



University of Maryland School of Public Health

MIEH 690: UMD Global STEWARDS: Experiential Exploration of Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS)

Semester:	Spring 2020
Classroom and Time:	Wednesdays starting at 9:00am on Zoom
Instructor:	Dr. Amy R. Sapkota
Office:	2234P, SPH Building (255)
Phone:	301-405-1772
Email:	ars@umd.edu
Office Hours:	By Appointment

Course Description:

Experiential introduction to broad food, energy, water (FEW) nexus topics, focusing on how integration across the biological, physical, social, behavioral, computer and engineering sciences will be critical in solving FEW systems challenges. FEW nexus issues from molecular to societal levels and from local to global scales will be covered. Course meetings will include active learning-based lectures, discussions, on-campus and off-campus field trips, hands-on activities, brainstorming about interdisciplinary FEW systems projects, and guest lectures.

Course Pre-requisites:

Required: Graduate status and permission of the instructor.

Course Learning Objectives:

After successfully completing this course you will be able to:

- 1) Identify major food, energy and water systems challenges from local to global scales
- 2) Conceptualize and articulate interplays between food-energy-water systems from local to global scales
- 3) Recognize and translate the language of multiple disciplines working at the food-energy-water nexus from molecular to societal levels
- 4) Identify strengths and critique weaknesses of multiple FEW nexus disciplines
- 5) Begin to collaborate as a member of an interdisciplinary research team to analyze and offer solutions to specific food-energy-water system challenges

UMD Global STEWARDS Competencies Addressed in this Course:

The following competencies for the UMD Global STEWARDS program are addressed in this course:

- 2) Identify strengths and critique weaknesses of multiple disciplines
- 3) Synthesize the approaches and tools from multiple disciplines to evaluate and address a research problem
- 4) Work in a team with individuals trained in different disciplines
- 5) Communicate research based in one discipline or field of study to academic researchers trained in different disciplines

Required Readings:

Each week, we will have 1 required reading that covers fundamental knowledge supporting that week's topics (e.g. reports, chapters, review papers). In addition, we will read 1 research article and spend a designated amount of time in each session discussing the article. These discussions will be framed to encourage critical thinking and participation by all. The final reading list for each class session will be posted on ELMS at least one week prior to each session.

Additional Materials Required: None**Course Requirements:**

Classes will consist of lectures, discussions, on-campus and off-campus fieldtrips, hands-on activities, brainstorming sessions about interdisciplinary FEW systems projects, and guest lectures. Students are expected to carefully complete the assigned readings prior to the class for which they are assigned and be prepared to discuss, analyze and critique the topics during class. The instructor welcomes meetings with students outside of class to discuss questions and to gain more insights about the materials presented in class. Students may e-mail, call, or ask during class for an appointment. Attendance and active engagement during every class and fieldtrip is expected.

Assignments and Grading:

Interdisciplinary FEW Systems Project: (NOTE: The projects will start in the spring semester and will be the focus of the Fall MIEH691 course.) Students will be organized into 3-4 project groups. Each student will bring a diverse set of expertise to each project, creating a microcosm for interdisciplinary team science. The groups will gain real-world experience by conceptualizing and/or conducting an interdisciplinary FEW systems project. Projects may employ a combination of engineering, life sciences, epidemiological or policy approaches; earth system sciences frameworks; social/behavioral approaches; computational methods; and/or other innovative approaches. Through this work, students will gain hands-on experience in study design, research methods, data analysis and/or science communication across varying FEW disciplines. The final project deliverable (due at the end of the Fall MIEH 691 course) will be a grant proposal, a manuscript, an Op-Ed, an extension/outreach package, or another actionable type of science/policy writing.

