UMBC UGC New Course Request: GES 319 Watershed Science and Management

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COURSE INFORMATION:

course number(s)	319
formal title	Watershed Science & Management
transcript title (≤24c)	Watershed Sci. & Mgt.
prerequisite	GES 110 or GES 120
credits	3
max. repeat credits	0
grading method(s)	☒ Reg (A-F) ☒ Audit ☒ Pass-Fail

PROPOSED CATALOG DESCRIPTION:
An introduction to watershed structure and function with particular emphasis on principles of hydrology, geomorphology, ecology and their application to the management of watersheds. Students will explore how these fundamental dimensions help shape responses to management in the context of current environmental challenges.

RATIONALE FOR NEW COURSE: The GES curriculum currently lacks a bridge between the introductory Physical Geography (GES 110) course, and the more advanced Hydrology (GES 416), Fluvial Geomorphology (GES 411), and Watershed Analysis & Modeling (GES 419). This course will provide that bridge as well as a cross-disciplinary connection between Physical Geography and Environmental Science tracks within the department.

ATTACH COURSE OUTLINE:

Course Syllabus: Watershed Science & Management

Instructor: Dr. Matthew Baker
211-K Sondheim Hall; (410) 455-3759; mbaker@umbc.edu
Office Hours: M,W 11am-12pm or by appointment

Class: M, W, F 10am-11am, Sondheim Hall Room 202

Final Exam: Mon May 18th 10:30am-12:30pm

Course Webpage: available through Blackboard

Course Goals and Objectives:
The class is intended to provide students with an introduction to the field of watershed science and a framework for understanding threats to water resources as well as management alternatives. As an integrative discipline, watershed science includes aspects of hydrology, geomorphology, ecology, and water resource management. In an effort to link our examination of watershed science to current issues, this course will

focus primarily on anthropogenic impacts and management efforts in the Chesapeake Bay Watershed as a case study. Specific learning objectives for this course include:

(1) an understanding of the links between aspects of the hydrologic cycle and watershed function
(2) appreciation of linkages between watershed function and water quality or sediment transport
(3) appreciation of linkages between watershed function and aquatic habitat
(4) an understanding of human impacts to watershed functions
(5) familiarity with current problems faced by watershed managers including scientific, technical, economic, and political constraints

As a broad overview, this class will intentionally overlap with other subjects offered by GES in the hope of encouraging further interest and study of watershed processes.

Course Structure: Everything relevant to the course will be posted on Blackboard (Bb). This includes readings that we will be discussing throughout the duration of the course, information about the course assignments, and grades. If you experience any problems accessing information from the course website please let Dr. Baker know as soon as possible.

Class Periods:
Class meetings will consist of at least two lectures per week and one discussion period. The discussion period may include some lecture, group exercises, or in class assignments. You are responsible for all material covered in class. From time to time, Dr. Baker may post figures or notes from lectures but you are expected to take notes in class regardless.

Readings:
GES 302A Watershed Sci. & Mgt. Baker Spring 2009
Assigned readings will be made available on Blackboard. These readings are dsigned to prepare you for the material covered in an upcoming lecture. Please come to class prepared. Additional background reading may be available on blackboard or referenced in class.

Assignments and Exams:
There will be two or three short (<5 pages) papers assigned throughout the course of the semester as well as two (2) in-class exams, on **Friday, February 27th and Wednesday, April 8th.** Dr. Baker reserves the right to deliver pop quizzes at any time during normal class periods.

Grades:
Grading for this course will be based on a weighted average of in-class exam scores (35%), papers and quizzes (35%), and the final exam (30%). Grading will be on a straight-scale (A>=93, A-=90-92.9, etc.) with no curves and no opportunities for extra credit.

The following statement is in accordance with new University policy:
By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standard of honesty. Cheating, fabrication, plagiarism, and helping others commit these acts are all forms of academic dishonesty and they are

wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory. The instructor of this class reserves the right to check picture identification during any quiz or examination or use available tools for assessing plagiarisms.

Tentative Course Outline (subject to modification):

I. Watershed Hydrology and Hydrologic Functions
a. Review of the hydrologic cycle
b. The water balance
c. Watershed components and behavior
d. Hydrologic routing

II. Watershed Geomorphology and Transport Functions
a. Morphology and evolution
b. Channel networks and transport
c. Channel form and adjustment

III. Watershed Ecology and Habitat Functions
a. Physical and chemical habitat
b. Aquatic biota
c. Classification and structure

IV. Impacts to Inland and Coastal Systems
a. Land use and human modifications
b. Inland waters
c. Coastal waters

V. Watershed Assessment
a. Inventories
b. Problem Scoping
c. Evaluating alternatives

VI. Legal and Institutional Frameworks
a. Relevant laws
b. Relevant agencies and programs

VII. Management Case Studies
a. Water quantity, quality, habitat integrity, designated uses
b. Protection, rehabilitation, enhancement
c. Best Management Practices

VIII. Technical, Social, and Political Challenges