UMBC UGC Instructions for New Course Request Form (revised 12/2020)

Date submitted: The date that the form will be submitted to the UGC.

Course number & title: Enter the number and title of the course at the top of the page. Contact the Registrar's Office to confirm that the desired course number is available.

Cross-listed courses: All cross-listed course numbers must be listed in the course number box. Requests to create cross-listed courses must be accompanied by letters of support via email from all involved department chairs. Proposals for new courses or the addition of a cross-listing to an existing course must include as a part of the rationale the specific reason why cross-listing is appropriate. Email from all involved department chairs is also required when cross-listing is removed and when a cross-listed course is discontinued. Please note that Special Topics courses cannot be cross-listed.

Contact information: Provide the contact information of the Chair or UPD of the department or program housing the course. If the course is not housed in a department or program, then provide the same information for the head of the appropriate academic unit. (See UGC Procedures) If another faculty member should also be contacted for questions about the request and be notified about UGC actions on the request, include that person's contact information on the second line.

Course number: For cross-listed courses, provide all the numbers for the new course.

Transcript title: Limited to 30 characters, including spaces.

Recommended Course Preparation: ***Please note that all 300 and 400 level courses should have either recommended course preparation(s) or prerequisite(s) and that 100 or 200 level courses may have them.***
Here fill in what previous course(s) a student should have taken to succeed in the course. These recommendations will NOT be enforced by the registration system. Please explain your choices in the "rationale" (discussed below).

Prerequisite: ***Please note that all 300 and 400 level courses should have either recommended course preparation(s) or prerequisite(s)*** Here fill in course(s) students need to have taken before they enroll in this course. These prerequisites will be enforced through the registration system. Please explain your choices in the "rationale" (discussed below).

NOTE: Please use the words "AND" and "OR", along with parentheses as appropriate, in the lists of prerequisites and recommended preparation so that the requirements specified will be interpreted unambiguously.

NOTE: Unless otherwise indicated, a prerequisite is assumed to be passed with a "D" or better.

# of credits: To determine the appropriate number of credits to assign to a course please refer to the UMBC Credit Hour Policy which articulates the standards for assignment and application of credit hours to all courses and programs of study at UMBC regardless of degree level, teaching and learning formats, and mode of instruction.

Maximum total credits: This should be equal to the number of credits for courses that cannot be repeated for credit. For courses that may be repeated for credit, enter the maximum total number of credits a student can receive from this course. E.g., enter 6 credits for a 3 credit course that may be taken a second time for credit, but not for a third time. Please note that this does NOT refer to how many times a class may be retaken for a higher grade.

Grading method(s): Please review the grading methods document (this link can be found on the UGC forms page) before selecting a grading option. Please do not select all three grading options by default.

Proposed catalog description: Provide the exact wording of the course description as it will appear in the next undergraduate catalog. Course proposals should be a) no longer than 75 words, b) stated in declarative sentences in language accessible to students, and c) avoid reference to specific details that may not always pertain (e.g., dates, events, etc.). Course descriptions should not repeat information about prerequisites (which are always listed alongside the course description)."

Rationale: Please explain the following:
a) Why is there a need for this course at this time?
b) How often is the course likely to be taught?
c) How does this course fit into your department's curriculum?
d) What primary student population will the course serve?
e) Why is the course offered at the level (ie. 100, 200, 300, or 400 level) chosen?
f) Explain the appropriateness of the recommended course preparation(s) and prerequisite(s).
g) Explain the reasoning behind the P/F or regular grading method.
h) Provide a justification for the repeatability of the course.

Cross-listed courses: Requests to create cross-listed courses must be accompanied by letters of support via email from all involved department chairs. Proposals for new courses or the addition of a cross-listing to an existing course must include as a part of the rationale the specific reason why cross-listing is appropriate. Email from all involved department chairs is also required when cross-listing is removed and when a cross-listed course is discontinued. Please note that Special Topics courses cannot be cross-listed.

Course Outline: Provide a syllabus with main topics and a weekly assignment schedule which includes complete citations for readings with page numbers as appropriate. Explain how students' knowledge and skills will be assessed.