Two-page policy memo: Students will identify a specific FEW nexus topic or finding of interest (that is distinct from the topic of the Interdisciplinary FEW Systems Project and the individual short research paper) and prepare a two-page policy memo recommending short and long-term policy actions that can be carried out to address the chosen topic. The memo will be written using lay language and will be targeted to a specific policy-maker/elected official (e.g. county council member, mayor, governor, president) or other decision maker (e.g. regulatory official at the Food and Drug Administration or the Maryland Department of the Environment). Students will present a summary of their policy memos during lightning round presentations on the due date. *Specific topics are due to Dr. Sapkota no later than 2 weeks in advance of the due date*. Additional specific guidelines for completing the policy memo will be provided on the class website.

Short research paper: Each student will prepare a 5-10 page research paper focused on a specific domestic or international FEW nexus interaction or case study (two or more food-energy-water systems

must be included in the topic/paper). Ideally, the paper will align with the student's research interests and or dissertation topic and will help to possibly formulate a future interdisciplinary research study that can be carried out as part of the student's dissertation research or a separate side project. *Specific topics are due to Dr. Sapkota no later than 2 weeks in advance of the due date*. Additional specific guidelines for completing the research paper will be provided.

Discussion board comments: For most lectures, students will post 1 comment/thought on the week's readings to the ELMS discussion board. Students are expected to submit their comment/thought (and respond to those of others, if desired) by 12:00 midnight the Monday before each Wednesday lecture. Comments/thoughts, along with that week's readings, will be discussed at the beginning of each lecture.

Grading Procedures:

Grade Weights and Grading

Assignment	Grade (%)
Attendance and participation	15
Interdisciplinary FEW Systems Project Pitch	25
Two-page policy memo	25
Short research paper	25
Discussion board comments	10
Total	100

Number Grade	Letter Grade
96-100%	A+
93-95%	A
90-92%	A-
86-89%	B+
83-85%	B
80-82%	B-
76-79%	C+
73-75%	C
70-72%	C-
66-69%	D+
63-65%	D
60-62%	D-
<60%	F

Course Policies:

Email – The Official University Correspondence:

Verify your email address by going to www.my.umd.edu.

All enrolled students are provided access to the University's email system and an email account. *All official University email communication will be sent to this email address* (or an alternate address if provided by the student). Email has been adopted as the primary means for sending official communications to students, so email must be checked on a regular basis. Academic advisors, faculty, and campus administrative offices use email to communicate important and time-sensitive notices.

Students are responsible for keeping their email address up to date or for redirecting or forwarding email to another address. Failure to check email, errors in forwarding email, and returned email (from "full mailbox" or "unknown user" errors for example), will not excuse a student from missing University announcement, messages, deadlines, etc. Email addresses can be quickly and easily updated at www.my.umd.edu or in-person at the Student Service Counter on the first floor of the Mitchell Building.

For technical support for University email: www.helpdesk.umd.edu or call 301-405-1400.

Absence Policy:

In accordance with University policy if you are absent for a single (1) lecture due to illness or some form of personal or family emergency, this absence will be considered “excused” and the instructor will accept a note from you attesting to the date of the illness/incident, along with an acknowledgement that the information is true. Whenever feasible, you should try to contact the instructor in advance.

Multiple or prolonged absences, and absences that prevent attendance at a major scheduled grading event (like the presentation of a case study) will require written documentation from an appropriate health care provider/organization.

A link to pull information on the new policy covering absences from class can be found at <http://www.president.umd.edu/policies/v100q.html>

Late work and Missed Exams / Assignments:

All work is due when assigned. Any work not completed and handed in by the **BEGINNING of class (9:00am) on the due date will receive a reduction of one letter grade (if handed in at 9:01am or later, it is late!)**. Work not handed in by 9am the following day will receive **an additional letter grade reduction**. Work will not be accepted beyond this point except in extreme circumstances approved by your instructor. You must prearrange with the instructor to miss a class deadline.

Missed classes (in the absence of a documented medical, personal or family emergency) where you were scheduled to provide your student-led interdisciplinary case study may not be made up.

Course Evaluations

The University, the School of Public Health, and the Maryland Institute for Applied Environmental Health are committed to the use of student course evaluations for improving the student experience, course and curriculum delivery, and faculty instruction. Your evaluations help instructors improve their courses; help deans and department chairs decide on merit pay for faculty, renewal of contracts, and support tenure and promotion decisions; and help current and future students decide on classes. **The system (www.CourseEvalUM.umd.edu) will open at the end of the semester** for course evaluations.

