WINONA STATE UNIVERSITY
GENERAL EDUCATION PROGRAM APPROVAL FORM

Routing form for General Education Program Course approval. Course GEOS 443 Global Water Resources

Department Approval

[signature] 3/17/14 tdogwiler

Department Chair Date e-mail address

Dean's Recommendation ✓ Yes ____ No*

Charla S Muntzka 3/17/14

Dean of College Date

*If the dean does not approve the proposal, a written rationale should be provided to the General Education Program Subcommittee.

GEPS Recommendation ____ Approved ____ Disapproved

Chair, General Education Program Subcommittee Date

A2C2 Recommendation ____ Approved ____ Disapproved

Chair of A2C2 Date

Faculty Senate Recommendation ____ Approved ____ Disapproved

President of Faculty Senate Date

Academic Vice President Recommendation ____ Approved ____ Disapproved

Academic Vice President Date

Decision of President ____ Approved ____ Disapproved

President Date

Please forward to Registrar.

Registrar ____ Please notify department chair via e-mail that curricular change has been recorded.
Date entered

[Revised 10-22-12]

WINONA STATE UNIVERSITY
PROPOSAL FOR GENERAL EDUCATION PROGRAM COURSES

Department Geoscience Date 3/16/2014

GEOS 443	Global Water Resources	4
Course No.	Course Name	Credits

Prerequisites CMST 191; GEOS 309 or GEOS 325 recommended

GEP Goal Area(s):*

CORE GOAL AREAS
- [ ] Goal 1: Communication
- [ ] Goal 3: Natural Science
- [ ] Goal 4: Mathematics/Logical Reasoning
- [ ] Goal 5: History and the Social and Behavioral Sciences
- [ ] Goal 6: The Humanities and Fine Arts

THEME GOAL AREAS
- [ ] Goal 7: Human Diversity
- [ ] Goal 8: Global Perspective
- [ ] Goal 9: Ethical and Civic Responsibility
- [ ] Goal 10: People and the Environment

* Courses may be submitted for up to two Goal Areas.

Additional Requirement Categories (list number of credits desired in appropriate category):

- [✓] Intensive:
  - [ ] 1. Writing
  - [✓] 2. Oral Communication 4 credits
  - [ ] 3a. Mathematics/Statistics
  - [ ] 3b. Critical Analysis
- [ ] Physical Development and Wellness

Provide information as specified in the previous directions.

Attach a ***General Education Program Approval Form***.

Department Contact Person for this Proposal:

Candace L. Kairies-Beatty	x5789	ckairiesbeatty@winona.edu
Name (please print)	Phone	e-mail address

[Revised 9-6-11]

Course Outline

1. Perspectives on water and environmental issues
    a. Tragedy of the commons
    b. Global water distribution and use
    c. Global population growth
    d. Global climate change
2. The water environment of early civilizations
    a. Drinking water and sanitation systems
    b. Agriculture
    c. Early water transportation and development
3. Surface water hydrology review
4. Groundwater hydrology review
5. Water as a global resource
    a. Global water agency issues
    b. Water footprints of nations
        i. Methods for assessing water footprints
6. Water quality
    a. Point source and nonpoint source pollution
    b. Inorganic chemicals
    c. Organic chemicals
    d. Waterborne disease
    e. U.S. Clean Water Act and amendments
    f. Water quality management
7. Municipal and irrigation water development
    a. Municipal water systems
    b. Irrigation need
    c. Irrigation techniques
8. Dams and reservoirs
    a. Types and purposes of dams
    b. Impacts of dams and reservoirs
    c. Rivers, dams and rehabilitation efforts
    d. Dam removal and impacts on surrounding environment
9. Water allocation law
    a. Ancient water allocation law
    b. Water allocation law 1200-1799
        i. Spanish water law
        ii. First possession
        iii. English common law
    c. Water allocation law: 1800 – 1847
        i. Code Napoleon
        ii. Western U. S.
    d. Water allocation law: 1848 – 1899
    e. Water allocation law: 1900 – present
    f. Interstate compacts
    g. Groundwater allocation law
10. Roles of federal, regional, state and local water management agencies
    a. Selected U.S. federal water agency issues
    b. Selected regional, state and local water agency issues
    c. Privatization of water systems
11. Drinking water and wastewater treatment
    a. Historical perspective
    b. Federal protection of drinking water in the U.S.
    c. Drinking water issues
    d. Source water protection
12. Problems with bottled water
13. Economics of water
    a. The value of water
    b. Public vs. private ownership
    c. Water affordability and marketing
    d. Water banking
14. Water conflicts, solutions and our future
    a. Cutting demand and increasing supplies
    b. Surface and groundwater use conflicts
        i. domestic examples
        ii. International examples
    c. Global climate change and water resources
    d. Efficient, sustainable , and equitable water use in a globalized world
        i. Fairness and sustainability of large water footprints
        ii. International protocol on water pricing
        iii. Minimum water rights