Component: This is the type of instruction the course will utilize. The options are as follows: Clinical, Continuance, Discussion, Field Study, Independent Study, Laboratory, Lecture, Practicum, Seminar. Additionally, more than one component may be selected by the department. Please review the UMBC guidelines for components here: https://registrar.umbc.edu/course-component-and-credit-hour-guidelines/

Departmental Consent: Does this course require a student to have departmental approval noted in PeopleSoft prior to registering? If yes, please check the box. Departmental consent is a permanent addition to the course description. If the department would like consent to be administered by semester, or instructor do not check this box.

Note: the UGC form is a Microsoft Word form. You should be able to enter most of the information by tabbing through the fields. The document is protected. In the rare case that you need to unprotect the document, use the password 'ugcform'. Beware that you will lose all the data entered in the form's fields if you unlock and lock the document. https://highpoint-prd.ps.umbc.edu/app/catalog/listCatalog

UMBC UGC New Course Request: GES 420 Watershed Biogeochemistry

Date Submitted: 30 August 2021 (revised 24 September 2021)

	Name	Email	Phone	Dept
Dept Chair or UPD	Maggie Holland	mholland@umbc.edu	5-1921	GES
Other Contact	Alan Yeakley	yeakley@umbc.edu	5-3955	GES

COURSE INFORMATION:

Course Number(s) Include Cross-listed Courses	GES 420
Formal Title	Watershed Biogeochemistry
Transcript Title (≤30c)	Watershed Biogeochemistry
Recommended Course Preparation	
Prerequisite	Must the pre-requisite be passed with a grade of : ☐ 'A' ☐ 'B' ☒ 'C' or ☐ 'D' GES 310 or GES 311
# of Credits Must adhere to the UMBC Credit Hour Policy	3
Repeatable for additional credit?	☐ Yes ☒ No
Max. Total Credits	3 This should be equal to the number of credits for courses that cannot be repeated for credit. For courses that may be repeated for credit, enter the maximum total number of credits a student can receive from this course. E.g., enter 6 credits for a 3 credit course that may be taken a second time for credit, but not for a third time. Please note that this does NOT refer to how many times a class may be retaken for a higher grade.
Grading Method(s)	☒ Reg (A-F) ☐ Audit ☐ Pass-Fail

PROPOSED CATALOG DESCRIPTION (Approximately 75 words in length. Please use full sentences.**):**

This course studies the chemistry and hydrology of watershed-based ecosystems, emphasizing physical and biological processes. Focal areas include atmospheric input; soil development; cycling of minerals, carbon, and nutrients in terrestrial ecosystems; water quality in rivers and wetlands; and impacts of management on watershed-based ecosystems. A key aspect of the course is how landscapes such as watersheds, wetlands, rivers, and lakes are affected by human impacts, including forest logging, urbanization, acidic rainfall, and increases in greenhouse gases.

RATIONALE FOR NEW COURSE:

This course has been taught at UMBC twice since 2017, as a senior level course (i.e. GES 400). We would offer it once a year, most likely during fall semester, although it could be taught alternatively during spring semester as department needs determine. The course would complement other courses in GES on the environmental science side of our curriculum, both terrestrial and aquatic, and is geared primarily for students majoring in Environmental Science and Geography (i.e. our BS degree in GES). This course would also complement GES 412, Biogeochemical Cycles in the Global Environment (rarely taught), as it provides a watershed-based, process-scale approach to understanding the biogeochemistry of ecosystems. The prerequisites for the course are GES 120, Environmental Science and Conservation, as well as one of either GES 310, Geomorphology, or GES 311, Weather and Climate. Watershed Biogeochemistry would be taught at the 400 level, due to its treatment of the material at an advanced level. Both years it was taught there were at least 14 students in the class (with a cap of 18). The grading method of A-F is standard for 400 level courses in GES. The course is justified to be repeated every year due to its consistently high enrollment and to its place in the GES curriculum, accessible to our BS majors as well as our BA majors provided they take the junior level prerequisite of either GES 310 or 311.

ATTACH COURSE SYLLABUS (mandatory):

Where: **Room TBA; University of Maryland Baltimore County**
Lecture: **Time TBA**
Instructor: **Alan Yeakley (Email (preferred): yeakley@umbc.edu ; phone: 410-455-3955)**
Office hours: **Sondheim 211A; times TBA**

READINGS

- Schlesinger and Bernhardt, 2013. Biogeochemistry: An Analysis of Global Change. Academic Press.
- Likens, 2013. Biogeochemistry of a Forested Ecosystem. Springer.