In addition to submitting evaluations through CourseEvalUM, the students are also expected to participate in additional surveys and interviews with our Global STEWARDS Evaluation Team.

Additional Important University Policies:

Religious Observances:

The University System of Maryland 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 student’s responsibility to inform the instructor in advance of any intended absences for religious observance.**

Special Accommodations / Disability Support Services:

If you have a documented disability and wish to discuss academic accommodations for test taking or other needs, you will need documentation from Disability Support Service (301-314-7682). If you are ill or encountering personal difficulties, please let the instructor know as soon as possible. You can also contact Learning Assistance Services (301-314-7693) and/or the Counseling Center (301-314-7651) for assistance.

Academic Integrity:

The University's code of academic integrity is designed to ensure that the principle of academic honesty is upheld. Any of the following acts, when committed by a student, constitutes academic dishonesty:

- CHEATING: intentionally using or attempting to use unauthorized materials, information, or study aids in an academic exercise.
- FABRICATION: intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
- FACILITATING ACADEMIC DISHONESTY: intentionally or knowingly helping or attempting to help another to violate any provision of this code.
- PLAGIARISM: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.

For more information see: <http://www.shc.umd.edu/code.html>.

The Honor Pledge is a statement undergraduate and graduate students should be asked to write by hand and sign on examinations, papers, or other academic assignments. The Pledge reads:

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination.

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.shc.umd.edu>.

Inclement Weather / University Closings:

In the event that the University is closed for an emergency or extended period of time, the instructor will communicate to students regarding schedule adjustments, including rescheduling of examinations and assignments due to inclement weather and campus emergencies. Official closures and delays are announced on the campus website (<http://www.umd.edu>) and snow phone line (301-405-SNOW), as well as local radio and TV stations.

Course Schedule Summary			
Session	Date	Topic	Assignments Due BEFORE class
# 1	1/29/20	Course overview Uncovering the Food-Energy-Water Nexus Research Lightning Rounds, 5 min each	Readings posted on course website
# 2	2/5/20	Systems Thinking at the Food-Energy-Water Nexus Systems Thinking Game Discuss topics and guidelines for two-page policy memos	Readings posted on course website Discussion Board comment due by 12:00 midnight the Sunday before the lecture
# 3	2/12/20	Climate Change Impacts on Food-Energy-Water Systems Guest speaker: Dr. Amir Sapkota, Maryland Institute for Applied Environmental Health "Climate Change and Impaired Population Health: Perspectives From Countries on Opposite Ends of the Economic Spectrum" Food-Energy-Water Systems As An Opportunity for Mitigation and Adaptation	DUE by 9:00am: Send topic for two-page policy memo via ELMS to Dr. Sapkota Readings posted on course website Discussion Board comment due by 12:00 midnight the Sunday before the lecture
# 4	2/19/20	Water-Food Intersections: Interdisciplinary Research within the CONSERVE Center of Excellence Guest speakers: Rachel Rosenberg Goldstein, CONSERVE Co-Project Director Manan Sharma, CONSERVE Co-Project Director Sean Ellis, CONSERVE collaborator Panel Discussion: What are the benefits and challenges of working in an interdisciplinary Center? What do we know now that we wish we knew when we formed the Center?	Readings posted on course website Discussion Board comment due by 12:00 midnight the Sunday before the lecture
# 5	2/26/20	Lightning rounds on two-page policy memos, 5 min each Food/Waste-Energy Intersections	DUE by 9:00am: Two-page policy memo Readings posted on course website No Discussion Board comment due this week