Assessment

Graded Item	Description	% of Grade
Exams (3 during the regular semester plus a semi-comprehensive final)	Traditional short answer exam	25%
Laboratory Assignments	The laboratory exercises will be designed to foster students' ability to think critically and more in-depth about topics and ideas discussed in class.	20%
Water Footprint Project	Working in groups students will conduct a water footprint assessment of a local business or some aspect of operations at WSU. **Speaking Assignment:** Students learn to speak informally about their work as they present short (3-4 minute) progress reports during the semester. **Speaking Assignment:** Each student group will prepare and deliver (to the rest of the class) an oral presentation detailing their portion of the project and their results. **Speaking Assignment:** Each student group will prepare posters and present them as part of the Geoscience Department's Earth Talks Speaker Series (or other appropriate public venue as opportunities arise).	15%
Short Presentations	**Speaking Assignment:** Each student will select two topics of interest related to global water resources and will prepare and deliver a 15 minute talk on each of the topics (to be given on separate days, one early on in the course and one toward the end of the semester).	20%
Discussion Project - Student-led discussion of primary scientific literature	Working in pairs, students will select a topic relevant to the study of global water resource issues. Each student pair will then select two articles from peer-reviewed scientific literature pertinent to their topic that the other in the class students will read. **Speaking Assignment**: On their assigned discussion day, each student pair will present pertinent background material before beginning the discussion of the article. The student pairs will then facilitate and guide the discussion of the two articles.	15%
Discussion Write-ups	On weeks when articles from peer-reviewed scientific literature are assigned, either as part of instructor- or student-led discussion, students must prepare a short report of the articles up for discussion on that day, including any questions that arise while they read the article, their response to the article, and a brief summary of the article.	5%

Oral Intensive Outcomes:	How Met in Course:	Assessment Plan:
Earn significant course credit through extemporaneous oral presentations;	As described above, 50% of the course grade involves speaking assignments, either to the class or in a public setting.	Multiple graded speaking assignments assessing the scientific information presented and the extemporaneous nature of the presentation. Students will receive both peer and instructor evaluation of their speaking.
Understand the features and types of speaking in their disciplines;	Students will be given expectations for speaking in scientific settings such as professional scientific meetings and presenting original research, including how to present a brief, but detailed, summary of their work.	Multiple graded speaking assignments assessing the professional quality and appropriateness of their work.
Adapt their speaking to field-specific audiences;	Students are expected to present their results to both an informed audience (during classroom presentations) and the general public (during public poster presentations).	Multiple graded speaking assignments with peer evaluations and evaluations from the general public.
Receive appropriate feedback from teachers and peers, including suggestions for improvement;	During each presentation, students will receive peer evaluations and evaluation from the instructor regarding content and presentation skill, and offering suggestions for improvement. Multiple opportunities for revision and improvement are built into the assignments described above.	Evaluations are presented to students after each of their presentations. In later assignments, students will be graded on their improvement over the course of the semester.
Make use of the technologies used for research and speaking in their fields; and	Students will be expected to use scholarly literature databases when researching topics. Their presentations will be required to make use of presentation technology and software.	The quality of background research for each presentation will be graded. Presentations will also be graded on appropriate use of technology and software.
Learn the conventions of evidence, format, usage, and documentation in their fields.	A bibliography is required for each project.	Students are graded on the thoroughness and proper documentation of their background research.