency evacuations (i.e., fire, tornado, etc.) contact me as to the most appropriate procedures to follow in such an emergency.