# 6	3/4/20	Introduction to Group Dynamics Interdisciplinary FEW Systems Projects	Readings posted on course website No Discussion Board comment due this week
# 7	3/11/20	Social/Behavioral Dimensions of the Food-Energy-Water Nexus Discuss topics and guidelines for short research paper Guest Speaker: Dr. Thurka Sangaramoorthy Title: Rapid Ethnographic Assessments: A Practical Approach For Collaborative Community Research	Readings posted on course website Discussion Board comment due by 12:00 midnight the Sunday before the lecture
None	3/18/20	**Spring Break**	None
# 8	3/25/20	On-Campus Field trip: CANCELLED due to coronavirus preventative measures	CANCELLED
# 9	4/1/20	Stormwater reuse/treatment Join via Zoom. Please try joining on Zoom 5-10 minutes early so we can troubleshoot connectivity issues. 9:00-9:15am: Go over any questions related to our transition to online learning, and discuss topics and guidelines for short research paper. NOTE: Topics for short research paper are due (via ELMS) by 9:00am, April 8th 9:15-10:00am: Stormwater reuse/treatment for irrigation and other applications, Allen Davis (ENG) 10:00-10:15am: Break 10:15am: Forming Interdisciplinary FEW Systems Projects, Stephanie Lansing	Readings posted on course website Discussion Board Comment due by 12:00 midnight the Sunday before the lecture
# 10	4/8/20	Off-Campus Field Trip CANCELLED Energy-Water Intersections Please try joining on Zoom 5-10 minutes early so we can troubleshoot connectivity issues.	DUE 9:00am: Send topic for short research paper via ELMS to Dr. Sapkota Readings posted on course website.

		<p>9:00-10:00am: Energy-Water Intersections and Innovations in the Town of Emmitsburg, MD</p> <p>Independent Activity: Please see details on the course website.</p>	<p>Discussion Board Comment due by 12:00 midnight the Sunday before the lecture</p>
# 11	4/15/20	<p>Global Perspectives: Emerging FEW Systems Innovations Around the Globe</p> <p>Please try joining on Zoom 5-10 minutes early so we can troubleshoot connectivity issues.</p> <p>Guest speakers: 9:00-9:45am: Shree Krishna Dhital, Sanskriti Farms and Research Center, Nepal (30-minute presentation followed by 15 minutes of discussion)</p> <p>9:45-10:00am: Break</p> <p>10:00-10:45am: Dr. Thomas Wild, CMNS Earth System Science Interdisciplinary Center (30-minute presentation followed by 15 minutes of discussion)</p>	<p>Readings posted on course website</p> <p>Discussion Board comment due by 12:00 midnight the Sunday before the lecture</p>
# 12	4/22/20	<p>Policy and Governance at the FEW Nexus</p> <p>Please try joining on Zoom 5-10 minutes early so we can troubleshoot connectivity issues.</p> <p>Guest Speakers: 9:00-9:45am: Poorti Vishwas Sapatnekar, PhD Candidate, School of Public Policy (30-minute presentation followed by 15 minutes of discussion)</p> <p>9:45-10:00am: Break</p> <p>10:00-10:45am: Dr. Alok Bhargava, School of Public Policy (30-minute presentation followed by 15 minutes of discussion)</p>	<p>DUE 9:00am: Short research paper</p> <p>Readings posted on course website</p> <p>No Discussion Board comment due this week</p>
# 13	4/29/20	<p>Off-Campus Field trip CANCELLED</p> <p>Forests, The Future of Food Systems</p> <p>Please try joining on Zoom 5-10 minutes early so we can troubleshoot connectivity issues.</p>	<p>Readings posted on course website</p> <p>Discussion Board comment due by 12:00 midnight the Sunday before the lecture</p>

		<p>9:00-10:00am: Forests, The Future of Food Systems</p> <p>Independent Activity: Please see details on the course website.</p>	
# 14	5/6/20	<p>Interdisciplinary FEW Systems Project Pitches</p> <p>Please try joining on Zoom 5-10 minutes early so we can troubleshoot connectivity issues.</p> <p>[Please see the course website for details on the timing of each group's presentation]</p>	<p>Readings posted on course website</p> <p>No Discussion Board comment due this week</p>

Note: This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines and updated readings. In the unlikely event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines, and assignments will be made based on the duration of the closing and the specific dates missed.