

BIOS: 595: Stream Ecology

I. Course Info:

What: Stream Ecology – BIOS 595, CRN 33835, 4 credits
When: Spring 2017, M and W 9:30 - 10:50; recitation; Tuesday 11AM-1PM
Where: GBB 202
URL: Moodle site

II. Instructor Information:

Dr. Marc Peipoch
Division of Biological Sciences
HS 513B
406 – 830 -7474
email: marc.peipoch@mso.umt.edu
office hours: not specified, email or call to schedule a meeting

III. Text book (non required – two electronically available):

- 1) Allan, J. D. and M.M. Castillo. 2009. Stream Ecology: Structure and Function of Running Waters, 2nd Edition, Springer-Verlag, pp. 436. (ISBN 978-1-4020-5582)
- 2) Hauer, F.R. and G.A. Lamberti. 2006. Methods in Stream Ecology. 2nd Edition, Prentice Hall , pp. 877. (ISBN 0-12-332907-8)

IV. Policies on attendance, academic honesty, and plagiarism

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code available at the following link: [Student Conduct Code](#)

- 1) *Attendance:* Attendance is expected and necessary. The instructor recognizes that occasional absence may occur due to a variety of reasons. Students cannot contribute or receive if they are not present. A student's propensity to attend class will be noted in the 'participation' portion of the course grade (see below). Any absence can be considered excused if and only if the student consults the instructor before missing the class.
- 2) *Plagiarism:* Plagiarism will not be tolerated. If the instructor determines that a student has plagiarized any material as part of any content turned into the instructor (or assistants) as part of the course requirements, the student will be dismissed from the course and will receive a failing grade (i.e., F). Further retributions will be determined following the Code of Conduct protocol.
- 3) *Submission Deadlines:* If a student submits an assignment (notebook, exams, or others) after the indicated deadline it will not get marked. The amount of time between the

submission deadline indicated by the instructor and the late submission will not be relevant (i.e., a few seconds late equals days of delay). Any late submission can be considered excused if, and only if, the student consults the instructor before missing the deadline.

4) *Accessibility, disabilities, and special accommodations*: The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS in Lommasson 154. I will work with you and DSS to provide an appropriate accommodation.

V. Course Content and Structure

1) Learning Outcomes:

- i) Ability to discuss and assert general ecological principles as they pertain to running water ecosystems.
- ii) Fundamental skills necessary to interpret primary scientific literature directed at ecological issues in running water ecosystems.
- iii) Composite understanding required to apply concepts and techniques that are fundamental to ecological assessment of streams and rivers to real-world problems influencing form and function.

2) Lecture/Discussions: The course is designed to function as a graduate level effort where students and instructor contribute together to provide the course content. In this way, students will be expected to participate in discussion of lecture material, text content, and assigned readings.

3) Recitation: The course will include an evening discussion period of 2 hours duration where the class will address primary literature associated with the lecture topics. Initially, the course will be lead by the instructor, but students will be paired and identified as discussion leaders as the course progresses.

4) Class Notebook: We will compile a series of handouts associated with lectures, readings, and laboratory exercises. Notebooks will be collated to generate a comprehensive reference containing schematics, references, and literature citations that will then serve as a future resource. The notebook will be of great importance for the student and will have direct impact on course grades (see below).

VI. Grading - Basis for Scores:

Course grades will be derived from 4 areas:

A) Class Notebook (20%): The notebook should include handouts associated with lectures and notes from literature discussions. Most important, the notebook should

include your class notes. These may be your original notes taken in class or notes included after the original notes have been restructured/rewritten. Notebooks will be left with the instructor following the exams and will be graded based on content, extent, and organization.

B) Class Participation (10%): A good deal of class time will be spent addressing assigned literature and textbook readings. Students will be called on to address literature content and contribute to discussion. The instructor will document student class participation.