COURSE DESCRIPTION

This course studies the chemistry and hydrology of watershed-based ecosystems, emphasizing physical and biological processes. Focal areas include atmospheric input; soil development; cycling of minerals, carbon, and nutrients in terrestrial ecosystems; water quality in rivers and wetlands; and impacts of management on watershed-based ecosystems. A key aspect of the course is how landscapes such as watersheds, wetlands, rivers, and lakes are affected by human impacts, including forest logging, urbanization, acidic rainfall, and increases in greenhouse gases.

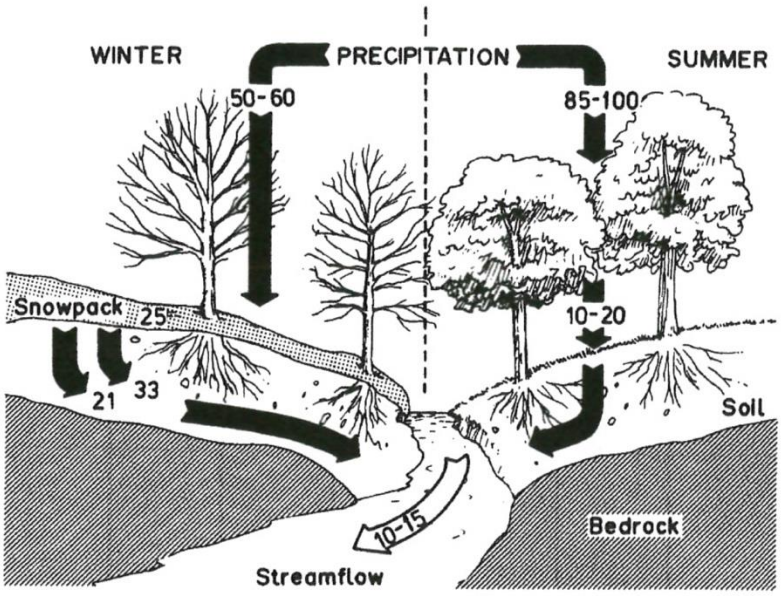

Fig. 23 General relationships for two seasonal periods in Watershed 6 at Hubbard Brook Experimental Forest. The values are hydrogen ion concentrations in μEq/L (modified from Hornbeck et al. 1976)

Course goals: By the end of this course, students will be able to:

- Conceptualize watersheds as systems
- Understand basic watershed hydrology and chemical processes
- Understand the overall role of geology on watershed soil development
- Understand roles that soil and biota play in processing water and nutrients on landscapes
- Solve mass balance problems that concern water and chemical constituents in watersheds
- Understand how various land use and climate impacts affect the conditions and overall sustainability of watershed-based ecosystems
- Understand the processes that affect water quality in streams and rivers draining watersheds
- Understand the scientific underpinnings of how watersheds can be managed sustainably

WEEKLY TOPICS

Week	Dates	Lecture Topic	Activities
1	Aug 30	Introduction	
2	Sept 4, 6	Origins (S&B: Ch 1, 2)	HW 1 due
3	Sept 11, 13	Atmosphere (S&B: Ch 3)	
4	Sept 18, 20	Lithosphere (S&B: Ch 4)	HW 2 due
5	Sept 25, 27	Carbon Cycle (S&B: Ch 5)	HW 3 due
6	Oct 2, 4	Biogeochemical Cycling (S&B: Ch 6)	HW 4 due
7	Oct 9, 11	Synopsis	HW 5 due
8	Oct 16, 18	Review, ***Midterm exam***	Exam
9	Oct 23, 25	Wetland chemistry (S&B: Ch 7)	
10	Oct 30, Nov 2	Inland water chemistry (S&B: Ch 8)	
11	Nov 6, 8	Watershed hydrology (L: Ch 1, 2)	HW 6 due
12	Nov 13, 15	Watershed chemistry (L: Ch 3, 4)	HW 7 due
13	Nov 20	Watershed chemistry (L: Ch 5, 6)	HW 8 due
14	Nov 27, 29	Synopsis	HW 9 due
15	Dec 4, 6	HW Review	
16	Dec 11, 13	Review, ***Final exam*** (note: Dec 13 at 6 pm)	Exam

ASSIGNMENTS

Readings:

The readings for each week are given above. It is expected that these assigned readings will be read prior to class; be ready to discuss them within class lecture.

