

Systems Dynamics and Strategic Management for Community Resilience (PA 317)
Department of Community Development and Applied Economics
Spring 2019

Class meetings

Mondays, 5:30pm – 8:30pm
Old Mill Annex 200

Instructor

Patrick Bitterman, PhD
Office: 23 Mansfield Ave #210
Email: patrick.bitterman@uvm.edu
Office Hours: Monday & Thursday, 4pm - 5pm, or by appointment

Department Chair (Community Development and Applied Economics)

Dr. Jane Kolodinsky
Office: 202 Morrill Hall
Email: Jane.Kolodinsky@uvm.edu
Phone: 802-646-4616

Course description

We need only look to the media to see the vulnerabilities that confront us. Natural and human-induced disasters, political upheaval, economic downturns, and disruptive technologies threaten the well-being of people and their communities. These system dynamics are shaped by the infrastructure humans build and maintain, the social organizations they design, and the ecosystems in which they live – characteristics that influence their ability to not only “bounce back” from crisis, but to be sufficiently forward-thinking and proactively adapt to reduce their vulnerability in the first place. Concepts such as resilience, adaptation, and sustainability are useful theoretical concepts for understanding these processes – but not more so than the very real tools and practices employed by planners, public managers, researchers, and policymakers.

This class combines the science of resilience with the practices of resilience. As such, students will be engaged in both academic study of the core concepts and themes of systems analysis and strategic management, and the applications of these concepts to real world settings. Applied class projects, guest speakers, and case studies will provide students with both a strong theoretical and hands-on understanding and appreciation of the science and the tools available.

Learning objectives

By the end of the term, students will have gained:

- an increased understanding and appreciation for the theory and application of community resilience and other resilience frameworks
- knowledge of threats and opportunities facing communities and institutions in Vermont
- an increased conceptual understanding of system dynamics, as well as knowledge of how real-world dynamics affect community resilience in Vermont and the Lake Champlain region
- experience in collaborative project management – including planning, logistics, and communication

- an increased understanding of methods and tools to quantify resilience, vulnerability, and related metrics for the purposes of planning and action

Required materials

Masterson, J.H., Peacock, W.G., Van Zandt, S.S., Grover, H., Schwartz, L.F., & Cooper, J.T. 2014. *Planning for Community Resilience: A Handbook for Reducing Vulnerability to Disasters*. Island Press.

Rodin, Judith. 2014. *The Resilience Dividend*. New York: Public Affairs Press.

Wilson, Geoff. 2012. *Community Resilience and Environmental Transitions*. Routledge.

Course policies

Attendance and participation

Students are expected to attend all class meetings. This is an issues-based and discussion-based course, meaning that your attentiveness and participation in group discussion is extremely important. While attendance will not be taken, individual presentations (i.e., “research slams”) and your contribution to a collective group project are substantial portions of your grade. If missing a class is unavoidable, please contact me in advance by **email**.

The key to a successful class experience is participation, which in turn relies on students reading the material, attending class meetings, completing work in a timely manner, and discussing the material and related issues.

In-class discussion should include:

1. demonstration that the student has read and understood class material;
2. discussion arguments that evidence creativity and logical structure;
3. consistent participation without monopolizing the discussion; and
4. constructive and critical examination of issues couched in an atmosphere of civility and mutual respect.

Class format

This course will be conducted as a graduate level seminar in which students are expected to lead and engage in discussion regarding the readings and assignments at hand. There is much to be learned from the perspectives and experiences of others, and I encourage you to share your personal and professional experiences in reference to in-class discussions and assignments.

As the instructor for this course, I understand my role to be:

1. a facilitator who is responsible for keeping discussion on track
2. an expert in resilience, coupled human-environmental systems, and geospatial analysis – subject to limitations on my own knowledge and ability
3. an evaluator of your progress in achieving course objectives.

This course meets weekly. Therefore, we will have limited class meetings during the semester. Readings and/or assignments will be required for each class period. To avoid falling behind, it is imperative that you keep up with the assignments. You should come to class prepared to take notes, ask questions, and share your ideas.

Late work

Unless otherwise noted:

- all assignments are due at the start of class on the specified due date
- late items will be accepted, but will be penalized 20% of the potential points for each day that they are late. This includes days we do not have class (e.g., weekends)
- “research slams” cannot be made up. If you miss a class and, therefore, your “slam” of that week, you may write a 5-page (double-spaced) essay on the week’s readings as a substitute. You may do this twice during the semester.

Changes to the syllabus

Any changes to the syllabus will be communicated via email and posted on Blackboard course page.