C) Exams (45%): Two exams will be offered during the semester; the first exam will be an in-house written exam. Students will be expected to bring their notebooks along with them for the first exam, but notebooks will not be available for use during the written exam. Instead, notebooks will then be left with the instructor for assessment. The final exam will also be a written exam designed to be comprehensive and cumulative. The first exam is worth 20% of the grade and the final is worth 25%.

D) Recitation (25%): Participation in discussions and ability to display a working knowledge of the literature.

E) Grade Assignment: All students will receive the grade they have earned. No extra-credit points will be available at any point during the course. Grades are generically distributed as follows: A (90–100%), B (80-89%), C (70-79%), D (60-69%), F (<60%). Plus and minus marks will be applied as determined by the instructor.

IV. Course Syllabus

Section I - Stream Templates: physical, chemical, and biological features		
Day	Date	Topic
Monday	Jan 23	Introduction/Overview/ <i>Lecture 1: Hydrology & Stream Channels I</i>
Wednesday	Jan 25	<i>Lecture 1: Hydrology & Stream Channels - II</i>
Monday	Jan 30	<i>Lecture 2: Stream Water Chemistry</i>
Wednesday	Feb 1	<i>Lecture 3: Physical Factors important to Biota</i>
Monday	Feb 6	<i>Lecture 4: Autochthonous Organic Matter</i>
Wednesday	Feb 8	<i>Lecture 5: Allochthonous Organic Matter</i>
Monday	Feb 13	<i>Lecture 6: Trophic Relationships</i>

Section II - Population Ecology: predation, competition, herbivory and drift		
Day	Date	Topic/Module
Wednesday	Feb 15	<i>Lecture 7: Species Interactions I: Herbivory</i>
Monday	Feb 20	<i>President's Day - No Class</i>
Wednesday	Feb 22	<i>Lecture 8: Species Interactions II: Competition</i>
Monday	Feb 27	<i>Lecture 9: Species Interactions III: Predation</i>
Wednesday	Mar 1	<i>Lecture 10: Animal Drift and Colonization</i>

Section III - Community Ecology: diversity, disturbance, and niches		
Day	Date	Topic
Monday	Mar 6	Mid-Term Exam
Wednesday	Mar 8	<i>Lecture 11: Diversity and Food Webs 1</i>
Monday	Mar 13	<i>Lecture 12: Diversity and Food Webs 2</i>
Wednesday	Mar 15	<i>Lecture 13: Key Stone Species & Ecosystem Engineers</i>

Section IV - Ecosystem Ecology: energy flow, OM dynamics, and nutrient cycling

Day	Date	Topic
Monday	Mar 20	<i>Spring Break – No Class</i>
Wednesday	Mar 22	<i>Spring Break – No Class</i>
Monday	Mar 27	<i>Lecture 14: Ecosystem Metabolism and Energy Flow I</i>
Wednesday	Mar 29	<i>Lecture 15: Ecosystem Metabolism and Energy Flow II</i>
Monday	Apr 3	<i>Lecture 16: Organic Matter Dynamics (Debris Dams) I</i>
Wednesday	Apr 5	<i>Lecture 17: Organic Matter Dynamics (Debris Dams) II</i>
Monday	Apr 10	<i>Lecture 18: Biogeochemical Cycles (Nitrogen Cycle)</i>
Wednesday	Apr 12	<i>Lecture 19: Nutrient Spiraling in Streams</i>
Monday	Apr 17	<i>Lecture 20: Hyporheic Zones I</i>
Wednesday	Apr 19	<i>Lecture 21: Hyporheic Zones II</i>
Monday	Apr 24	<i>Lecture 22: Disturbance and Succession I</i>
Wednesday	Apr 26	<i>Lecture 23: Disturbance and Succession II</i>

Section V - Landscape Ecology: large scale models, land use, and anthropogenic influences

Day	Date	Topic
Monday	May 1	<i>Lecture 24: Large River Systems I</i>
Wednesday	May 3	<i>Lecture 25: Large River Systems II</i>

Final Exam: Friday, 12th @ 10AM