

Syllabus – Spring, 2013
REWM 4700 - Watershed Management
MWF 11 – 11:50, AG 1030

Instructor: Dr. Scott Miller, Department of Ecosystem Science & Management
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TA: Alan Klatt, MS Student in REWM / WARE
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Office Hours: *Miller:* Monday 12-2, Tuesday 2-4, Friday 9-11 or by appointment
Klatt: Tuesday & Thursday 11-12 or by appointment

Objectives: Gain an understanding of the principles, theory and practices of watershed management. Be able to describe the connections among watershed-scale management decisions and environmental outcomes, specifically related to water resources, ecological condition and human needs.

Text: Brooks, K.N., P.F. Ffolliott, H.M. Gregersen and L.F. DeBano. 2012. Hydrology and the Management of Watersheds. Blackwell Publishing, 4th Edition. Hardcover and Kindle editions are available.

Grading: There are four areas that will contribute to your grade: homework, exams, and unannounced quizzes.

Exams (3 exams, 100 points each)	300 pts
Problem Sets (7 problems*, 15 points each)	105
Quizzes (3 quizzes, 15 minutes long, 10 points each)	30
<i>Total available points</i>	<i>435</i>

* you will be given 8 problem sets, but the lowest score will not count towards your

Grading will be on a straight scale. A:90-100%, B:80-89%, C:70-79%, D:60-69%, F < 60%.

Exam Schedule:

Exam 1 - Wednesday, February 13
Exam 2 - Wednesday, March 27
Exam 3 - Wednesday, May 8 (10:15-12:15)

Grading Policy: Late work will be deducted 10% per class period past the due date. Work will not be accepted 2 weeks past due date. In order to finalize grading, work will not be accepted past Friday, May 3.

Draft Outline/Book Readings for Watershed Management * Subject to alteration

<u>Section</u>	<u>Pages</u>
Introduction to Watershed Management	3-24
■ Importance of Water Properties	
■ Water Resource Characteristics	
■ Rationale for Watersheds as a Useful Management Scale	
The Hydrologic Cycle & The Water Budget	27-48
• Processes controlling water transport	
• Balancing a budget	
• Fate & transport of water	
Precipitation	49-80
■ Factors Influencing Amount, Distribution, and Intensity	
■ Drought	
■ Snow Hydrology	
Losses: Evaporation, Interception and Transpiration	81-112
• Evaporation from water, soil & plants	
• Actual vs. potential ET	
Infiltration & Soil Water	113-140
■ Influence of Soil Characteristics	
■ Influence of Vegetation Characteristics	
■ Land Management Considerations (e.g., grazing)	
Runoff and Streamflow	141-154
• Measuring in the field	160-167
• Simple models of runoff	
• Predicting runoff and understanding return periods	
Groundwater & Surface Water Interactions	173-194
• Water sources for people	
• What controls the amounts into and out of groundwater systems	
Managing Wildland Watersheds & Water Yield	333-356
• Vegetation manipulation by people, fire, insects	368-379
• Increasing water yield	
• Changing the timing of runoff	
Surface Erosion & Desertification	199-222
• Controls on erosion	
• Background vs. accelerated erosion	
• Simple models: USLE and others	
Gully Erosion and Soil Mass Movement	222-238
• Rills, gullies & large slumps	
• Impact of vegetation on erosion control	
Water Quality (role of range and forest management influences)	297-323
• Water chemistry	
• Human and ecological considerations	
Riparian and Wetland Considerations	389-422
• Importance of wetlands	
• Managing watersheds for riparian function	
Stream Channel Morphology and Stream Classification	267-293
• Channel evaluation	
• Field observations and management toolboxes	

Student Support

If you have a physical, learning, or psychological disability and require accommodations, please let me know as soon as possible. You will need to register with, and provide documentation of your disability to, University Disability Support Services (UDSS) in SEO, room 330 Knight Hall, 766-6189, TTY: 766-3073

Student Code of Conduct

1. Students should exhibit respectful classroom values and behavior by:
 - engaging in appropriate communication, interaction and preparedness
 - demonstrating trust, respect and civility
 - approaching course content as important and necessary
 - meeting all deadlines for assignments and team member obligations
 - turning off cell phones in class
 - avoiding unnecessary talking
 - not reading outside material or doing other work during class

2. Students should contribute to a positive learning environment by:
 - arriving, attending and departing class in a respectful manner
 - taking responsibility for team and individual assignments
 - developing cooperative relationships with other students and faculty

3. Students should support a professional learning environment by:
 - avoiding inappropriate language
 - refraining from unrealistic expectations in dealing with administration, faculty and staff
 - communicating with the instructor if changes could be made to improve the learning environment

4. Students must uphold the academic integrity standards expected by the University of Wyoming. Academic integrity is conceptualized as doing and taking responsibility for one's own work. This includes individual assignments and the assumption of responsibility for work that is turned in as the "work product" of a team. Each team member is equally responsible for the work presented as the output of that team's effort. Each team member must carefully collaborate and have jointly participated in the final output. The University of Wyoming's definition of Academic Dishonesty referenced in the Student Code of Conduct: "An act attempted or performed which misrepresents one's involvement in an academic task in any way, or permits another student to misrepresent the latter's involvement in an academic task by assisting the misrepresentation." These acts include, but are not limited to: "Representing as one's own work material copied or borrowed from any source, written or otherwise, public or private, without proper citation of the source. See University of Wyoming Regulation 802. A good rule of thumb is to never use more than five consecutive words from a source without providing a citation. Student work may be evaluated for plagiarism using anti-plagiarism software if the instructor suspects academic dishonesty.