

DEPARTMENT OF CIVIL ENGINEERING  
UNIVERSITY OF ARKANSAS  
FAYETTEVILLE, ARKANSAS 72701

Sept 24, 2018

MEMO FOR STUDENTS ENROLLED IN CVEG 563 Section 8, Geosynthetic Applications in Civil Engineering

SUBJECT: Administrative Instructions, CVEG 563-969 Geosynthetic Applications in Civil Engineering, Second Eight Week Term, Fall 2018

- 1. General:** Meeting Time TBD  
Location TBD  
Prerequisites: Soil Mechanics, CVEG3133  
Soil Mechanics Lab, CVEG3130  
Instructor Norman D. Dennis, Jr.  
Office: 4188 Bell Engineering Center  
Phone: 479-575-6010  
Email: [ndennis@uark.edu](mailto:ndennis@uark.edu)  
Office Hours: By Appointment, call 479-575-7455  
Home: 856-6072 Before 9:30 PM daily and after 8:00 AM on weekends.

**2. Course Description** At the conclusion of the course a student will have a solid understanding of the beneficial use of the five major categories of geosynthetics; textiles, grids, nets, membranes and composites for civil engineering applications. Major design applications will focus on the sub-disciplines of geotechnical, transportation and environmental engineering. Design considerations for each beneficial use will be developed. In addition, quality control issues for both manufacturing and installation of geosynthetic products will be addressed.

**3. Course Objectives:** When you complete this course you should be able to:

- a. Identify the various polymers used for geosynthetics and describe their engineering properties.
- b. Describe the various laboratory testing procedures for obtaining engineering properties of geosynthetics.
- c. Identify geosynthetics by major category and function.
- d. Design reinforced roadways and slopes with geosynthetics.
- e. Design filters and drainage systems for roads and embankments with geosynthetics.
- f. Design covers and liner systems for landfills with geosynthetics.
- g. Design erosion control systems with geosynthetics.

- h. Describe and analyze recent case studies of engineering works that use geosynthetics.

#### **4. Texts and References:**

- a. Koerner, Robert, M., Designing with Geosynthetics, Fifth Edition, Prentice Hall Inc., New Jersey, 2006 pp. 761 ISBN 0-13-726175-6 (any edition of this text will do,)

- b. Course Supplements. At specific points in the course we will use course supplements in the form of trade magazines, journal articles, and government documents to present information not specifically covered in the assigned text. These documents will be available in BlackBoard.

**5. Study Assignments:** Study (reading) assignments for each lesson will be posted in writing at the start of the previous video. The assignments are the basis for understanding the next video and for working any homework problems. You should approach each new video with a general understanding of the major concepts that will be presented in the video.

#### **6. Examinations, Homework and Grading:**

- a. Examinations: CVEG 563-2 has 3 exams during the semester as indicated in the Course Schedule. The “final examination” in this course, is somewhat comprehensive, but focuses on the content in student presentations. Exams may include both closed and open book sections.

- b. Quizzes. Quizzes will be given at the discretion of the instructor. Specific points associated with the quizzes will be rolled into the Instructor Grade in the grading plan.

- c. Homework. Homework assignments are posted in BlackBoard with specific due dates and will be submitted through Blackboard. Submission deadlines will always be at 11:59 PM.

- d. Solutions. Solutions to homework problems, exams, or any other special problems, will be maintained on BlackBoard and will be posted two days after the submission deadline.

- e. Late Submissions. For major homework assignments late work will be accepted if coordination is made prior to the turn-in date. Work turned in late will be penalized in decrements of 10%. The first 10% cut begins at midnight of due date! A report or problem due at 11:59 PM but submitted at 12:01 AM on the next day will receive a 10% cut. Additional 10% decrements will be made on subsequent days at the discretion of the instructor. Work will not be accepted beyond three days late without special coordination affected well in advance of the due date.

g. Grade Summary:

ITEM	POINTS	PERCENT
Exams (3 @ 150 pts ea)	450	39
Special Problems/Homework (3@ 100 pts / Multiple totaling 50 pts)	350	30
Report/Presentation (250/100)	350	31
<b>TOTAL</b>	<b>1150</b>	<b>100.00%</b>

h. Raw score conversions to letter grades follow.

- A 1035 points
- B 920 points
- C 805 points
- D 690 points
- F Less than 690 points

**7. . Special Problems (SPs):**

- a. Special Problems. CVEG 563- has three Special Problems (DPs).
  - (1) DP1 – Roadway Reinforcement (100 pts)
  - (2) DP2 – Filter Design (100)
  - (2) DP2 – Cover/Liner Stability (100 pts)

- b. Admin Instructions. Instructions specific to each DP will be covered in the administrative instructions handed out with the specific problem. Issue/due dates for each problem are noted on the Course Schedule and in BlackBoard.
- c. Group Work. There is no group work in this course

#### **8. Report/Presentation:**

- a. You will be required to do a literature review and prepare a written report (term paper) on a narrowly focused topic within the broad category of geosynthetics. As part of the report requirement you will be given 20 minutes to present your topic and lead a group discussion/problem solving session. This will be accomplished in BlackBoard Collaborate.
- b. Your grade will be based on the quality and completeness of both the report and presentation. Your presentation will be graded by both myself and the rest of the class.
- c. You will be required to view each student's presentation, evaluate their presentation for content and delivery and write a brief summary of the content of their presentation.
- d. A list of potential topics will be distributed during the second week of class if you have not made a selection before then.

