WATS 5350 – MANAGEMENT & RESTORATION OF AQUATIC ECOSYSTEMS CAPSTONE – II SYLLABUS

COURSE INFORMATION

SEMESTER(S) TRADITIONALLY OFFERED: Spring

CREDITS: 2 credits

CLASS MEETING TIME: TBD (1 afternoon per week 3 hour time slot: 1 hour lecture/discussion; 2 hours lab)

CLASSROOM: TBD

INSTRUCTORS:

Dr. Peter Wilcock
NR210
wilcock@usu.edu
Office hours by appointment

Dr. Joseph Wheaton
NR360
Joe.Wheaton@usu.edu
Office hours by appointment

COURSE WEB PAGE: Forthcoming... see Canvas for assignments

PREREQUISITES: WATS 5340 – Management & Restoration of Aquatic Ecosystems Capstone - I

COURSE FEE: $75 is collected to cover the cost of field trips and implementation projects.

COURSE LEARNING OUTCOMES:

1. Gain direct experience applying knowledge as a watershed scientist to working on real-world aquatic ecosystem restoration and management problems (e.g. stream restoration, watershed management, wetland restoration) with practitioners.

2. Provide constructively critical evaluations of various aspects of restoration projects through a mix of peer-review of other student projects and evaluation of real-world projects.

3. Build a working understanding of the typical process through which restoration projects are conceived, proposed, planned, permitted and conceptually designed (see WATS 5701 for the detailed design, construction bidding, construction implementation and adaptive management aspects of projects).

4. Develop a working understanding of different aspects and approaches to restoration design and create two types of design and evaluate their ability to achieve project objectives. Articulate specific, testable design hypotheses for your own designs.

5. Develop a pragmatic Adaptive Management Plan for a real project.

6. Get first-hand experience constructing & implementing a ‘cheap and cheerful’ restoration project by building structures you designed.
7. Understand the principles of Post Project Appraisals and Monitoring and how to evaluate overall restoration objectives and test design hypotheses.
8. Apply the evaluation and adjust loops of an Adaptive Management Plan to see how the process of learning-by-doing can work.

COURSE STRUCTURE:
The course will generally consist of 30-60 minutes each week of lecture and discussion on new topics, followed by hands-on workshop/labs doing a mix of group project work, individual assignments and mock meetings. Students will be exposed to and work on (a) actual local restoration project(s) through guest lectures with professionals and practitioners as well as field trips.