Use of proper citation methods

The advancement of knowledge is predicated on building upon the foundation set by collective work of others. Therefore, it is very important to ascribe credit to those that created original materials and produced original work(s). All sources of information used in your work should be cited using appropriate methods and standards. You are expected to fully reference the material(s) you draw upon within your analysis. **Again, I expect you to provide accurate and complete references for all materials.** As you will be directly quoting multiple sources, you will also need to provide a list of references. You may format your citations following APA, Chicago, or other appropriate styles (e.g., the format of an established academic journal) with one exception. Do **NOT** use a footnote-style citation method. There are multiple external resources to help with citation methods (e.g. Purdue University’s OWL). Further, citation software (e.g., Zotero, Mendeley), some of which are free or low-cost, can greatly simplify this work and automate the process.

Miscellany

Be honest and have integrity in your work. For example, do not increase the perceived length of a paper by increasing the size of punctuation or manipulating spacing. Be kind and be polite. Do not interrupt – let others finish talking before speaking in disagreement (or agreement!). Limit laptop and phone use to appropriate and necessary activity. Finally, you will get out of this class what you put into it – come prepared, participate, and be attentive, and you will be successful.

Assignment summaries

1. Independent study

In single or in pairs, identify a topic related to course themes. Conduct either: 1) a case study, or 2) a literature review on the topic. 15 pages for sole authored work; 25 pages for co-authored work (double-spaced).

Possible topics:

- Event analysis or impact assessment (e.g., single or comparative case studies of communities that have suffered stresses, impact assessment of specific disaster).
- Critical infrastructure resilience (e.g., review of resilience measurement index)

- Personal resilience (e.g., reports of PTSD from disaster trauma) and/or indicators of social vulnerability
- Organizational resilience (e.g., efforts of companies to increase resilience, efforts of institutions to enable resilience of communities)
- Stakeholder engagement methods and/or planning processes (e.g., overview of tools and applications and cases of specific planning and engagement activities)
- Review of academic and professional literature pertaining to resiliency measurements, processes, frameworks, implications, etc.

If you choose to work in pairs, you may only choose the case study option (i.e., no cooperative literature reviews). You will prepare and perform a 15-minute (inclusive of time for questions) presentation in class and submit a final paper.

2. Flood hazard resilience for Lake Champlain/Richelieu River Basin (LCRR): Community presentation or charrette

Burlington, VT and Saint Jean, QC suffered very different consequences as a result of extensive flooding during the Spring of 2011. As a class, you will be asked to prepare a public presentation using various data visualizations, interactive features, text, and presentations to provide an overview of the impacts of these events on the communities, and to summarize and evaluate their actions taken to improve resilience and mitigate future events. Everyone has different experiences, strengths, and interests, and the collective project should leverage your unique talents to produce a product representative of everyone's work. While in-class time will be provided to coordinate and plan your activities, much of this work will take place outside of class. Dimensions of analysis may include:

- a media review of the events, including a photo essay and GIS maps of flooded areas and impacts
- a review of the environmental, social, and economic impacts (see Wilson and Masterson)
- an assessment of the current state of the communities and the region – what were the impacts and how have the communities been resilient (or not)?
- A comparison of the two communities and their experiences through data visualization or artistic interpretation

As a class, you will present your works publicly at a time, location, and format to be determined.

3. Research “slams” and other class assignments

As directed (see weekly summaries in the course outline), prepare a brief presentation regarding the topic at hand. Presentations should be 4-5 minutes in length, and you should incorporate concepts and examples from the readings as appropriate. I also encourage you to include relevant examples from your professional or personal experience.

4. Other assignments

There are 2 additional assignments, the details of which will be posted on Blackboard and communicated in class at the appropriate time.

Unless otherwise noted, all assignments should be submitted to the corresponding Blackboard assignment by the start of class on the day they are due.

Evaluation scale

Grade	% of Points	Grade	% of Points	Grade	% of Points	Grade	% of Points
A	94-100	B+	87-89	C+	77-79	D+	67-69
A-	90-93	B	84-86	C	74-76	D	64-69
		B-	80-83	C-	70-73	D-	60-63
						F	Below 60

Individual assignment grades will be based on the following:

Assignment	Total points
Weekly assignments (50%)	
Research “slams” (40 points x 8 slams)	320
Hazard mitigation	90
Governance visualization	90
Independent study/project (25%)	
Proposal	20
Presentation	80
Paper	150
Class/group project (25%)	
Project content	200
Participation (individual)	50
Total	1000

Extra credit

Extra credit assignments and opportunities will not be offered.