News report:

Each student will present once during the term on an item of watershed biogeochemistry in the news. Each week, approx. 1-2 students will each present for 5-10 min on a news item that's pertinent to that week's lecture topic (e.g., the C cycle in week 5, wetland chemistry in week 9, etc). News can be either from on-line or print sources, and can

include newspapers, magazines, and journal articles. Along with the oral presentation, the student will turn in a copy of the news source and a one-paragraph essay on the news topic. The essay should be typed double-spaced, include full citation of the source(s) used, and be *no more than one page long*. Both the oral presentation and the essay will be evaluated as part of the participation grade.

Homework:

Homework will be assigned most weeks. Homework will be on the Tuesday of a given week at the beginning of class. Turn in the homework as hardcopies in class (i.e. not by email, unless there are extenuating circumstances, worked out in advance with the instructor). If a spreadsheet is used to solve the homework, accompany a copy of the spreadsheet with a hand-written example of how each calculation was performed. It is permissible to work with other students on these homework problems; however, each student is responsible for her/his own independent set of homework solutions (i.e. do not do a single homework set together and make photocopies of it).

Exams:

There will be two exams (mid-term, final). The exams will be closed book. We'll review for each exam in the prior class period. The mid-term will be over the first half of the course, and the final will be on the second half (i.e., the final is non-comprehensive).

Late penalties:

There will be a late penalty of 5%/weekday for late homework. For every homework set assigned, there will be a brief homework review session in the class period prior to the due date.

Grade distribution:

Homework (25%); Mid-term exam (25%); Final exam (25%); Participation (i.e. News report, Vocal participation in class; Punctuality in both personal presence and homework submission) (25%).

FURTHER CONSIDERATIONS

Academic Integrity:

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 standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include failing the class, suspension or dismissal. This includes cheating on an exam or RRQ by copying answers from or sharing answers with another student. The penalty will be an automatic zero on the exam. For more information consult the following university web site: **http://www.umbc.edu/undergrad_ed/honesty/**

Peer Tutoring Services Are Available for This Course

Appointment Tutoring: free tutoring, by appointment, for selected classes, in small groups. Tutoring sessions may be arranged by visting **https://lrc.umbc.edu/tutor/appointments/**

Who are peer tutors?

Peer tutors are currently enrolled students with demonstrated course mastery who receive ongoing training. Peer tutors have undergone a selection process that includes faculty recommendations. Oftentimes, peer tutors for GES classes are current GES majors.

What happens during a tutoring session?

Peer tutors help students learn course concepts and methods of analysis, practice problems, and prepare for tests; they also help with learning strategies and study skills for the classes they support.

Accessibility and Disability Accommodations, Guidance and Resources

Accommodations for students with disabilities are provided for all students with a qualified disability under the Americans with Disabilities Act (ADA & ADAAA) and Section 504 of the Rehabilitation Act who request and are eligible for accommodations. The Office of Student Disability Services (SDS) is the UMBC department designated to coordinate accommodations that would create equal access for students when barriers to participation exist in University courses, programs, or activities.

If you have a documented disability and need to request academic accommodations in your courses, please refer to the SDS website at sds.umbc.edu for registration information and office procedures.

SDS email: disAbility@umbc.edu
SDS phone: (410) 455-2459

If you will be using SDS approved accommodations in this class, please contact me (instructor) to discuss implementation of the accommodations. During remote instruction requirements due to COVID, communication and flexibility will be essential for success.