#### **9. Written Submissions:**

a. Documentation. Written submissions are governed by The McGraw Hill College Handbook. Submissions, except routine homework, must be typed and should comply with the above reference or another appropriate reference. Assistance you get from **me** need not be acknowledged, however, assistance from other instructors or other students must be properly acknowledged as a parenthetical note and a proper bibliographic citation.

b. Organization/Neatness of Submissions. A significant part of engineering is written communication of laboratory work and analysis/design proposals. As a significant course in your Civil Engineering program, heavy emphasis will be placed on the clarity, organization, and readability of your work. I will exercise significant freedom in decrementing work due to poor "readability."

**10. Instructor Availability:** You and your understanding of the course material is my primary responsibility. You may contact me at my office during the normal working day or at home in the evenings if needed (not later than 9:30 PM please).

- a. Unfortunately, I cannot establish normal office hours during the work day. Ms. Rifi Raindriati manages my calendar and you can get an office hours (phone) appointment by calling her at 575-6010 if you have urgent questions.
- b. I will respond to email as quickly as possible, but likely not during the normal business day.
- c. Once the course starts I will try to find a convenient time for the class to meet via Blackboard Collaborate one evening per week for no more than an hour. This will be your opportunity to ask questions or get clarification on any issues with schedules or assignments.

**14. Academic Integrity:** As engineers you are responsible for upholding the canons of ethics of the profession. A test of your ability to do so is to uphold the University's Academic Honesty Policy. See <http://honesty.uark.edu> for a discussion of the university's Honesty Policy. While I don't anticipate problems of this nature, any instance of academic dishonesty, as defined by the University Sanction Rubric, will be dealt with immediately and severely in accordance with the published procedures. The absolute minimum sanction for academic dishonesty will be a grade of zero for the work in question.

Norman D. Dennis, Jr.  
University Professor Civil  
Engineering

**COURSE SCHEDULE**  
**CVEG 563-969 – GEOSYNTHETIC APPLICATIONS IN CIVIL ENGINEERING**  
**Fall Term 2018**

<b>Date</b>	<b>Lesson Number</b>	<b>Subject</b>	<b>NOTES</b>
Week 1	1	Introduction to Geosynthetics	<b>Read Chap 1 (Handout)</b>
	2	Overview of Geosynthetic Properties and Applications I	
	3	Overview of Geosynthetic Properties and Applications II	
	4	Polymer Properties and Testing	
	5	Geosynthetics Manufacture (Overview)	
Week 2	6	Geosynthetics Testing (Overview) I	
	7	Geosynthetics Testing (Overview) II	
	8	Geotextiles (Functions)	Chap 2, 80-93
	9	Geotextiles Properties and Testing I	Chap 2, 93-150
	10	Geotextiles Properties and Testing II	
Week 3	11	Geotextiles - Separation	Chap 2, 150-162
	12	Geotextiles – Reinforcement I	Chap 2, 162-234
	13	Geotextiles – Reinforcement II	
	14	Geotextiles – Filtration/Drainage	Chap 2, 234-262
	15	Geotextiles – Construction Issues	Chap 2, 262-295
	16	Geogrids – Properties/Testing	Chap 3, 315-336
Week 4	<b>17</b>	<b>EXAM I (Through Geotextiles)</b>	
	18	Geogrids – Reinforcement I	Chap 3, 336-380
	19	Geogrids – Reinforcement II	
	20	Geogrids – Reinforcement III	
	21	Geonets – Properties/Testing	Chap 4, 387-403
	22	Geonets - Drainage	Chap 4, 404-411
Week 5	23	Geomembranes – Properties and Testing I	Chap 5, 416-462
	24	Geomembranes – Properties and Testing II	
	25	Geomembranes – Covers I	Chap 5, 494-503
	26	Geomembranes – Covers II	Chap 5, 550-562
		Geomembranes – Liners I	Chap 5, 463-493, 503-512
	28	Geomembranes – Liners II	Chap 5, 513-549
	29	Geomembranes – Liners III	Chap 5, 571-594
Week 6	30	Geomembranes – Miscellaneous Applications	Chap 5, 565-570
	31	Geosynthetic Clay Liners – Properties and Testing	Chap 6, 613- 630
	33	Geosynthetic Clay Liners – Applications I	<b>Chap 6, 631-645</b>
	34	Geosynthetic Clay Liners – Applications II	
	35	<b>EXAM II (Through Geomembranes)</b>	
	36	Geopipes – Properties, Testing and Applications	Chap 7, 650-694
Week 7 and catch-up	37	Geopipes II - Applications	
	38	Geocomposites - Erosion Control Products	Chap 8, 736-747
	39	Geocomposites – Filtration and Drainage	Chap 8, 756-779

Week 8	40	Student Presentations	
	41	Student Presentations	
	42	Student Presentations	
	43	Student Presentations	
	<b>45</b>	<b>Final (Semi comprehensive + presentations_)</b>	