ASSIGNMENTS & COURSE GRADING:
Each of the learning outcomes 4-8 will have an individual or group assignment that will account for 80% of your grade with assignment weightings proportional to workload. There will be no tests. All assignments will require producing those materials that professionals and practitioners would normally prepare. Each group will produce a final project report and make an oral presentation. 20% of your grade will be based on peer-reviews you provide of project documents and constructive critiques of each other’s projects.
## APPROXIMATE SCHEDULE:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic (Learning Outcomes met)</th>
<th>Labs/ Field Trips</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>1</td>
<td>Course Overview, Review of WATS 5340 &amp; Identification of Projects (L.O. 1, 2)</td>
<td>Field Trip Visit Project Site(s)</td>
<td>Review Restoration Designs</td>
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<tr>
<td>2</td>
<td>Overview of Restoration Design &amp; Implementation (L.O. 3, 1, 2)</td>
<td>Meet real design practitioners</td>
<td>Reading</td>
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<td>3</td>
<td>Restoration Design – Geomorphic Principles (L.O. 4, 1, 3)</td>
<td>Field trip for identification of valley setting, geomorphic units and structural elements.</td>
<td>Prepare geomorphic map</td>
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<td>4</td>
<td>Restoration Design – Grading Plans (L.O. 4, 1, 3)</td>
<td>Grading Plan Development in CAD or GIS</td>
<td>Grading Plan (individual)</td>
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<td>5</td>
<td>Project Design – Design Hypotheses: Generation &amp; Testing (L.O. 4, 1, 2, 3)</td>
<td>Design hypothesis generation &amp; testing with simulation modeling</td>
<td>Bioenergetics Modeling Report</td>
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<td>6-7</td>
<td>Project Design – Field Designs &amp; Monitoring Plans (L.O. 4, 1, 3)</td>
<td>Designing Pilots (week 1) ; Field design with design apps (week 2)</td>
<td>Conduct field design and prepare plan; Peer Review</td>
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<td>8-9</td>
<td>Adaptive Management Plans (L.O. 8, 1, 3)</td>
<td>Adaptive Management Planning (site visit as necessary)</td>
<td>Prepare Adaptive Management Plan</td>
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<td>10</td>
<td>Construction Bidding &amp; Planning (L.O. 6, 1, 2, 3)</td>
<td>Guest lecture/visit with engineering contractors</td>
<td>Evaluate bids</td>
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<td>11-12</td>
<td>Construction Implementation &amp; Oversight (L.O. 6, 1, 3)</td>
<td>Build BDAs and PALs (local project) – 2 field trips (one to Birch Creek; one to new project)</td>
<td>As-Built Report &amp; Lessons Learnt</td>
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<td>13</td>
<td>Post Project Appraisal (L.O. 7, 1, 3)</td>
<td>Testing design hypotheses through building – rapid assessment apps - BACI</td>
<td>PPA Vignette</td>
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<td>14</td>
<td>Adaptive Management (L.O. 8, 1, 3)</td>
<td>‘Maintenance’ field trip; Use monitoring to evaluate and refine plan.</td>
<td>Revise AM Plan</td>
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<td>15</td>
<td>Course Synthesis through Adaptive Management – Learning by Doing</td>
<td>Student Presentations</td>
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COURSE POLICIES:
Our own course policies include:

- **Late work.** Any work submitted past the due date will receive an automatic 10% reduction unless due to a pre-approved excused absence. Any work turned in over one week past the due date may not be accepted without prior approval.
- **Working together.** You are welcome and expected to work together on assignments and projects. However, each student must undertake their own analyses, make their own maps, produce their own figures, conduct their own peer reviews and contribute to the production of group reports. Specific guidelines for these expectations will be provided on each assignment. Plagiarism will not be tolerated. Copying figures or text without appropriate citations or permission will not be tolerated.
- **Academic Dishonesty.** Use common sense. Don’t cheat.

In addition, we adhere to the University’s course policies:

**ACADEMIC FREEDOM AND PROFESSIONAL RESPONSIBILITIES (FACULTY CODE)**
Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy #403 further defines academic freedom and professional responsibilities: USU Policies Section 403

**ACADEMIC INTEGRITY - "THE HONOR SYSTEM"**
Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish the higher level of conduct expected and required of all Utah State University students.

The Honor Pledge: To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge: "I pledge, on my honor, to conduct myself with the foremost level of academic integrity." A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University.

**GRIEVANCE PROCESS (STUDENT CODE)**
Students who feel they have been unfairly treated in matters other than (i) discipline or (ii) admission, residency, employment, traffic, and parking - which are addressed by procedures separate and
independent from the Student Code] may file a grievance through the channels and procedures described in the Student Code: Article VII Grievances

PLAGIARISM
Plagiarism includes knowingly "representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes the unacknowledged used of materials prepared by another person or agency engaged in the selling of term papers or other academic materials." The penalties for plagiarism are severe. They include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, denial or revocation of degrees, and referral to psychological counseling.

SEXUAL HARASSMENT
Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at 797-1266.

STUDENTS WITH DISABILITIES
The Americans with Disabilities Act states: "Reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation within the program. If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center (797-2444), preferably during the first week of the course. Any request for special consideration relating to attendance, pedagogy, taking of examinations, etc., must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative format, large print, audio, diskette, or Braille."

WITHDRAWAL POLICY AND "I" GRADE POLICY
Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.