Sexual Assault, Sexual Harassment, and Gender Based Violence and Discrimination

UMBC's Policy on Sexual Misconduct, Sexual Harassment and Gender Discrimination and Federal Title IX law prohibit discrimination and harassment on the basis of sex in University programs and activities. Any student who is impacted by sexual harassment, sexual assault, domestic violence, dating violence, stalking, sexual exploitation, gender discrimination, pregnancy discrimination, gender-based harassment or retaliation should contact the University's Title IX Coordinator to make a report and/or access support and resources:**Mikhel A. Kushner, Title IX Coordinator (she/her/hers)**
410-455-1250 (direct line), kushner@umbc.edu

You can access support and resources even if you do not want to take any further action. You will not be forced to file a formal complaint or police report. Please be aware that the University may take action on its own if essential to protect the safety of the community.

If you are interested in or thinking about making a report, please see the Online Reporting Form. Please note that, while University options to respond may be limited, there is an anonymous reporting option via the online form and every effort will be made to address concerns reported anonymously.

Notice that Faculty are Responsible Employees with Mandatory Reporting Obligations:

All faculty members are considered *Responsible Employees*, per UMBC's Policy on Sexual Misconduct, Sexual

Harassment, and Gender Discrimination. Faculty are therefore required to report possible violations of the Policy to the Title IX Coordinator, even if a student discloses something they experienced before attending UMBC.

While faculty members want you to be able to share information related to your life experiences through discussion and written work, students should understand that faculty are required to report Sexual Misconduct to the Title IX Coordinator so that the University can inform students of their rights, resources and support.

If you need to speak with someone in confidence, who does not have an obligation to report to the Title IX Coordinator, UMBC has a number of Confidential Resources available to support you:

- The Counseling Center: **410-455-2472 / After-Hours 410-455-3230**
- University Health Services**: 410-455-2542**
- Pastoral Counseling via Interfaith Center: **410-455-3657; interfaith@umbc.edu**

Other Resources:

- Women's Center (for all genders): **410-455-2714; womenscenter@umbc.edu.**
- Shady Grove Student Resources, Maryland Resources, National Resources.

Child Abuse and Neglect:
Please note that Maryland law and UMBC policy require that I report all disclosures or suspicions of child abuse or neglect to the Department of Social Services and/or the police.

Pregnancy

UMBC's Policy on Sexual Misconduct, Sexual Harassment and Gender Discrimination expressly prohibits all forms of Discrimination and Harassment on the basis of sex, including pregnancy. Resources for pregnant students are available through the University's Office of Equity and Inclusion. Pregnant and parenting students may contact the Title IX Coordinator to discuss plans and assure ongoing access to their academic program with respect to a leave of absence or return following leave related to pregnancy, delivery, or early months of parenting.
In addition, students who are pregnant may be entitled to accommodations under the ADA through the Student Disability Service Office, and/or under Title IX through the Office of Equity and Inclusion.

Religious Observances & Accommodations

UMBC Policy provides that students should not be penalized because of observances of their religious beliefs, students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. It is the responsibility of the student to inform the instructor of any intended absences for religious observances in advance, and as early as possible. For questions or guidance or to request an accommodation, please contact the Office of Equity and Inclusion at oei@umbc.edu.

Hate, Bias, Discrimination and Harassment

UMBC values safety, cultural and ethnic diversity, social responsibility, lifelong learning, equity, and civic engagement.

Consistent with these principles, UMBC Policy prohibits discrimination and harassment in its educational programs and activities or with respect to employment terms and conditions based on race, creed, color, religion, sex, gender, pregnancy, ancestry, age, gender identity or expression, national origin, veterans status, marital status, sexual orientation, physical or mental disability, or genetic information.

Students (and faculty and staff) who experience discrimination, harassment, hate or bias or who have such matters reported to them should use the online reporting form to report discrimination, hate or bias incidents; reporting may

be *anonymous*.

Required Information for Registrar's Office Implementation:
Items below will be listed in the catalog, but do not require UGC approval. For future changes to these items, submit an RT ticket to the Registrar's Office.

Component	☐ Clinical ☐ Discussion ☐ Field Study ☐ Independent Study ☐ Laboratory ☒ Lecture ☐ Practicum ☐ Seminar ☐ Thesis Research ☐ Tutorial
Departmental Consent	☐ Yes ☒ No
When Offered (Fall, Summer, Winter, Spring, Other*) *If Other, please describe	Fall or Spring (one offering per year)

Requested Effective Date (Please note that the final approval date will determine the earliest possible effective date):

October 2021

Under what APR will this course evaluated?

2023