Course outline (schedule subject to change **WITH** notification)

January 14, 2019	Towards a complex systems perspective on community resilience & planning
Class activities:	Course introduction Opening lecture
Read:	No readings
Due:	Nothing due
Keyword(s):	Resilience

January 21, 2019

No class: Martin Luther King Jr. Day

January 28, 2019	Threats to resilient ecosystems: climate change, natural and human induced disruptions
Read:	Rodin: Introduction “Why resilience matters” Rodin: Chapter 1 “The resilience framework” Wilson: Chapter 1 “Introduction” Masterson et al.: Chapter 1 “The new era of catastrophes” Davidson et al. 2016 (BB)
Due:	Disruptive shocks research slam: drawing on this week’s readings, prepare 1 slide about a specific type of “shock.” Draw on at least two external references in preparing the slide and presentation. Post slide on Blackboard before class.
Keyword(s):	Climate change, extreme events, flood hazard

February 4, 2019	Resilient communities framework
Read:	Masterson et al.: Chapter 2 “What is resilience?” Rodin: Chapter 12 “Revitalization” Wilson Chapter 2 “Understanding community resilience” Janssen et al. 2006 (BB) Bodin 2017 (BB)
Due:	Disruptive events research slam: select a natural or anthropogenic disaster or disruptive event and: 1. define the nature of the disaster and the impacted community/region 2. explain what is known about the causes of the event, 3. define broader impacts of the event 4. provide an overview of the response to the event Submit slides to Blackboard before class.
Keyword(s):	community capitals, community assets, social capital

February 11, 2019	Systems thinking: mindsets, pathways, and transitions
Read:	Rodin: Chapter 2 “A Mindset” Rodin: Chapter 3 “A practice” Rodin: Chapter 6 “Awareness” Wilson: Chapter 3 “Transition theory” Cutter et al. 2008 (BB)
Due:	Impacts/data research slam: prepare an overview of a major or minor disruption that affected a particular community or region. This may or may not be tied to the even you discussed in the prior week. 1. define the disruption and the community or region impacted 2. provide some assessment of the economic impact 3. provide some assessment of its social impact 4. provide some assessment of its environmental impact 5. consider the connections/relationships among the impacts 6. describe any post-event recovery or adaptive/mitigative response Submit slides to Blackboard before class
Keyword(s):	Design thinking, systems analysis, participatory planning, adaptive management

February 18, 2019

No class: President's Day

February 25, 2019	Deep dive – 2011 flooding the LCRR region
Read:	LCRR Flood Hazard Mitigation Report (BB)
Due:	2011 LCRR flooding newsclip(s) research slam: identify two news articles relating to the 2011 flooding in Vermont and Quebec. Summarize the content of the news items. Find at least one map or other visualization related to the flood, its effects, or the response. Submit slides to Blackboard before class.
Keyword(s):	LCRR

March 4, 2019	Resilient infrastructures
Read:	Masterson: Chapter 4 “Assessing hazard exposure” Rodin: Chapter 8 “Getting ahead of the threat” Rodin: Chapter 11 “After the crisis” Journal articles on Blackboard
Due:	Critical infrastructure research slam: prepare an overview of a specific example of “critical infrastructure” 1. discuss how that industry or policy domain is responding to the “resiliency challenge.” 2. review industry publications for this exercise. Submit slides to Blackboard before class. Independent study proposal: A 1-page (max 1.5 spaced) description of the project
Keyword(s):	Risk assessment, cascading failure, risk governance
Notes:	No class next week

March 11, 2019

No class: Spring break

March 18, 2019	National, regional, and municipal planning frameworks
Read:	Masterson: Chapter 3 “Organizing and connecting through disaster phases” Masterson: Chapter 7 “Assessment of hazard mitigation plans”
Due:	Hazard mitigation plan exercise
Keyword(s):	Regional planning organizations, municipal plans, intergovernmental networks

March 25, 2019	Collaborative management and stakeholder engagement
Read:	Masterson: Chapter 8 “Planner’s toolbox” Masterson: Chapter 9 “Consistency” Journal articles on Blackboard
Due:	Team project planning updates for 2011 flood resilience project Resilience project research slam: select a case from the Resilience Alliance website or from examples in Rodin. Provide a presentation about this case (and its antecedents). Submit slides to Blackboard before class.
Keyword(s):	Trust, durability, citizen participation

