Syllabus

CDAE 295/395 PA 295/395: Smart Resilient Communities

Spring 2018

Room: Hills Agri Sci 234   Tuesdays, 4:35 – 7:35 pm

Instructor:	**Asim Zia, Ph.D.**
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Office Hours:	**Tuesdays 1-3 pm or by appointment**

Catalog Description: Focus on social ecological systems integration framework to determine community resilience, enable smart design processes at the nexus of food, energy and water systems and learn practical skills, such as early warning systems, ubiquitous computing and interactive scenario planning techniques

Welcome to CDAE 295/395 PA 295/395: In this upper undergraduate/graduate level course, we will explore complex adaptive systems and adaptive management approaches to design smart resilient communities. Increasing demands of a globalizing economy, aging critical infrastructure, changing demographics, and a changing climate has led to increasing concern about the resiliency of social-ecological and socio-technological systems at multiple scales of governance. Multi-scale challenges require multi-scale solutions. In particular, secure provision of food, energy and water and early warnings to vulnerable communities in the face of natural and man-made hazards requires urgent attention of policy makers, planners and citizens. This course will focus on social ecological systems and socio-technological systems integration framework to unravel the complex pathways that determine community resilience and enable smart design processes at the nexus of food, energy and water systems. The emphasis will be placed on practical skills, such as early warning systems, ubiquitous computing and sensors, resilience design approaches and interactive scenario planning techniques, for analyzing and designing smart resilient and sustainable communities.

COURSE OBJECTIVES
At the completion of this course, you should be able to:
- Understand the problems, challenges and opportunities for designing smart resilient communities
- Apply adaptive management, ubiquitous computing and sensing tools to design resilient communities
- Develop early warning systems and integrative designs at the nexus of food, energy and water systems
- Engage in scenario planning and community development by attaining higher competency in social ecological systems and interactive scenario planning approaches

- Critically analyze the design of community resilience at multiple scales of governance

A SEMINAR WITH PROJECT BASED LEARNING
This course is designed as a seminar with project based learning, so all students are expected to take leadership role in stimulating class discussions on readings, project based assignments and relevant community resilience issues. My role is to facilitate the class discussion and evaluate your progress vis-à-vis attainment of course objectives. Your active participation in the seminar discussions will help you achieve the course objectives through an interactive learning experience. Each 3-hour seminar bloc is typically broken down as follows, not in this particular order: (1) Instructor introduces the seminar topic (60-75 minutes); (2) Interactive group activities (20-30 minutes); (3) Open discussion on questions that are generated prior to and during the seminar (30-45 minutes); (4) Review of assignments and/or group activities (15-30 minutes). There will be 6 to 8 guest speaker presentations to engage you directly with the stakeholders. Videos and documentaries will also be extensively used to enhance your learning experience.

COURSE WEBSITE
A course website is created on Blackboard, which can be accessed at https://bb.uvm.edu. All power point presentations, additional readings, and assignments will be made available at the Blackboard website.

TEXTS AND OTHER READINGS

Required:
　　Walker, B., & Salt, D. (2012). *Resilience practice: building capacity to absorb disturbance and maintain function*. Island Press. E-copy available through UVM library.
　　Goldsmith, S., & Crawford, S. (2014). *The Responsive City: Engaging Communities through Data-Smart Governance.* Jossey-Bass.

Additional readings, shown in the *italics* in the Calendar, will be uploaded on the Blackboard website for this class.

CALENDAR

Date	Topics, Sub-Topics, Readings and Assignments
January 16	**Topic: Community Resilience** **Readings:** *Daniel Lerch (2015) Six Foundations for Building Community Resilience. Post Carbon Institute.*
January 23	**Topic: Networked Citizenship** **Readings:** Goldsmith, S., & Crawford, S. (2014). Chapters 1 and 2
January 30	**Topic: The interactive Communities as Digital Platforms** **Readings:** Goldsmith, S., & Crawford, S. (2014). Chapters 3 and 4
February 6	**Topic: Responsive Governance and Data Smart Cities** **Readings:** Goldsmith, S., & Crawford, S. (2014). Chapters 6, 7 and 8
February 13	**Topic: Smart Cities, Big Data and Civic Hackers** **Readings:** *Townsend, A. (2013) Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia. Introduction, Chapters 3 and 10.*
February 20	**Topic: Social Ecological Systems Framework for Resilience Practice** **Readings:** (1) Walker and Salt (2012), Chapter 1 *(2) Walker et al. (2004). Resilience, adaptability and transformability in social--ecological systems. Ecology and society, 9(2), 5.*
February 27	**Topic: Assessing Resilience** **Readings:** Walker and Salt (2012), Chapters 2 and 3

March 6	**Town Meeting Day, No Class**
March 13	**Spring Recess, No Class**
March 20	**Topic: Designing at the Nexus of Food, Energy and Water Systems** **Readings:** *Bizikova et al. (2013) The water-energy-food security nexus: towards a practical planning and decision-support framework for landscape investment and risk management. International Institute for Sustainable Development*
March 27	**Topic: Designing at the Nexus of Food, Energy and Water Systems** **Readings:** *Bizikova et al. (2014) The water-energy-food nexus and agricultural investment: a sustainable development guidebook. International Institute for Sustainable Development*
April 3	**Topic: Mainstreaming Early Warning Systems for Community Resilience** **Readings:** *Zia, A., C. H. Wagner (2015) Mainstreaming Early Warning Systems in Development and Planning Processes: Multi-level implementation of Sendai Framework in Indus and Sahel. International Journal of Disaster Risk Science 6(2): 189-199.*
April 10	**Topic: Managing Resilience** **Readings:** Walker and Salt (2012), Chapter 4 *Scheffer et al. (2002) Dynamic interaction of societies and ecosystems – linking theories from ecology, economy and sociology. Chapter 8. In "Panarchy: Understanding transformations in human and natural systems", PP 195-239.*
April 17	**Topic: Practicing Resilience in Different Ways** **Readings:** Walker and Salt (2012), Chapter 5
April 24	**Topic: A Smart Resilient World** **Readings:** Walker and Salt (2012), Chapter 6
May 1	**Activity:** Student Presentations

ASSIGNMENTS AND GRADING

All assignments for this class are geared towards providing you hands-on experience in understanding and designing resilient communities and critically analyzing community resilience. Detailed instructions for each of these assignments will be uploaded on the blackboard website and thoroughly discussed during the seminar on the assigned dates.
PROJECT ASSIGNMENT 1: LAKE CHAMPLAIN BASIN (LCB) PROJECT: Semester length group project on designing smart resilient communities in transboundary LCB **(35%)**
PROJECT ASSIGNMENT 2: RESILIENT COMMUNITY DESIGN PROJECT: Individual project focused on a community of your choice; entailing resilience assessment and management **(35%)**
SHORT ASSIGNMENTS: During the course of the semester, students will be handed out short assignments to build their competency in smart city tools and assessment of resilience at the nexus of food-energy-water systems **(20%)**
PARTICIPATION AND LEADERSHIP (10%)

INCLUSIVENESS:
Disability/Access: In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact ACCESS, the office of Disability Services on campus. ACCESS works with students to create reasonable and appropriate accommodations via an accommodation letter to their professors as early as possible each semester.
Contact ACCESS: A170 Living/Learning Center - 802-656-7753 - access@uvm.edu.

Religious Holidays: Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of

the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time.

STUDENT RIGHTS AND RESPONSIBILITIES
[Academic Integrity Policy](#)
1. Students may not plagiarize.
All ideas, arguments, and phrases, submitted without attribution to other sources must be the creative product of the student. Thus, all text passages taken from the works of other authors (published or unpublished) must be properly cited. The same applies to paraphrased text, opinions, data, examples, illustrations, and all other creative work. Violations of this standard constitute plagiarism.
2. Students may not fabricate.
All experimental data, observations, interviews, statistical surveys, and other information collected and reported as part of academic work must be authentic. Any alteration, e.g., the removal of statistical outliers, must be clearly documented. Data must not be falsified in any way. Violations of this standard constitute fabrication.
3. Students may not collude.
Students may only provide, seek or accept information about any academic work to or from another student with the authorization of the instructor. Students may only collaborate on academic work within the limits prescribed by their instructors. Violations of this standard constitute collusion.
4. Students may not cheat.
Students must adhere to the guidelines provided by their instructors for completing academic work. Students may not claim as their own work any portion of academic work that was completed by another student. Students may only use materials approved by their instructor when completing an assignment or exam. Students may not present the same (or substantially the same) work for more than one course without obtaining approval from the instructor of each course. Students must adhere to all course reserves regulations. Violations of this standard constitute cheating
[Grade Appeals](#)
A student who believes that s/he has received an unfair course grade should first contact the registrar's office to verify that the grade submitted by the instructor is the same grade the registrar has recorded. If the grade has been recorded correctly, the student should next contact the instructor, department chair, and dean of the college/school in which the course is offered (in that order) to discuss the matter.
The following deadline must be observed by the student who wishes to appeal a grade (though extensions may be granted by the dean of the college / school offering the course). The student should contact the instructor as soon as possible, and no later than the tenth day of instruction of the semester following the assignment of the grade in question. No grade can be appealed after the student has graduated.
[Educational Records and Privacy](#)
The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records.
The right to inspect and review the student's education records within 45 days of the day the University receives a request for access. Students should submit to the registrar, dean, head of the academic department, or other appropriate official, written requests that identify the record(s) they wish to inspect.
The right to request the amendment of the student's education records that the student believes to be inaccurate, misleading, or otherwise in violation of the student's privacy rights under FERPA. Students may write the University official responsible for the record to ask that it be amended, and should clearly identify the part of the record they want changed and specify why it is inaccurate, misleading, or otherwise in violation of their privacy rights under FERPA