April 1, 2019	Modeling and measuring social vulnerability
Read:	Masterson: Chapter 6 “Assessing social vulnerability” Journal articles on Blackboard
Due:	Team project data updates for 2011 flood resilience project
Keyword(s):	Social vulnerability, indicators, uncertainty

April 8, 2019	Resilient people and organizations
Read:	Rodin: Chapter 7 “Readiness” Rodin: Chapter 9 “Responsiveness” Rodin: Wilson 4 “Social memory” Journal articles on Blackboard
Due:	Indicators of vulnerability or resilience slam: Prepare presentation linking a theoretical construct (e.g., community resilience, social vulnerability) or one of its dimensions to possible indicators and data sources. While you do not have to perform a vulnerability analysis, your presentation should be place-based or linked to a specific location or region. Submit slides to Blackboard before class
Keyword(s):	Social vulnerability, indicators, uncertainty

April 15, 2019	Resilient governance networks
Read:	Rodin: Chapter 10 “Leadership emerges” Rodin: Conclusion “Realizing the resilience dividend” Journal articles on Blackboard
Due:	Resilience tool research slam: Provide an overview of a planning or response tool. Submit slides to Blackboard before class. Team project progress updates for 2011 flood resilience project
Keyword(s):	Network governance, adaptive governance, network management

April 22, 2019	Scenario development for resilience in complex social-ecological systems
Read:	Wilson: Chapter 5 “Path dependency” Wilson: Chapter 6 “Transitional corridors” Wilson: Chapter 7 “Community resilience and the policy challenge” Journal articles on Blackboard
Due:	Governance visualization exercise
Keyword(s):	Coupled human-natural systems, transdisciplinary, decision support tools

April 29, 2019	Last class period
Due:	Independent project presentations. Submit slides on Blackboard prior to the start of class.

May 2, 2019	
12pm – 4pm	Group project tabling in Davis Center.

May 6, 2019	
Due:	No class: Independent project papers due on Blackboard

University policies

Student Learning Accommodations

In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact SAS, the office of Disability Services on campus. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly encouraged to meet with their faculty to discuss the accommodations they plan to use in each course. A student's accommodation letter lists those accommodations that will not be implemented until the student meets with their faculty to create a plan.

Contact SAS:
A170 Living/Learning Center;
802-656-7753;
access@uvm.edu
www.uvm.edu/access

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. <https://www.uvm.edu/registrar/religious-holidays>

Academic Integrity

The policy addresses plagiarism, fabrication, collusion, and cheating.
<https://www.uvm.edu/policies/student/acadintegrity.pdf>

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 work cooperatively, but not collude.

Students are encouraged to collaborate on academic work within any limits that may be prescribed by their instructors. Students may only provide, seek or accept information about any academic work that will be submitted for a grade, to or from another student, with the authorization of the instructor. 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 person. 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 or within the same course without obtaining approval from the instructor of each course. Students must adhere to all course reserves regulations. Students may not act dishonestly or convey information that the student knows or should know to be false, by actions such as lying, forging or altering any document or record in order to gain an unfair academic advantage. Violations of this standard constitute cheating.

Grade Appeals

If you would like to contest a grade, please follow the procedures outlined in this policy:
<https://www.uvm.edu/policies/student/gradeappeals.pdf>

Grading

For information on grading and GPA calculation, go to <https://www.uvm.edu/registrar/grades>

Code of Student Rights and Responsibilities

<http://catalogue.uvm.edu/undergraduate/academicinfo/rightsandresponsibilities/>

FERPA Rights Disclosure

The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974.

<http://catalogue.uvm.edu/undergraduate/academicinfo/ferparightsdisclosure/>

Promoting Health & Safety

The University of Vermont's number one priority is to support a healthy and safe community:

Center for Health and Wellbeing

<https://www.uvm.edu/health>

Counseling & Psychiatry Services (CAPS)

Phone: (802) 656-3340

C.A.R.E.

If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by visiting the Dean of Students website at <https://www.uvm.edu/studentaffairs>

Final Exam Policy

The University final exam policy outlines expectations during final exams and explains timing and process of examination period. <https://www.uvm.edu/registrar/final-exams>

Revision log

2019-03-26

- Edited reading list for April 8
- Added details for group public tabling on May 2

2019-02-10

- Added clarifying language to independent study project regarding paper length.

2019-01-29

- Changed research slams to reflect a less-structured format. All research slams are now 4-5 minutes long with no restriction on the number of slides presented.
- Changed Blackboard readings for 2019-02-04

2019-01-14

- Added “free” to correct typo in citation/reference management software section
- Corrected the % of points to achieve a B+